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**Obstetric practice and cephalopelvic disproportion in
Glasgow between 1840 and 1900**

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Submitted in fulfilment of the requirements for the

Degree of PhD

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Abstract

This thesis examines obstetric practice associated with cephalopelvic disproportion in Glasgow between 1840 and 1900. Disproportion is a complication of labour, which occurs when there is a physical disparity between the size of the fetus and the size of the birth canal. The majority of these cases involved women who had suffered from rickets as a child, and had a deformed pelvis as a result. During this period the number of children affected by rickets appeared to increase, and as a consequence more cases of disproportion were encountered towards the end of the century. Descriptions of these cases found in a wide-range of published and unpublished materials have been used to analyse changes to obstetric practice in Glasgow.

The complex nature of medical decision-making in cases of disproportion is shown. Methods available for the treatment of disproportion included caesarean section, craniotomy, forceps, induction of premature labour, symphysiotomy, and turning. Medical practitioners' decisions were subject to social, medical and scientific factors. Practitioners' choices were influenced by their experience, reports of successful cases both abroad and at home, the severity of the pelvic deformity, innovations in medical technique, perceptions of the value of the mother compared to her unborn child, location, and the decisions of the women and their friends and family.

After the 1870s there was an increase in the number of women who were delivered by one of these forms of intervention at the Glasgow Maternity Hospital. This change can be attributed to an increase in the prevalence of this condition, but it also reflected a shift from women being admitted on social grounds to medical reasons. This change was in response to an acknowledgement that selecting cases earlier improved the chances of a successful outcome, as evidenced by Murdoch Cameron's work with caesarean section. In addition, as obstetrics emerged as a specialism, obstetric practitioners claimed these difficult cases for themselves. It was stressed that general practitioners and midwives should send women to obstetric physicians as soon as they were aware of complications, and that obstetric specialists were to replace general surgeons as the operator in severe cases of disproportion when caesarean section was required.

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Author's declaration

I hereby declare that this thesis is my own work and that, to the best of my knowledge and belief, it contains no material previously published or written by another person nor material which has been accepted for the award of any other degree, except where due acknowledgement has been made in the text.

Mark Skippen

9 April 2009

Abbreviations

BMA - British Medical Association

BMJ - British Medical Journal

GMJ - Glasgow Medical Journal

GRO - General Register Office

GUL Sp Coll - Glasgow University Library Special Collections

GULRA - Glasgow University Library Research Annexe

NHSGGCA - National Health Service Greater Glasgow and Clyde Archives

RCPSG - Royal College of Physicians and Surgeons of Glasgow

Chapter 1 – Introduction

This thesis examines obstetric practice associated with cephalopelvic disproportion in Glasgow between 1840 and 1900. The diagnosis and treatment of this condition is studied, with a particular emphasis placed on describing the procedures that were advocated and used by medical practitioners to accomplish these aspects of obstetric practice. It is the intention of this thesis to analyse the decisions made by practitioners when advocating and using these procedures, and hence reveal the factors that influenced the decision-making process. This chapter introduces the thesis subject, reviews relevant literature, and describes the approach and structure that has been taken in this study.

1.1 Cephalopelvic disproportion

Cephalopelvic disproportion is the medical term used to characterise the physical impediment of labour, which occurs when there is ‘an absolute or relative mechanical disparity between the fetal size and the birth canal’.¹ The consequences can be serious when this condition transpires. In severe cases childbirth is unable to progress because the fetal head becomes impacted in the pelvis. Without intervention this condition can result in uterine rupture, fistulas, and even fetal and maternal death. Current literature often includes procedures such as fetal monitoring, episiotomy, and anaesthesia when referring to interventions.² For the purposes of this thesis ‘intervention’ refers specifically to the procedures used to treat disproportion. Medical practitioners documented the diagnosis and treatment of disproportion in case notes, hospital records, medical journals, textbooks and theses. During the nineteenth century this condition was referred to as ‘disproportion’, or practitioners mentioned the cause of the problem, for example, deliveries were described as involving a woman with a contracted pelvis.³

¹ Hubert B. Liselele, ‘Maternal height and external pelvimetry to predict cephalopelvic disproportion in nulliparous African women: a cohort study’, *British Journal of Obstetrics and Gynaecology*, 107 (2000), p.951.

² Richard Johanson, Mary Newburn, and Alison MacFarlane, ‘Has the medicalisation of childbirth gone too far?’, *British Medical Journal*, 324 (2002), pp.892-893.

³ For the purposes of this thesis this condition will be referred to as disproportion.

Disproportion is often caused by complications associated with the fetal head or maternal pelvis. Ossification of the fetal skull can prevent the natural moulding of the head that occurs during childbirth, while the size of the head of a fetus suffering from hydrocephaly, where the fetal head is abnormally large due to a build up of cerebrospinal fluid, can also result in disproportion. However, it was predominantly changes to the shape and size of the maternal pelvis that were described as causing disproportion during the nineteenth century. Deformity of the bony pelvis can be caused by violent injury, but the principal origin of contracted pelvises was disease. The childhood disease rickets, and its adult variation osteomalacia, can result in malformation of the pelvis. Rickets produces a softening of bone and the weight-bearing bony pelvis can dramatically alter in shape as a result, becoming narrowed antero-posteriorly. The effect upon the pelvis is determined by the stage of a child's growth when they suffer from rickets.⁴ Generally the deformity forms a distinctive rachitic shape of the pelvis (Fig. 1.1). Childbearing women affected by rickets during their childhood were consequently at risk of disproportion.

Fig. 1.1: Diagram showing brim of (A) an unaffected female pelvis and (B) a female pelvis severely distorted by rickets, both viewed from above including true conjugate diameter.⁵

Fig 1.1 has been removed due to Copyright restrictions

An inspection of nineteenth-century obstetric textbooks reveals that there were several techniques available for the diagnosis and treatment of disproportion. Methods advocated to form a diagnosis included: medical history assessment, observation, pelvimetry, and vaginal examination. The treatments recommended

⁴ Donald J. Ortner, *Identification of Pathological Conditions in Human Skeletal Remains*, (Academic Press: San Diego, 2003), pp.393-403.

⁵ Irvine Loudon, *Death in Childbirth: An International Study of Maternal Care and Maternal Mortality 1800-1950*, (Oxford: Clarendon Press, 1992), p.132.

included: caesarean section - the surgical removal of the fetus from the uterus through the maternal abdominal wall; craniotomy - the perforation of the fetal skull to diminish the size of the fetal head enabling delivery; forceps - an instrument used for grasping the fetal head and applying force in the direction of delivery; induction of premature labour - the induction of labour before the fetus has reached its full-term size; symphysiotomy - the division of the symphysis pubis with the intention of increasing the size of the pelvic outlet; turning - the turning of the fetus within the uterus so that the feet present rather than the fetal head, this procedure was later called podalic version. Internal podalic version was used in an attempt to deliver a live child, but later a combined external and internal method of podalic version was introduced (see p.148).⁶ The existence of so many available methods led to considerable discussion regarding which ones to use. These discussions were well documented in the various forms of literature at the time, which enables an analysis of the factors that influenced the decisions made by practitioners.

1.2 The history of childbirth

The history of childbirth has been subject to a considerable amount of attention. To place the conclusions of this thesis within the context of this previous work, the literature that considers the obstetric practice of medical practitioners is examined here.⁷ It has been argued that three distinct historiographies of obstetrics exist. William Ray Arney included a section entitled 'Three Histories of Obstetrics' in his book examining this aspect of the medical profession.⁸ Until the early 1960s, most of the work that examined the history of childbirth focused upon the development of enduring techniques and instruments.⁹ This

⁶ There were further variations on these procedures. Embryotomy, the mutilation of the fetus, was also mentioned during this period. Craniotomy was a specific type of embryotomy.

⁷ The term 'obstetrics' came into use during the nineteenth century to depict medical practice associated with childbirth. Before this 'midwifery' was used when referring to such work. During the nineteenth century these terms were largely interchangeable as will be observed throughout this thesis in quotes from practitioners. For the purposes of this thesis the term 'obstetrics' will be used except for references to education because 'midwifery' continued to be used in reference to this throughout the century.

⁸ William Ray Arney, *Power and the Profession of Obstetrics*, (Chicago: University of Chicago Press, 1982), pp.2-10.

⁹ Good examples of this are Herbert R. Spencer, *The History of British Midwifery from 1650 to 1800: The Fitz-Patrick Lectures for 1927 Delivered Before the Royal College of Physicians of London*, (New York: AMS, 1978); Nicholson J. Eastman, 'Pelvic mensuration: A study in the perpetuation of error', *Obstetrical and Gynecological Survey*, 3 (1948), pp.301-329; Harvey Graham, *Eternal Eve*, (London: William Heinemann, 1950); J. M. Munro Kerr, R. W. Johnstone

was not a version of history confined to obstetrics, as the histories of other areas of medicine were also depicted in this way. Distinguished medical practitioners, considered as the architects and innovators of these procedures, were given the central role in a history that described an advancing profession. The authors of this literature were, in the main, medical practitioners and to them the apparent link between cause and effect seemed obvious. It appeared self-evident that the continued advocacy and use of obstetric procedures was based on the efficacy of each technique.

During the second half of the twentieth century the heroic positivist approach to the history of medicine made way for an examination of medicine within its social, cultural, political, and economic context.¹⁰ This occurred as historians began to consider medical history as a sphere of work amenable to their wider cultural approaches, and perhaps also as they became more confident in their ability to handle medical terminology and theory.¹¹ During the late 1960s and 1970s, feminist academics challenged the previous histories of childbirth. They highlighted a bias against midwives in the traditional histories and attempted to redress the balance. It was argued that men had medicalised childbirth during the eighteenth century, by using their obstetric practices to gain authority over a traditionally female-led event. The influence of competition between midwives and medical practitioners was central to discussions of feminist commentators when they described the practices of both parties.¹² These texts demonstrated that enduring obstetric practices were not to be assumed as an

and Miles H. Phillips, eds, *Historical Review of British Obstetrics and Gynaecology 1800-1950* (Edinburgh: E & S Livingstone, 1954); Theodore Cianfrani, *A Short History of Obstetrics and Gynaecology*, (Springfield: Thomas, 1960); and Walter Radcliffe, *Milestones in Midwifery*, (Bristol: John Wright & Sons, 1967).

¹⁰ See Olga Amsterdamska and Anja Hiddinga, 'Trading zones or citadels? Professionalization and intellectual change in the history of medicine', in *Locating Medical History: The Stories and Their Meanings*, ed. by Frank Huisman and John Harley Warner, (Baltimore: The John Hopkins University Press, 2004), pp.237-261. For a general overview of the historiography of medicine see Gert Brieger, 'The historiography of medicine', in *Companion Encyclopedia Of The History Of Medicine*, ed. by W. F. Bynum and Roy Porter, vol. 1 (London: Routledge, 1993), pp.24-44.

¹¹ This started during the first half of the twentieth century. The work of Henry E. Sigerist stands out in particular.

¹² Jean Donnison, *Midwives and Medical Men: A History of Inter-Professional Rivalries and Women's Rights*, (London: Heinemann, 1977); Jean Towler and Joan Bramall, *Midwives in History and Society*, (London: Croom Helm, 1986); and Margaret Connor Versluysen, 'Midwives, medical men and "poor women labouring of child": Lying-in hospitals in eighteenth-century London', in *Women, Health and Reproduction*, ed. by Helen Roberts, (London: Routledge, 1981), p.22.

improvement on what had preceded them.¹³ Obstetric procedures were no longer perceived as symbols of improving medical care, but instead represented shifting professional dominance and a gendered hierarchical divide.¹⁴ In light of more recent work the conclusions of this literature can perhaps be viewed as being as extreme as those of the positivist histories that had preceded them.

As with the history of medicine in general, approaches to the history of obstetrics now often acknowledge that a multitude of factors were important to the practice of attendants at childbirth. Jan Williams states that the control of childbirth cannot be viewed as simply a 'battle of the sexes', indeed all of the participants, including medical practitioners, midwives, and patients, whether male or female, are subject to seemingly all-pervasive powers.¹⁵ A more balanced position has been adopted without the pre-existing notion that either the changes were due to the ingenuity and forward thinking of medical practitioners, or the rampant obstetric movement dominating powerless midwives and their patients.¹⁶ Hiddinga and Blume, for example, in 1992 suggested, in their article on pelvimetry, that neither of the polarised approaches of the past were adequate and 'that to understand the changing place of technology in obstetrics, as in medicine more generally, more subtle concepts are needed'.¹⁷ In establishing accounts of childbirth the participation of the prospective mother, family, friends, medical students, nurses, and members of the clergy, have been depicted.¹⁸ In addition, the influence of education,

¹³ See Majorie Tew, *Safer Childbirth? A Critical History of Maternity Care*, (London: Chapman and Hall, 1990); and Ann Oakley, *The Captured Womb: A History of the Medical Care of Pregnant Women*, (Oxford: Basil Blackwell, 1984).

¹⁴ Josephine M. Lloyd, 'The "languid child" and the eighteenth-century man-midwife', *Bulletin of the History of Medicine*, 75 (2001), pp.641-679.

¹⁵ Jan Williams, 'The controlling power of childbirth in Britain', in *Midwives, Society and Childbirth: Debates and Controversies in the Modern Period*, ed. by Hilary Marland and Anne Marie Rafferty, (London: Routledge, 1999), p.232.

¹⁶ Some examples of this type of work are Adrian Wilson, *The Making of Man-Midwifery: Childbirth in England, 1660-1770*, (London: UCL Press, 1995); Lisa Forman Cody, 'Living and dying in Georgian London's lying-in hospitals', *Bulletin of the History of Medicine*, 78 (2004), pp.309-348; Lucinda McCray Beier, 'Expertise and control: Childbearing in three twentieth-century working-class Lancashire communities', *Bulletin of the History of Medicine*, 78 (2004), p.381; and Rosalind Pollack Petchesky, 'Foetal images: The power of visual culture in the politics of reproduction', in *Reproductive Technologies: Gender, Motherhood and Medicine*, ed. by Michelle Stanworth, (Oxford: Basil Blackwell, 1987), p.72.

¹⁷ Anja Hiddinga and Stuart Blume, 'Technology, science, and obstetric practice: The origins and transformation of cephalopelvimetry', *Science, Technology & Human Values*, 17 (1992), p.156.

¹⁸ Much of this work has centred on childbirth in the United States. See for example Judith Walzer Leavitt, 'The growth of medical authority: Technology and morals in turn-of-the-century obstetrics', *Medical Anthropology Quarterly*, 1 (1987), pp.230-255; and Judith Walzer Leavitt,

medical regulation, and the location of birth have all been subjected to examination.¹⁹ It is clear that the history of obstetric practice is more complex than either the traditional or revisionist histories suggested.²⁰

The outline of the historiography of obstetrics provided above could itself be perceived as a positivist depiction. The demarcation between these shifts was, however, not as absolute as is often implied.²¹ For example in 1960, Theodore Cianfrani, a medical practitioner, stated that he intended to consider how social and economic conditions affected the development of obstetrics.²² Indeed, examples of literature that can be considered as belonging to all of the approaches just described are still published. The history of obstetrics cannot be considered as having three chronologically distinct approaches. Neither the positivist, nor feminist approaches vanished upon the introduction of other historiographies. Current medical journals contain several examples of the heroic positivist approach, and some of the latest overviews of the history of obstetrics are also written with this perspective.²³ There are also examples of recent work that focuses on depicting obstetric practices as tools of domination used by medical practitioners.²⁴

'What do men have to do with it? Fathers and mid-twentieth-century childbirth', *Bulletin of the History of Medicine*, 77 (2003), pp.235-262.

¹⁹ See for example Charlotte G. Borst, 'Teaching obstetrics at home: Medical schools and home delivery services in the first half of the twentieth century', *Bulletin of the History of Medicine*, 72 (1998), pp.220-245; and Irvine Loudon, *The Tragedy of Childbed Fever*, (Oxford: Oxford University Press, 2000).

²⁰ The following is not a definitive list but identifies some of the excellent work that has emerged during the last two decades. Loudon, *Death in Childbirth*; Hilary Marland and Anne Marie Rafferty, eds, *Midwives, Society and Childbirth: Debates and Controversies in the Modern Period* (London: Routledge, 1999); Wilson, *The Making of Man-Midwifery*; and Amanda Carson Banks, *Birth Chairs, Midwives, and Medicine*, (Jackson: University Press of Mississippi, 1999).

²¹ This point is made for the history of medicine in general in, Frank Huisman and John Harley Warner, eds, *Locating Medical History: The Stories and Their Meanings* (Baltimore: The John Hopkins University Press, 2004).

²² Cianfrani, *A Short History*, p.v.

²³ For recent examples of advancing medical practice led by eminent men, see John F. O'Sullivan, 'Caesarean birth', *The Ulster Medical Journal*, 59 (1990), pp.1-10; Phillip Rhodes, *A Short History of Clinical Midwifery: The Development of Ideas in the Professional Management of Childbirth*, (Cheshire: Books for Midwives Press, 1995); and H. S. J. Lee, *Dates in Obstetrics & Gynecology: A Chronological Record of Progress in Obstetrics & Gynecology Over the Last Millenium*, (New York: The Parthenon Publishing Group, 2000).

²⁴ For a recent example of a feminist history denouncing the claim over childbirth of male medical practitioners, see Jo Murphy-Lawless, *Reading Birth and Death: A History of Obstetric Thinking*, (Cork: Cork University Press, 1998); and Pam Lieske, 'William Smellie's use of obstetrical machines and the poor', *Studies in Eighteenth-Century Literature*, 29 (2000), pp.65-86.

1.3 British obstetric practice during the nineteenth century

Nineteenth-century obstetric practice in Britain has received little attention when compared to that entertained by the eighteenth and twentieth centuries. This difference can be explained by the recognition of the eighteenth and twentieth centuries as periods when childbirth underwent major shifts. As has already been mentioned, during the eighteenth century male practitioners became increasingly involved in childbirth. Previously male midwives were only called for when difficulties arose, but during the 1700s they began to attend 'normal' childbirth when no complications came to pass. Loudon has claimed that the transformations that obstetrics underwent made 'the eighteenth century the most exciting period in the history of childbirth'.²⁵ It is not surprising that this period has received considerable attention, as explanations are sought for these changes.

Studies of the twentieth century have focused upon another notable shift in obstetric practice. During the first half of this century childbirth increasingly took place in hospital, whereas before this a very large majority of confinements took place at home. This shift culminated in the present situation found in Scotland, for example, where almost all births take place in hospital. It has also been observed that during this period medical intervention before and during labour increased considerably.²⁶ Whilst these changes warrant historical examination, the nineteenth century has been somewhat overlooked in the history of British obstetrics.

The examination of nineteenth-century obstetric practice, with the exception of work by Anne Cameron, Alison Nuttall and Irvine Loudon, tends to focus on the final years of this century.²⁷ Arney, for example, wrote of what he coins the pre-professional era up to the end of the nineteenth century. His examination

²⁵ Irvine Loudon, 'Review essay: The making of man-midwifery', *Bulletin of the History of Medicine*, 70 (1996), p.508.

²⁶ It is this shift that Anne Oakley and Marjorie Tew were concerned with. See Oakley, *The Captured Womb*; and Tew, *Safer Childbirth?*.

²⁷ Anne Marie Cameron, 'From ritual to regulation? The development of midwifery in Glasgow and the West of Scotland, c.1740-1840', (PhD, University of Glasgow, 2003); Alison M. Nuttall, 'The Edinburgh Royal Maternity Hospital and the medicalisation of childbirth in Edinburgh, 1844-1914: A casebook-centred perspective', (PhD, University of Edinburgh, 2002); and Loudon, *Death in Childbirth*.

actually considers little of the nineteenth century and focuses predominantly on the eighteenth. He then goes on to write of the professional period beginning in 1890.²⁸ This lack of attention might be explained by the perception that there was little change to obstetric practice during this century. In 1957 Charles Newman implied that there had been modest change when he stated that ‘a textbook of midwifery of 150 years ago would not lead one so very far wrong today’.²⁹ Loudon has also argued that much of the nineteenth century was ‘more a period of stagnation than progress for maternal care’.³⁰ Loudon states that the large volume of literature documenting instrument innovations produced during this period contributed to ‘an illusion of a vigorous and progressive speciality’.³¹ He contends that the major alterations to obstetric practice of anaesthesia, antisepsis, bacteriology, and surgical techniques were adopted from other branches of medicine and, apart from anaesthesiology, did not occur until the very end of the century.

There is, however, good reason to study obstetric practice in nineteenth century Glasgow. It has been suggested that the status of midwifery in Scotland, and particularly Glasgow, was different to that found elsewhere in Britain. Ostensibly the different requirements made of medical students across Britain demonstrate this difference in standing. For example, whereas until the Medical Amendment Act of 1886 medical students in England and Wales could qualify without any obstetric experience, early in the nineteenth century students in Glasgow were required to include midwifery within their curriculum and universities in Scotland established professorships in midwifery. Geyer-Kordesch and MacDonald claim that this difference was due in part to ‘the early blurring of distinctions between physicians and surgeons’ in Glasgow.³² Loudon argues that ‘[o]bstetrics was therefore a respectable medical subject north of the border long before it was in England, and the difference had a profound effect

²⁸ Arney, *Power and the Profession*, pp.20-38.

²⁹ Charles Newman, *The Evolution of Medical Education in the Nineteenth Century*, (London: Oxford University Press, 1957), p.77.

³⁰ Loudon, *Death in Childbirth*, p.172.

³¹ Loudon, *Death in Childbirth*, p.172.

³² Johanna Geyer-Kordesch and Fiona MacDonald, *Physicians and Surgeons in Glasgow: The History of the Royal College of Physicians and Surgeons of Glasgow 1599-1858*, (London: The Hambledon Press, 1999), p.273.

on obstetric practice.’³³ He did not expand on this association with obstetric practice. Further examination is required to establish what effects, if any, this difference had on obstetric practice.

Comments on obstetric practice during the nineteenth century are also found within histories that focus on other related issues. For example, Ornella Moscucci’s *The Science of Woman* considers several themes relevant to this thesis within her detailed depiction of the development of gynaecological practice.³⁴ As well as focusing upon gynaecological methods, such as the use of the speculum, in order to analyse professional interests and the emergence of gynaecology as a medical speciality, she also writes of many of the obstetric procedures discussed during this thesis. Moscucci argues that the emergence of women’s hospitals during this period brought similar cases in to one place and thus stimulated clinical development. Hence it is important to consider the impact of the establishment of lying-in hospitals in Glasgow upon obstetric practice and this will be considered during this thesis. Moscucci has also been able to demonstrate the importance of social, economic, and individual interests of practitioners and the diversity of medical opinion. The close association between obstetrics and gynaecology, their professionalisation, and subsequent disputes between obstetricians and surgeons are all described by Moscucci. These matters are particularly relevant to the examination of the use of techniques described in this thesis and Moscucci’s work will help inform this examination.

1.4 The focus on specific procedures

All of the procedures discussed during this thesis have received some form of previous historical attention. Caesarean section, craniotomy, forceps, induction of premature labour, symphysiotomy, and turning have all been mentioned in publications that portray the broad history of obstetrics. Examples of such work include the all-encompassing reviews of obstetric history by Munro Kerr et al,

³³ Irvine Loudon, *Medical Care and the General Practitioner 1750-1850*, (Oxford: Clarendon Press, 1986), p.92.

³⁴ Ornella Moscucci, *The Science of Woman: Gynaecology and Gender in England 1800-1929*, (Cambridge: Cambridge University Press, 1993).

and O'Dowd and Phillips.³⁵ These publications do little more than name the men who are linked with each procedure's original and subsequent innovation, and describe the acceptance or rejection of each technique as being solely associated with its efficacy. This kind of analysis continues to be published in medical journals. Indeed, the majority of literature that attempts to describe the advocacy and use of obstetric procedures during nineteenth-century Britain takes this form.

There has been a consistent focus upon certain procedures in the literature. For example, books have been produced that attempt to outline the entire history of caesarean section and forceps, but similar publications do not exist for craniotomy, induction of premature labour, symphysiotomy, or turning.³⁶ This disparity is also observed in journal articles that examine the history of obstetric practices. Caesarean section, in particular, has been the sole focus of several historical articles.³⁷ The reason for this apparently greater interest in procedures such as caesarean section and forceps, rather than techniques like craniotomy and symphysiotomy is easily explained. The former are still in use, and so of immediate interest to the authors and presumably their readers. The others are no longer regularly, if ever, performed in Britain. Adrian Wilson made a similar observation for the lack of interest shown during the nineteenth century towards the history of two other obstetric techniques, the fillet and the vectis.³⁸ The fillet was a noose-like instrument that was applied over the head of the fetus and used to pull the child through the pelvic canal. The vectis was a single-bladed instrument that was used to apply leverage upon the fetus. These procedures were used during the eighteenth century, but by the end of the

³⁵ Kerr, Johnstone and Phillips, eds, *Historical Review of British Obstetrics*; and Michael J. O'Dowd and Elliot E. Phillip, *The History of Obstetrics and Gynaecology*, (New York: Parthenon, 1994).

³⁶ Kedarnath Das, *Obstetric Forceps: Its History and Evolution*, (Calcutta: The Art Press, 1993); Dyre Trolle, *The History of Caesarean Section*, (Copenhagen: Reitzel, 1982); and Helen Churchill, *Caesarean Birth: Experience, Practice and History*, (Cheshire: Books for Midwives Press, 1997).

³⁷ For example see James Willocks, 'Caesarean section', *Scottish Medical Journal*, 18 (1973), pp.102-104; Julia Allison, 'Highlights from the history of Caesarean section', *Midwife, Health Visitor & Community Nurse*, 23 (1987), pp.546-547; O'Sullivan, 'Caesarean birth', pp.1-10; M. H. Kaufman, 'Reflections on Dr Henderson of Perth's case of impracticable labour: An early case (1820) in which the Caesarean operation was performed', *Scottish Medical Journal*, 38 (1993), pp.85-88; and Samuel Lurie, 'The changing motives of caesarean section: From the ancient world to the twenty-first century', *Archives of Gynecology and Obstetrics*, 271 (2005), pp.281-285.

³⁸ Wilson, *The Making of Man-Midwifery*, pp.65-66.

nineteenth they had been replaced by the forceps, and were ignored both in practice and by those writing about the history of obstetrics.

This historical bias is clearly observed when reading literature that describes the use of caesarean section and craniotomy. These procedures were used in similar circumstances, most often when labour was obstructed by the mother's contracted pelvis. During the nineteenth century craniotomy was used far more often than caesarean section in Britain. Even so craniotomy is only ever mentioned as a side note within the wider story of the increasing use of caesarean section during this period. This can be explained by the fact that there is little interest in a procedure like craniotomy that is now very rarely performed, and is a practice that few would want to be reminded of. At the same time, caesarean section is a procedure that is used often and considered as a significant improvement on what went before. The Scottish Health Statistics for 2004 and 2005 revealed that 23.9 per cent of deliveries in Scotland were completed by caesarean section.³⁹ This thesis attempts to consider all of the procedures that were available to practitioners. The focus upon caesarean section in the later chapters reflects the content of the sources used. It is noted throughout that other procedures continued to be used more frequently.

1.5 Procedures used in the treatment of disproportion in nineteenth-century Britain

Almost all of the procedures considered in this thesis were used for a variety of complications during childbirth. Even caesarean section, which is often described as only having been used because of severely contracted pelvis during the nineteenth century, was also used, on occasion, in instances where tumours obstructed the pelvic canal. The majority of literature that describes British obstetric practice in the nineteenth century does not distinguish between the situations in which procedures were used.⁴⁰ Hence the following summary detailing the use of these procedures applies to their use in general, and is not specific to the condition of disproportion. The only procedure that was used

³⁹ Information Services Division Scotland, 'Latest annual update to statistics on births in Scottish hospitals', <<http://extras.isdsscotland.org>>, [accessed 23 March 2009].

⁴⁰ With the exception of a brief summary by Loudon on the surgical procedures used in cases of labour involving contracted pelvis, see Loudon, *Death in Childbirth*, pp.32-35.

solely in cases of disproportion was symphysiotomy, which was used to increase the capacity of the pelvis. Munro Kerr claims that symphysiotomy, although revived during the late-nineteenth century in France and Italy, was rarely employed in Britain.⁴¹ Loudon contends that few British practitioners considered that this procedure would be successful and it was therefore not used. This is the extent of our knowledge of the use of this procedure in Britain during this period.

Our understanding of the use of turning and craniotomy is similarly negligible. The former was often used during the nineteenth century according to Munro Kerr, while Loudon states that British practitioners freely employed craniotomy. Loudon estimates that craniotomy was used in between 4 and 6 of every 1000 deliveries in England. He states that there was 'little hesitation in using craniotomy, even if the baby was alive, it was essential in order to preserve the life of the mother'.⁴² The induction of premature labour has been subjected to more detailed examination, but this focuses primarily on its use during the twentieth century when pharmacological techniques were introduced for this purpose.⁴³ Our knowledge of induction's use during the nineteenth century is limited to descriptions of the various techniques.⁴⁴ Our understanding of how often this procedure was used and what practitioners' thoughts were about this practice is currently limited. Munro Kerr claims that induction of premature labour was increasingly favoured during the nineteenth century.

The procedures we know most about are, unsurprisingly, the forceps and caesarean section. Histories of the nineteenth-century use of forceps tend to focus on detailing the various forms of this instrument. Das's comprehensive book, for example, described hundreds of forceps, implying that they were often employed, but tells us little of their actual use other than to demonstrate that many practitioners devised their own versions. It has indeed been asserted that forceps were the most popular of the procedures available during this period for

⁴¹ Kerr, Johnstone and Phillips, eds, *Historical Review of British Obstetrics*, p.35.

⁴² Loudon, *Death in Childbirth*, p.134.

⁴³ G. W. Theobald, 'The induction of labour', in *Obstetric Therapeutics: Clinical Pharmacology and Therapeutics in Obstetric Practice*, ed. by D. F. Hawkins, (London: Bailliere Tindall, 1974), pp.341-379.

⁴⁴ Arney, *Power and the Profession*, p.76 lists the introduction of sponges, rubber bougies, bags and the use of hot and cold vaginal douches to initiate labour.

difficult deliveries.⁴⁵ Caesarean section was at the opposite end of the spectrum. This operation was condemned by practitioners and only advocated when all else had failed and as such was performed infrequently.⁴⁶ Helen Churchill suggests that even at the end of the nineteenth century when it became more accepted as an option it was still only used when all else had failed.⁴⁷

Not all of the literature examining obstetric practice referred to the use of specific procedures. The general level of obstetric intervention has also been commented on. Loudon argues that both general practitioners and specialists practised a conservative approach to labour from the 1780s to the 1870s.⁴⁸ Alison Nuttall has recently studied the case notes and general registers of the Edinburgh Royal Maternity Hospital during the second half of the nineteenth century. Her work supports Loudon's assertion, and demonstrates that after 1870 obstetric intervention increased at the Edinburgh hospital.⁴⁹ Nuttall's study is the first attempt to examine the clinical work carried out at a Scottish lying-in hospital during this period. Little attention has focused upon obstetric practice in Scotland, and especially in Glasgow.

1.6 The treatment of disproportion in nineteenth-century Glasgow

London has been the subject of much of the literature that examines the history of obstetrics in Britain. The sheer volume of sources available, and the recognition of the work of several particularly influential practitioners has no doubt been partly responsible for this. Edinburgh has also had some consideration in this respect, mostly due to interest in the work of the medical practitioner Sir James Young Simpson.⁵⁰ In contrast, Glasgow's role in the history of obstetrics has received comparatively little attention. This deficiency is surprising given that Glasgow was, like Edinburgh and London, a major British

⁴⁵ Rhodes, *A Short History of Clinical Midwifery*, p.67 and Churchill, *Caesarean Birth*, p.27.

⁴⁶ Kaufman, 'Reflections on Dr Henderson', pp.85-88.

⁴⁷ Churchill, *Caesarean Birth*, p.22.

⁴⁸ Loudon, *Death in Childbirth*, p.183.

⁴⁹ Alison Nuttall, 'Passive trust or active application: Changes in the management of difficult childbirth and the Edinburgh Royal Maternity Hospital, 1850-1890', *Medical History*, 50 (2006), pp.351-372.

⁵⁰ See for example, Myrtle Simpson, *Simpson The Obstetrician: A Biography*, (London: Victor Gollancz, 1972); and D. L. S. Eustace, 'James Young Simpson: The controversy surrounding the presentation of his Air Tractor (1848-1849)', *Journal of the Royal Society of Medicine*, 86 (1993), pp.660-663.

city, with a huge population and a large medical community. Indeed, Glasgow is closely associated with some of the most revered individuals in obstetric history. For example, William Smellie and William Hunter were two of the most distinguished figures in the history of obstetrics during the eighteenth century. Although both were based in London, they were born in the West of Scotland and spent their formative years learning their medical trade in Glasgow. Furthermore, several events and people based in Glasgow have since been mentioned as important to the history of obstetric practice. Murdoch Cameron has been described as a British pioneer of caesarean section; John Martin Munro Kerr has been credited with popularising the lower segment approach to caesarean section;⁵¹ and Anne Louise McIlroy was one of Britain's first leading female obstetric practitioners. Yet they and their work have received little or no examination.⁵²

There are very few publications that have set out to examine the history of obstetrics in Glasgow, particularly during the nineteenth century. Indeed, in 1999 Johanna Geyer-Kordesch and Fiona MacDonald stated that '[t]he history of childbirth in Glasgow has yet to be written.'⁵³ Geyer-Kordesch and MacDonald included a chapter on midwifery and obstetrics in their book on the history of the Royal College of Physicians and Surgeons of Glasgow. This concentrates principally upon changes to regulation within this institution and other providers of medical education.⁵⁴ Since they made this statement about the dearth of historical focus on this subject in Glasgow, Anne Cameron has written her doctoral thesis examining the development of midwifery in Glasgow and the West of Scotland between 1740 and 1840. This study includes a chapter describing the teaching of midwifery to medical students between 1790 and 1834.⁵⁵ Brief comments referring to the history of childbirth in Glasgow during the nineteenth century can be found within studies of other aspects of medical

⁵¹ Peter M. Dunn, 'Professor Munro Kerr (1868-1960) of Glasgow and caesarean delivery', *Archives of Disease in Childhood - Fetal and Neonatal Edition*, 93 (2008), pp.167-169 provides a brief overview of Munro Kerr and his work.

⁵² One important aspect of obstetric history in Glasgow, the introduction of ultrasound to obstetric practice by Ian Donald, has recently come under scrutiny. For Ian Donald, see James Willocks and Wallace Barr, *Ian Donald: A Memoir*, (London: RCOG, 2004). Donald and his work is also the subject of a book by Malcolm Nicolson to be published.

⁵³ Geyer-Kordesch and MacDonald, *Physicians and Surgeons in Glasgow*, p.292.

⁵⁴ Geyer-Kordesch and MacDonald, *Physicians and Surgeons in Glasgow*, pp.251-292.

⁵⁵ Cameron, 'From Ritual to Regulation?'.

history in Glasgow, but few examples exist where this subject has been the principal focus.⁵⁶ Derek Dow's book on the history of the Glasgow Royal Maternity Hospital describes this institution within an economic, national, political and social context.⁵⁷ He writes briefly of the caesarean sections performed by Murdoch Cameron in this hospital at the end of the nineteenth century, but focuses primarily on administrative details. Surprisingly Dow did not make use of the hospital registers and case records that are also available. Two articles written by Hillan, and Willocks and Calder also mention Cameron but provide little more detail than Dow had previously.⁵⁸ The aim of this literature was not to examine the history of caesarean section, but to highlight that an event of significance occurred in Glasgow.

As Murdoch Cameron's work has been documented, however briefly, we already know a little of the obstetric practice that is examined in this thesis. Caesarean section, an operation 'fraught with danger', is described as being an operation of last resort for Glasgow practitioners until the end of the nineteenth century.⁵⁹ Apparently, they preferred to perform craniotomy because of the high incidence of maternal mortality associated with caesarean section and because of a lack of experience in abdominal surgery. Between 1879 and 1887 the operation was used on at least three occasions in Glasgow, all upon women whose labour was affected by a severely contracted pelvis, and on all three occasions the mother died. In 1888 Murdoch Cameron performed the operation at the Glasgow Maternity Hospital, and this was the first time that a woman survived this procedure in Glasgow. The child also lived. Cameron went on to perform the operation successfully on ten occasions between 1888 and 1890 according to Hillan, or on fourteen occasions as stated by Dow. Loudon contends that this sequence of successes was the 'first such series in Britain'.⁶⁰

⁵⁶ This text does more than most when referring to the use of antisepsis in midwifery, M. Anne Crowther and Marguerite W. Dupree, *Medical Lives in the Age of Surgical Revolution*, (Cambridge: Cambridge University Press, 2007).

⁵⁷ Derek A. Dow, *The Rottenrow: The History of the Glasgow Royal Maternity Hospital, 1834-1984*, (Carnforth: Parthenon, 1984).

⁵⁸ Willocks, 'Caesarean section', pp.102-104; J. Willocks and A. A. Calder, 'The Glasgow Royal Maternity Hospital 1834-1984 150 years of service in a changing obstetric world', *Scottish Medical Journal*, 30 (1985), pp.247-254; and E. M. Hillan, 'Caesarean section: Historical background', *Scottish Medical Journal*, 36 (1991), pp.150-154.

⁵⁹ Dow, *The Rottenrow*, p.66.

⁶⁰ Loudon, *Death in Childbirth*, p.137.

Some have depicted this series of operations as a pivotal event in the history of obstetrics, and Cameron has been referred to as one of the pioneers of caesarean section.⁶¹ A survey of the work examining the broad history of obstetrics, however, demonstrates a tendency to omit the name of Cameron in favour of European pioneers such as Max Sänger.⁶² The decision to include or leave out Cameron in these texts can of course be explained by a bias towards Glasgow practitioners in the studies that focus on Glasgow. More recently, however, Irvine Loudon has made a claim for Cameron's work to be given more historical weight than it has received thus far. In his 2006 review of Carruther and Carruther's *A History of Britain's Hospitals*, Loudon questions the exclusion of what he believes were some of the major events in Britain's hospitals. Amongst the events he lists as being ignored in this book, he writes:

Nor is there anything about the Glasgow Maternity Hospital where, in 1888, an obstetrician, Murdoch Cameron, was the first surgeon anywhere in the Western World to show that Caesarean section could be carried out as a safe operation. Indeed, it was so famous at the time that Caesarean section became briefly known as the 'Glasgow Operation'.⁶³

The influence that Cameron's work had on the practice of others is obviously implied here. Dow has suggested that the report of Cameron's cases within the *British Medical Journal (BMJ)* demonstrated that the medical profession had realised the achievement of Cameron's work. However, these reports were written by the journal's Glasgow correspondent, and so actually tell us little of the reception of Cameron's work outside Glasgow. The absence of Cameron from several texts that depict the history of caesarean section, and the illustrious status placed upon his work in others requires explanation. This thesis seeks to consider Cameron's work and his influence in and outside of Glasgow, as well as

⁶¹ Willocks and Calder, 'The Glasgow Royal Maternity Hospital 1834-1984', p.250; Crowther and Dupree, *Medical Lives in the Age*, p.12; J. H. Young, *Caesarean section: The History and Development of the Operation from Earliest Times*, (London: H. K. Lewis, 1944), p.144.

⁶² For example, Cameron is not included in Trolle, *The History of Caesarean Section*; Allison, 'Highlights from the history of Caesarean section'; J. P. Boley, 'The history of Caesarean section', *Canadian Medical Association Journal*, 145 (1991); Graham, *Eternal Eve*, p.572; O'Dowd and Phillip, *The History of Obstetrics and Gynaecology*, p.163.

⁶³ Irvine Loudon, 'A History of Britain's Hospitals and the Background to the Medical, Nursing and Allied Professions', *Journal of the Royal Society of Medicine*, 99 (2006), p.261.

examining the alternative procedures used in Glasgow that have, thus far, received no consideration.

1.7 Source material

It is all the more surprising that Glasgow's history of obstetrics has been largely ignored, given the plenitude of source material available for studying this topic. Glasgow is home to several medical archive collections that provide a valuable resource for historians of obstetrics. Only a few of these resources have been utilised thus far. In addition, Glasgow-based practitioners contributed frequently to medical journals with articles on this topic, and wrote some of the revered obstetric textbooks of the period. The wide variety of source material available makes Glasgow an excellent choice for studying the history of obstetrics, particularly as recent scholarship in the history of childbirth has demonstrated the value of utilising several source types when they are available.

As in the history of medicine in general, medical textbooks and journal articles were the predominant primary source used by authors of obstetric history. These sources were readily accessible and provided a simple method of gathering information about contemporary theory and obstetric practice. However, as other source types have been used, it has become evident that the everyday work of all medical practitioners did not always follow that described within the textbooks produced during the same period. Eckart Schwarz made this point for twentieth-century obstetric textbooks.⁶⁴ Of course, Erwin Ackerknecht made a similar argument when he requested that, what he termed, a behaviourist approach should be taken when writing the history of medicine.⁶⁵ This involved a 'more extensive and more critical analysis of what doctors *did* in addition to

⁶⁴ Eckart W. Schwarz, 'The engineering of childbirth: A new obstetric programme as reflected in British obstetric textbooks, 1960-1980', in *The Politics of Maternity Care: Services for Childbearing Women in Twentieth-Century Britain*, ed. by Jo Garcia, Robert Kilpatrick and Martin Richards, (Oxford: Clarendon Press, 1990), p.48. Nicolson has also demonstrated this with William Stokes book on stethoscopy in the nineteenth century, see Malcolm Nicolson, 'The art of diagnosis: Medicine and the five senses', in *Companion Encyclopedia Of The History Of Medicine*, ed. by W. F. Bynum and Roy Porter, vol. 2 (London: Routledge, 1993), pp.134-153.

⁶⁵ Erwin H. Ackerknecht, 'A plea for a "behaviourist" approach in writing the history of medicine', *Journal of the History of Medicine and Allied Sciences*, 22 (1967), pp.211-214.

what they *thought* and *wrote*'.⁶⁶ Using other forms of source material, in addition to textbooks and articles, enables such an analysis to take place.

Forty years of subsequent scholarship in the history of medicine has indeed answered Ackerknecht's plea. This has been no different in the history of obstetrics. Hospital records including minutes, case notes and registers have been used to great effect in recent work on the subject. For example, Nancy Dye used the case records from the New York Midwifery Dispensary to good effect, and others, such as Bronwyn Croxson and Alison Nuttall, have since undertaken similar work using British hospital registers and case notes.⁶⁷ The personal records of individual practitioners including practice diaries, case notes, lecture notes, and letters have also been used to reveal aspects of obstetric work.⁶⁸ Historians examining obstetrics of the late nineteenth and twentieth centuries have also benefited from the accounts of midwives and the women who experienced childbirth themselves.⁶⁹ The surviving artefacts of practice have also been used to document the history of this field of medicine.⁷⁰

It has been shown that medical practices can be illuminated further, by using a combination of types of source material. For example, Judith Leavitt used a combination of journal articles, case notes, editorials, obstetric textbooks, and women's birth accounts to examine the use of obstetric procedures between 1880 and 1920 in America.⁷¹ Lisa Cody has similarly used a combination of different source materials to reveal significant differences between existing beliefs about the condition of eighteenth-century lying-in hospitals and her findings.⁷² This thesis likewise employs an array of source materials and examines the obstetric practice of several types of medical practitioner, not just

⁶⁶ Ackerknecht, 'A plea for a "behaviourist" approach', p.214.

⁶⁷ Nancy Schrom Dye, 'Modern obstetrics and working-class women: The New York Midwifery Dispensary', *Journal of Social History*, 20 (1987), pp.549-564; Bronwyn Croxson, 'The foundation and evolution of the Middlesex Hospital's lying in service, 1745-86', *Social History of Medicine*, 14 (2001), pp.27-58; and Nuttall, 'The Edinburgh Royal Maternity Hospital'.

⁶⁸ See for example Amalie M. Kass, 'Texts and documents: The obstetrical case book of Walter Channing, 1811-1822', *Bulletin of the History of Medicine*, 67 (1993), pp.494-523; and Cameron, 'From Ritual to Regulation?'.
⁶⁹ For example see Lindsay Reid, *Scottish Midwives: Twentieth-Century Voices*, (East Linton: Tuckwell, 2000).

⁷⁰ For example see Banks, *Birth Chairs, Midwives, and Medicine*.

⁷¹ Leavitt, 'The growth of medical authority', p.248.

⁷² Cody, 'Living and dying in Georgian London's lying-in hospitals', pp.309-348.

those who were eminent enough to consider producing a textbook on the subject.

The search for sources revealed a distinct lack of material that illuminated the thoughts of women that suffered disproportion during this period. Whenever possible, references are made in this thesis to the experience of women that were found in the communications of medical practitioners. The focus upon the techniques used by practitioners unavoidably results in attention primarily being given to the medical practitioners rather than the women. It is, however, recognised that the women were integral to any decisions made, and were also influential themselves in some situations. During the nineteenth century women's domestic role was idealised, but this was not an all-encompassing reality. The separate spheres of domestic and public life were not rigidly set. Many women participated in public life and went to work, and demonstrated having agency in their everyday lives.⁷³ While gendered roles were demarcated during this period, class was a defining paradigm also. It is shown in this thesis that women were able to influence decisions and a woman's class was an important factor when practitioners made decisions.

The Royal College of Physicians and Surgeons of Glasgow, the University of Glasgow Special Collections, and the National Health Service Greater Glasgow and Clyde Archive (NHSGGCA) all hold extensive materials from the lying-in institutions and obstetric practitioners of this city. The NHSGGCA in particular holds extensive records of the Glasgow Royal Maternity Hospital (1834-2001). The hospital's minutes, annual reports, patient registers and case notes are all available. In addition, the NHSGGCA holds the records for the Western Infirmary, Glasgow Royal Infirmary, and Poor Law hospitals. All of which have been examined as part of this thesis. Visits were also made to the British Library, National Archives of Scotland, National Library of Scotland, Royal College of Physicians of Edinburgh, Royal College of Obstetricians and Gynaecologists, and Wellcome Library to study material held by these institutions. This revealed a large and wide-ranging stock of relevant primary material, including personal

⁷³ Esther Breitenbach and Eleanor Gordon, 'Introduction', in *Out of Bounds: Women in Scottish Society 1800-1945*, ed. by Esther Breitenbach and Eleanor Gordon, (Edinburgh: Edinburgh University Press, 1992), pp.1-9.

letters between practitioners, the minutes of medical societies, and medical theses.

As well as this examination of unpublished material, a thorough search was made for obstetric textbooks, journal articles and other publications authored by Glasgow-based practitioners. This involved searching the catalogues of all of the institutions listed above. Between 1840 and 1900 many papers were published in the *Glasgow Medical Journal (GMJ)* on obstetric topics, and the papers presented and discussions held at Glasgow medical societies were also found in this journal. Thus every volume of this journal was examined thoroughly to source any relevant material. It was also clear that Glasgow-based practitioners did not restrict their attendance to only Glasgow societies, nor did they only publish in the *GMJ*. Therefore many other medical journals were also examined for this period. These were looked at for the entire length of their publication between 1840 and 1900. During this study the *BMJ* and *Lancet* were made available online, providing an opportunity for a thorough search of these journals using key word searches.⁷⁴

The following journals were also examined; *British and Foreign Medical Review*, *Caledonian Medical Journal*, *Dublin Journal of Medical Science*, *Edinburgh Medical and Surgical Journal*, *Edinburgh Medical Journal*, *Journal of Obstetrics and Gynaecology of the British Empire*, *London and Edinburgh Monthly Journal of Medical Science*, *London Medical Review*, *Monthly Retrospect of the Medical Sciences*, *Northern Journal of Medicine*, *Obstetrical Journal of Great Britain and Ireland*, *Retrospect of Practical Medicine and Surgery*, *Scottish Medical and Surgical Journal*, *Medical Chronicle*, *Transactions of the Edinburgh Obstetrical Society*, *Transactions of the Glasgow Obstetrical and Gynaecological Society*, *Transactions of the Medico-Chirurgical Society of Glasgow*, and *Transactions of the Obstetrical Society of London*. This extensive search for primary sources produced a wealth of material that reveals not only what procedures were advocated and used by practitioners in Glasgow during this period, but also what factors influenced them in this work.

⁷⁴ Before these journals were digitised the index of the hard copy version were also examined for the names of Glasgow practitioners and key words, including the names of individual procedures, 'rickets', and 'pelvis'.

1.8 Factors that influenced the use of procedures

Historians acknowledge that there are many factors that influence the procedures advocated and used by medical practitioners. Sociologists have also recognised that decision-making in medical practice is influenced by several factors in addition to what are perceived as normative interactions.⁷⁵ Eisenberg summarised many of the factors that have thus far been identified. He writes of four groups: patient characteristics, for example, social class, appearance, gender, ethnicity, and family influence; practitioner characteristics, such as religion, personality, age, and education; practitioner interaction with their profession, including group decision making, peer pressure, prestige, relationships with other practitioners, hierarchy, cost, and work environment; and the relationship between the patient and practitioner particularly in terms of where the balance of responsibility lies.⁷⁶ Evidently there are many factors to consider when examining the use of medical procedures. It is the intention of this thesis to examine the factors that had an effect on the decision making of obstetric practitioners in Glasgow. It is therefore important to review what factors have already been recognised as influencing British obstetric practice during this period.

The wealth of literature examining the history of obstetrics has identified many factors affecting practitioners' decisions. It is not possible to write here of all of the factors that have been identified as influencing obstetric practice for all time periods and locations. What has been written of British obstetric practice in the nineteenth century will be considered. The success of a procedure, measured by its associated mortality rates, has often been documented as the principal influence. The mortality rates published by practitioners were used to justify their own practices. The extent that their results influenced the work of others cannot be assumed. The availability of these statistics to practitioners, and their subsequent acceptance as indicators of good practice need to be considered.

⁷⁵ See for example John B. McKinlay, Deborah A. Potter and Henry A. Feldman, 'Non-medical influences on medical decision-making', *Social Science and Medicine*, 42 (1996), pp.769-776.

⁷⁶ John M. Eisenberg, 'Sociologic influences on decision-making by clinicians', *Annals of Internal Medicine*, 90 (1979), p.957.

Perhaps the most significant changes in mortality associated with an obstetric procedure that it has been claimed had a direct influence on the work of British obstetric practitioners was that associated with caesarean section. In 1876, the Italian practitioner, Eduardo Porro wrote of a case in which he removed the uterus after performing the caesarean section. This technique reduced the risk of infection and prevented intra-peritoneal bleeding.⁷⁷ Practitioners who performed this procedure reported lower maternal mortality rates than that associated with the operation where the uterus remained. In 1882 Max Säger wrote an article in which he advocated suturing the uterus. It is suggested that prior to this article the uterus was only ever sutured when extensive bleeding needed to be stopped rather than as a preventative action. Subsequently the mortality rate associated with caesarean section dropped considerably. It has been stated that these two events were behind the increasing use of this procedure in Britain at the end of the century.

Of the factors that have been identified as influencing British obstetric practice the influence of innovations from abroad is often emphasised. The introduction by Étienne Tarnier, a French obstetrician, of the axis traction rods to the forceps in 1877 has been noted as the reason for the increasing use of this instrument in Britain. This innovation enabled the operator of the forceps to enact force upon the child in the axis of the pelvic canal and prevented excessive force being applied to the maternal parts.⁷⁸ Other types of forceps and methods of induction designed by practitioners from other countries such as Germany and France are also often referred to. It certainly seems likely that the improved results observed elsewhere would impact upon British practice, but no examination into the extent to which British practitioners followed the advice of their Continental counterparts has been carried out. Examining the comments in a localised study of Glasgow practitioners on this subject will allow for some consideration of external influences. As Jonathan Reinarz has argued:

Local or micro-studies are particularly good at revealing the intricate networks of the decision-making process that guide innovations and

⁷⁷ Hillan, 'Caesarean section: Historical background', p.153.

⁷⁸ Rhodes, *A Short History of Clinical Midwifery*, p.65.

allow scholars to make far more reliable generalizations about innovations and their diffusion.⁷⁹

Other medical practices, other than innovations to the procedures themselves, have also been proposed as influencing factors. The introduction of anaesthetics and antisepsis/asepsis has been widely reported as paving the way for the use of caesarean section during this century, as they did for surgery in general.⁸⁰ Hillan claims that '[o]bstetricians quickly recognised the value of these surgical advances' and they made caesarean section a viable alternative to craniotomy.⁸¹ Anaesthesia is recognised as having been introduced to obstetric practice in 1847 by James Young Simpson in Edinburgh. Yet caesarean section, Loudon argues, was not viewed as a viable alternative to craniotomy until the late 1880s and 1890s.⁸² Loudon contends that anaesthesia may have removed the pain of normal childbirth for many women, but it did not result in a greater trust in caesarean section. Pain relief was not a solution to the mortality associated with the procedure. While anaesthesia may not have been as important for this procedure, the first use of ether in childbirth in 1847 by James Young Simpson was in a case of contracted pelvis when version was employed. Anaesthesia evidently had some part to play in the attempts made at delivery when disproportion was encountered.

The importance of antisepsis to changes in obstetric practice has also recently been questioned. Loudon asserted that antisepsis was introduced to obstetric practice in British hospitals between 1879 and 1884 and as a result caesarean section was increasingly employed. This was over a decade after Lister began to disseminate information about the antiseptic methods he had devised.⁸³ Loudon

⁷⁹ Jonathan Reinartz, 'Mechanizing medicine: Medical innovations and the Birmingham voluntary hospitals in the nineteenth century', in *Devices and Designs: Medical Technologies in Historical Perspective*, ed. by Carsten Timmermann and Julie Anderson, (Houndmills: Palgrave MacMillan, 2006), p.38.

⁸⁰ J. Drife, 'The start of life: A history of obstetrics', *Postgraduate Medical Journal*, 78 (2002), p.313; O'Sullivan, 'Caesarean birth', p.4. It has been argued that the introduction of anaesthesia and antisepsis allowed more ambitious surgery and more frequent operations in general in the hospitals at the end of the nineteenth century, see Lindsay Granshaw, 'The rise of the modern hospital in Britain', in *Medicine in Society: Historical Essays*, ed. by Andrew Wear, (Cambridge: Cambridge University Press, 1992), p.211.

⁸¹ Hillan, 'Caesarean section: Historical background', p.152.

⁸² In Edinburgh, James Young Simpson used ether for the first time for childbirth in January 1847. A. D. Farr, 'Religious opposition to obstetric anaesthesia: A myth?', *Annals of Science*, 40 (1983), p.160.

⁸³ Loudon, *Death in Childbirth*, p.204.

argues, convincingly, that the uptake of this method was neither comprehensive nor quick, but that it eventually resulted in much reduced maternal mortality rates in lying-in hospitals when it was used.⁸⁴ He claims that many obstetric practitioners, much like their surgical counterparts, did not necessarily warm to Lister's methods or associated theories. Nor did general practitioners who continued to abstain from employing aseptic techniques in the early twentieth century. However, Alison Nuttall has recently argued that Loudon's explanation is too simple. In fact, Nuttall argues that in Edinburgh the increase in intervention at the very end of the century appears 'to be associated with increasingly confident and pro-active doctors, and an increase in acceptance of such treatment by patients, rather than the safety net of antisepsis as such'.⁸⁵ A closer examination reveals that Loudon's original assertion applied specifically to interventions associated with difficult cases, whereas Nuttall refers to a general increase in intervention at the Edinburgh hospital. This being an institution where, Nuttall asserts, practitioners extended the types of cases where intervention was employed into 'normal' cases. The difference in the types of cases that Loudon and Nuttall are referring to explains why they reached different conclusions.

The increase in intervention witnessed at the end of the nineteenth century, Loudon has suggested, was also a result of a move towards a surgical approach by obstetric practitioners who were aware of the opportunity to broaden their field of work with surgical gynaecology.⁸⁶ He does not reflect further on the influence gynaecological surgery had on obstetric practice, and this factor warrants further consideration. The lack of comment on the wide range of factors mentioned at the beginning of this section is not because historians of British practice have ignored them entirely. These factors are, indeed, mentioned in the context of the eighteenth and twentieth centuries, but the limited research into nineteenth-century practice seems to have resulted in this discrepancy. The history of nineteenth-century obstetric practice outside Britain has, however, taken a wider view.⁸⁷ This is particularly true of the United

⁸⁴ Loudon, *The Tragedy of Childbed Fever*, pp.130-150.

⁸⁵ Nuttall, 'The Edinburgh Royal Maternity Hospital', p.325.

⁸⁶ Loudon, *Death in Childbirth*, p.184.

⁸⁷ For example, see Laura Cházaro, 'Mexican women's pelves and obstetrical procedures: Interventions with forceps in late 19th-century medicine', *Feminist Review*, 79 (2005), pp.100-115.

States.⁸⁸ Some of this work identifies similar factors to those written about with regard to Britain. For example, Joseph Ryan has suggested that by the end of the nineteenth century American practitioners had the necessary skills to perform caesarean sections after having performed ovariectomies and other surgical procedures.⁸⁹ This of course supports Loudon's suggestion that gynaecology was instrumental in obstetric practitioners becoming more surgical in their approach.

Other factors that have not yet featured within the British literature have also been identified abroad. Charlotte Borst examined how education and training affected the obstetric practice of practitioners in Wisconsin.⁹⁰ Leavitt and Kass have demonstrated that far from practitioners being able to confidently follow the assertions of obstetric textbooks, teachers, and dominant theories there was heterogeneity within everyday obstetric practice and between practitioners. Practitioners were frequently unable to understand the reason for the outcome of the cases they attended, often made mistakes in diagnosis and treatment, were aware of their limited knowledge and thus often called for consultation, and did not have much experience in the practices available to them or the possible difficulties that might be encountered.⁹¹ Case diaries have also revealed aspects of the practitioner-patient relationship that had thus far remained hidden. Kass suggests that practitioners were genuinely concerned for the women they took on as patients, an aspect that had largely been ignored.⁹² Kass also provides evidence that women were able to exert some measure of control. Women decided when to ask for medical practitioners' help, decided whether the practitioner should be allowed to examine them, provided information about

⁸⁸ See Steven M. Stowe, 'Obstetrics and the work of doctoring in the mid-nineteenth-century American South', *Bulletin of the History of Medicine*, 64 (1990), pp.540-566; and Charlotte G. Borst, *Catching Babies: The Professionalization of Childbirth, 1870-1920*, (Cambridge: Harvard University Press, 1995).

⁸⁹ Joseph G. Ryan, 'The chapel and the operating room: The struggle of Roman Catholic clergy, physicians, and believers with the dilemmas of obstetric surgery, 1800-1900', *Bulletin of the History of Medicine*, 76 (2002), p.486.

⁹⁰ Borst, *Catching Babies*, p.99.

⁹¹ Judith Walzer Leavitt, *Brought to Bed: Childbearing in America 1750 to 1950*, (New York: Oxford University Press, 1986), pp.62-63; and Amalie Kass, '"Called to her at three o'clock am": Obstetrical practice in physician case notes', *Journal of the History of Medicine and Allied Sciences*, 50 (1995), pp.203-206. This was also mentioned by Joseph Ryan in Ryan, 'The chapel and the operating room', p.486.

⁹² Kass, '"Called to her at three o'clock am"', pp.206-208.

the length of pregnancy and labour, and even requested particular techniques, such as forceps.⁹³

In 1987 Judith Walzer Leavitt published an article that demonstrates the value of examining the decision-making process when medical practitioners encountered disproportion. Exploring the period from about 1880 to 1920 in America she analyzed 'how technological innovations, changing medical theory, moral and ethical considerations, and professional interests interacted to make physicians more powerful arbiters in America's birthing rooms'.⁹⁴ By comparing the descriptions of individual cases where disproportion was encountered, Leavitt was able to demonstrate that several parties had a say in the procedures used. Women, delivered in their own homes felt able to challenge the advice of medical practitioners. Increasingly, husbands and clergy took part, the former generally in favour of craniotomy because that would save the mother, and the latter supporting the use of procedures such as caesarean section in order to save the fetus. As the choice between medical practices became more technical, practitioners were able to gain authority in this setting as the other people involved relied upon them to provide the options available. Yet the case notes reveal that while practitioners had perhaps taken control of these encounters, the decisions they made were in fact still based upon moral, ethical, and social grounds. This thesis attempts a similar analysis of the evidence available for encounters in Glasgow.

1.9 A multi-treatment approach

One aspect of obstetric practice that has not been considered for Britain that would have impacted upon the decisions practitioners made about individual procedures was the existence of other alternative techniques. It is clear that obstetric practitioners had several possible methods of dealing with cases involving disproportion. It was only during the twentieth century that caesarean section became the treatment of choice for this condition. Until this point all of the techniques examined in this thesis were advocated and used, some continuously, whilst others, like symphysiotomy for example, were used intermittently. Our current understanding has been somewhat simplified by the

⁹³ Kass, "'Called to her at three o'clock am'", pp.208-211.

⁹⁴ Leavitt, 'The growth of medical authority', p.230.

focus upon individual techniques, even though the availability of other techniques would have been part of the decision-making process. A number of historical studies have pointed this out for other areas of medicine. Ilana Löwy writes that:

Innovations later perceived as highly efficient did not appear in a vacuum, but were obliged to compete with the existing therapeutic methods. Their acceptance was thus seldom a non-problematic, “self-evident” consequence of intrinsically superior efficiency.⁹⁵

It is historically inadequate to solely consider the innovation and diffusion of medical procedures as stand-alone artefacts.⁹⁶ Considering the techniques as part of a multiple treatment approach in this thesis will provide a better understanding of the factors involved in the decision to use one technique rather than another. The procedures need to be examined alongside other competing techniques. In doing this we can highlight the justifications made for a particular practice, and the arguments against others. It is also important to follow each of the procedures as they changed. As Worboys has noted, whilst histories of treatment now take into account the adoption and diffusion of competing treatments, it is also important to be aware that the initial introduction (even if it can be identified) is not the end of the changes in a practice, because they are often renegotiated and reinvented.⁹⁷ Pickstone provides an excellent synopsis of the complexity of medical innovation and diffusion, which is particularly apt to the following thesis. He states that:

If we wish to understand how medicine has changed, we have no alternative but to study the real, messy, contested and complex

⁹⁵ Ilana Löwy, 'Introduction: Medicine and Change', in *Medicine and Change: Historical and Sociological Studies of Medical Innovation*, ed. by Ilana Löwy, (London: John Libbey, 1993), p.13.

⁹⁶ This has also been argued in Ann Oakley, *Essays on Women, Medicine and Health*, (Edinburgh: Edinburgh University Press, 1993), p.191.

⁹⁷ Michael Worboys, 'Treatments for pneumonia in Britain 1910-1940', in *Medicine and Change: Historical and Sociological Studies of Medical Innovation*, ed. by Ilana Löwy, (London: John Libbey, 1993), pp.329-330.

debates by which, over time, some procedures were accepted in preference to others.⁹⁸

This literature review has revealed that there are gaps in the British record of nineteenth century obstetrics. In addition to a lack of research into the history of Glasgow obstetrics, the ‘traditional’ interpretations of the rise of ‘important’ techniques are still common. This thesis will explore and develop our understanding of obstetric practice in Glasgow upon reflection of the other types of obstetric historiographies that have emerged. Glasgow is also worth studying because the work of Murdoch Cameron is of particular interest, and also because the records of this city’s medical practice are particularly suitable for examining how ordinary practitioners respond to medical innovation, and what determined the decisions they made.

1.10 Thesis aims

This thesis examines the obstetric practices used in Glasgow between 1840 and 1900 in instances of disproportion. The boundaries of this city changed substantially during the nineteenth century (see section 2.1). For the purposes of this study Glasgow is defined by the practitioners and the location of their cases. Those practitioners who described themselves as based in Glasgow and those cases that were described as taking place in Glasgow are included. Some cases, particularly those that occurred within the lying-in institutions, involved women who had travelled to Glasgow from areas outside of the city. These deliveries were also included. In doing so this work adds to a limited literature on the history of childbirth in Glasgow. Moreover, it builds upon our current knowledge of British obstetrics during the nineteenth century, a period that has thus far received scant attention. This time period was chosen, not only to fulfil this requirement, but also because during these years obstetric practice underwent significant change. In addition to developing our knowledge in these areas where gaps have been identified, it is also the intention of this thesis to analyse what obstetric procedures were used and identify the factors that influenced practitioners’ decisions to use them. This local study will reveal the complexity of medical decision-making, and also provide further insight into

⁹⁸ John V. Pickstone, 'Introduction', in *Medical Innovations in Historical Perspective*, ed. by John V. Pickstone, (Basingstoke: MacMillan Press, 1992), p.16.

obstetrics, and medicine as a whole, during this period. It will also be demonstrated that to produce a history of a single procedure, it is necessary to consider the other procedures that were also available as an option in the same circumstances. By using a multi-treatment approach it will be shown that the emergence of enduring obstetric procedures did not follow a linear progression. As a result of examining obstetric practice, this thesis also furthers our understanding of the prevalence of disproportion during this entire period.

1.11 Thesis structure

The thesis is separated into six chapters. Chapter 1 introduces the thesis and reviews the literature that has examined the history of obstetric practice, enabling the conclusions of this thesis to be placed in the context of this previous work. Chapter 2 focuses on Glasgow and the existence of rickets amongst this city's population between 1840 and 1900. This is followed by an examination of the obstetric provision available in Glasgow after 1840, highlighting the role of the city's hospitals in dealing with difficult childbirth. The next three chapters examine the prevalence, diagnosis, and treatment of disproportion in Glasgow between 1840 and 1900. Chapter 3 concentrates on the period between 1840 and 1870, and considers the factors that influenced the decisions made by medical practitioners during cases of disproportion. Chapter 4 considers these aspects of obstetric practice for the period between 1870 and 1890, and draws attention to, and attempts to explain, changes that occurred. Chapter 5 examines the last decade of the nineteenth century and pays particular attention to the work of Murdoch Cameron and caesarean section in Glasgow.

The thesis begins in 1840. Before this date there were very few published or unpublished sources that documented the obstetric practice advocated or used by Glasgow practitioners for disproportion. Anne Cameron describes the general features of obstetric practice in Glasgow before 1840. The study that follows finishes in 1900. After this time there were further developments in the techniques used that received considerable attention in publications of the period. An examination of this subject into the twentieth century would be valuable but is not possible within the word limit of this thesis. The chapters have been divided chronologically, in part, because of the findings of previous

literature that has examined obstetric practice in nineteenth-century Britain. Alison Nuttall and Irvine Loudon have identified the 1870s and 1890s as periods of significant change in obstetric practice. By separating the thesis in this way the conclusions of Nuttall and Loudon can be tested in this study of Glasgow practice. The structure of this thesis has also been shaped by the sources that were used. It was found that as the nineteenth century continued the availability of source materials increased. This was not only true of published materials. The records of cases of disproportion dealt with in hospitals were also more likely to be available at the end of the century, whereas the early records of hospitals were sparse and incomplete. Hence the number of relevant sources located for the period between 1890 and 1900 was actually greater than that found for between 1840 and 1870.

Chapter 2 - Glasgow, Rickets, and Childbirth, 1840-1900

This chapter outlines the circumstances of an industrialising nineteenth-century Glasgow and the city's association with rickets. It is suggested that previous comments regarding the prevalence of rickets within the population of Glasgow are not necessarily accurate. The cumulative nature of the anecdotal and statistical evidence does, however, point to an increase in the incidence of this disease during the second half of the century. Our understanding of the extent to which nineteenth-century childbirth was affected by this occurrence is currently based upon the situation in the Glasgow Maternity Hospital during the 1890s. It is argued that hospital-associated childbirth was firmly established in Glasgow during the nineteenth century. It was not, however, until the very end of the century that lying-in hospitals were considered to be the most appropriate location for dealing with problems that arose during childbirth. The approach of the Glasgow Maternity Hospital resulted in a large number of women with contracted pelves being admitted to the hospital, an occurrence not seen to the same extent elsewhere. This change needs to be taken into account when discussing the obstetric practices that were used when childbirth was perceived to be problematic. By examining rickets and the institutions involved with childbirth in Glasgow, this chapter provides the context for the examination of obstetric practices that follows.

2.1 Glasgow 1840-1900

The nineteenth century saw Glasgow become one of the world's major cities. It became renowned, not only as the second city of the Empire, but also as the 'shipbuilding capital of the world'.⁹⁹ During this period Glasgow increased considerably in size both geographically and in population. In 1821 the city, with 147,043 residents, overtook Edinburgh as Scotland's most populated urban area.¹⁰⁰ Between 1841 and 1901 Glasgow's population increased from 267,463 to

⁹⁹ Irene Maver, *Glasgow*, (Edinburgh: Edinburgh University Press, 2000), p.113. London was the first city of the Empire.

¹⁰⁰ Maver, *Glasgow*, p.83. Edinburgh had 138,235 residents.

761,709.¹⁰¹ This growth is attributed to several factors. The principal reason for the increase in population was the active movement of people, from elsewhere, into Glasgow. Glasgow experienced large-scale immigration and in-migration from Ireland, the Highlands and west-central lowland Scotland. The Highland clearances and the potato famine in Ireland forced families to relocate and Glasgow was the destination for many of them, but it was the prospect of employment that led people from all over Scotland and Ireland to seek residence in this city during the nineteenth century. The city's textile, engineering and metalworking industries grew.¹⁰² Glasgow also benefited from a diverse manufacturing foundation that also included the production of chemicals, glass, pottery, and printing.¹⁰³ The expanding employment opportunities were an attractive feature of Glasgow throughout this century.¹⁰⁴

The growth in Glasgow's population was also partly a result of the city expanding geographically. The city's municipal boundaries extended outwards to encompass neighbouring districts on several occasions during this period.¹⁰⁵ As a result people who had not moved became part of the city's population figures. The geographical expansion of Glasgow was not just a result of legislative changes to the city's boundaries. This period of prosperity also resulted in the construction of buildings on the outskirts of the city. Glasgow spread into the previously undeveloped areas around it, mostly to the west and south.¹⁰⁶ The middle classes relocated out of the hub of Glasgow into these newly forming suburbs. Relatively affluent people who had benefited from the strengthening

¹⁰¹ *Detailed Annual Report Of The Registrar-General Of Births, Deaths And Marriages In Scotland*, HMSO, 1855-. In Scotland the registration of births, deaths and marriages was enacted in 1854. The earlier figures for the population referred to here were originally from the census and were noted within the reports of the Registrar General.

¹⁰² Marguerite W. Dupree, 'Family care and hospital care: The 'sick poor' in nineteenth-century Glasgow', *Social History of Medicine*, 6 (1993), p.197. For an examination of the demographic changes to Glasgow during the nineteenth century see A. Gibb, 'The demographic consequences of rapid industrial growth: A case study of Glasgow 1801-1914', *Dept. of Geography and Topographic Science, University of Glasgow, Occasional Paper Series*, 24 (1988).

¹⁰³ John Butt, 'The industries of Glasgow', in *Glasgow Volume II: 1830 to 1912*, ed. by W. Hamish Fraser and Irene Maver, (Manchester: Manchester University Press, 1996), pp.96-140.

¹⁰⁴ R. H. Campbell, *Scotland Since 1707: The Rise of an Industrial Society*, (Oxford: Basil Blackwell, 1965), pp.178-181; and Anthony Slaven, *The Development of the West of Scotland: 1750-1960*, (London: Routledge & Kegan Paul, 1975), pp.140-145.

¹⁰⁵ Charles Withers, 'The demographic history of the city, 1831-1911', in *Glasgow Volume II: 1830 to 1912*, ed. by W. Hamish Fraser and Irene Maver, (Manchester: Manchester University Press, 1996), p.142.

¹⁰⁶ Maver, *Glasgow*, pp.93-100.

economy moved into larger homes, away from the densely populated centre. However, not all of Glasgow's residents profited from the success of the city's burgeoning industry and economy during this period.

Living standards within Glasgow varied considerably. Some areas within the centre of the city became the setting of extreme deprivation.¹⁰⁷ The poor conditions of parts of Glasgow did not go unnoticed as the following testimony in an 1838 Parliamentary Report on handloom weavers demonstrates. An assistant commissioner to the Home Office, Jelinger Symons, stated that:

I have seen human degradation in some of its worst phases, both in England and abroad, but I can advisedly say, that I did not believe until I visited the wynds of Glasgow, that so large an amount of filth, crime, misery and disease existed on one spot in any civilized country.¹⁰⁸

Symons was not the only person to point out the inadequacies of the slums of Glasgow. The sanitary reformer Edwin Chadwick wrote in 1842 after a visit to inspect Glasgow that:

It might admit of dispute, but, on the whole, it appeared to us that both the structural arrangements and the condition of the population in Glasgow was the worst of any we had seen in any part of Great Britain.¹⁰⁹

Chadwick was in all likelihood speaking of the infamous Glasgow tenements. These buildings, referred to by one visiting commentator as 'frightful abodes of wretchedness', were tall and imposing in design and had often been built only a few feet from each other.¹¹⁰ Taking advantage of the need for accommodation as the population increased early in the century, the density of the tenements

¹⁰⁷ Maver, *Glasgow*, p.87.

¹⁰⁸ J. C. Symons and J. D. Harding, *Reports from Assistant Hand-Loom Weavers' Commissioners*, House of Commons Papers, 1839, p.51. For a biography of Symons see John Shepherd, 'Symons, Jelinger Cookson (1809-1860)', *Oxford Dictionary of National Biography*, Oxford University Press, [<http://www.oxforddnb.com/view/article/26897>, accessed 17 July 2007].

¹⁰⁹ M. W. Flinn, ed. *Report on the Sanitary Condition of the Labouring Population of Gt. Britain by Edwin Chadwick* (Edinburgh: Edinburgh University Press, 1965), p.99.

¹¹⁰ Dr. Sutherland, *Appendix (A) to the Report of the General Board of Health on the Epidemic Cholera of 1848 & 1849*, HMSO, 1850, p.73.

presumably reflected attempts by owners to maximise their returns. A combination of this overcrowding and poor sanitation produced the living conditions in areas such as Glasgow Cross, High Street, and Calton that were so fervently criticised by the social reformers of the period.¹¹¹ This situation did not go unnoticed by the city's own residents either. A Glasgow doctor, David Smith, wrote the following damning description of these buildings and the conditions found within them in 1843:

The tenements in which I have visited, are occupied from the cellars to the attics, and almost altogether kept for lodging houses, -many of them being more fit for pig-styes than dwellings for human beings, and in not a few the donkey and pigs rest at night in the same apartment with the family. The entrance to these abodes is generally through a close, not unfrequently some inches deep with water, or mud, or the fluid part of every kind of filth, carelessly thrown down from unwillingness to go with it to the common receptacle.¹¹²

As a direct consequence of the considerable growth of the city's population, medical practitioners like Smith had an increased pool of potential patients to work with. In addition, the concentration of people in overcrowded and insanitary dwellings aggravated factors implicated in the spread of disease.¹¹³

The association between these living conditions and the spread of infectious disease led to action being taken by the city's authorities.¹¹⁴ Building regulations were introduced that stipulated a minimum space between new buildings.¹¹⁵ A ticketing system was established in the 1860s that stipulated the maximum number of residents allowed in each home, though this was often evaded. In

¹¹¹ W. Hamish Fraser and Irene Maver, 'The social problems of the city', in *Glasgow Volume II: 1830 to 1912*, ed. by W. Hamish Fraser and Irene Maver, (Manchester: Manchester University Press, 1996), p.369.

¹¹² David Smith, 'Some account of the epidemic fever prevailing in Glasgow', *The Edinburgh Medical and Surgical Journal*, 61 (1844), p.67.

¹¹³ Helen M. Dingwall, *A History of Scottish Medicine: Themes and Influences*, (Edinburgh: Edinburgh University Press, 2003), p.156.

¹¹⁴ For an examination of the actions taken to improve the poor conditions of this residential district in Glasgow see Olive Checkland, 'Local government and the health environment', in *Health Care as Social History: The Glasgow Case*, ed. by Olive Checkland and Margaret Lamb, (Aberdeen: Aberdeen University Press, 1982), pp.1-15; and A. K. Chalmers, *The Health of Glasgow 1818-1925 - An Outline*, (Glasgow: Bell & Bain, 1930).

¹¹⁵ Chalmers, *The Health of Glasgow 1818-1925 - An Outline*, p.25.

1866 the City Improvement Act was passed that enacted the removal of buildings from these overcrowded pockets of Glasgow.¹¹⁶ Whilst these activities improved the situation somewhat it has been argued that the problems were just moved into adjacent areas.¹¹⁷ The reduction in housing stock and simultaneous increase in the size of the population contributed to conditions remaining inadequate in parts of Glasgow. Accommodated in an increasing number of small flats within tenement buildings, many large families lived in very cramped conditions.¹¹⁸ In 1886 a third of all Glasgow families lived in single-room flats.¹¹⁹ The focus of reformers had been to thwart infectious diseases that had swept through Glasgow on several occasions. The conditions of urbanisation and industrialisation had produced circumstances in Glasgow, as in similar urban areas, where problems such as cholera, fever, industrial injuries, measles, rickets, and tuberculosis were rife.¹²⁰ Rickets, in particular, became a condition associated with Glasgow. As Fraser and Maver have claimed, the ‘bow or “bandy” legs came to be the caricature image of the Glasgow man’.¹²¹

2.2 Glasgow and rickets

The proximity of tall tenement buildings to each other has been described as one of the factors that resulted in rickets existing in Glasgow during the nineteenth century.¹²² The space between these buildings, known as a close, was often so narrow that sunlight did not reach parts of Glasgow at street level. It is thought that children living in these areas did not, therefore, spend much time in the sun. Our natural levels of vitamin D, a deficiency of which causes rickets in children, are dependent on two factors: dietary intake and exposure to sunlight. It is now thought that although vitamin D is available in certain foods, mainly oily fish, it is predominantly sourced through being synthesized upon the

¹¹⁶ J. B. Russell, *On the Immediate Results of the Operations of the Glasgow Improvement Trust at last May Term, as Regards the inhabitants Displaced, with remarks on the Question of Preventing the Recurrence of the Evils Which the Trust Seeks to Remedy*, (Glasgow: s. n., 1874), pp.214-216.

¹¹⁷ Fraser and Maver, 'The social problems of the city', p.365.

¹¹⁸ For an examination of Glasgow's demography during the nineteenth century see Withers, 'The demographic history of the city, 1831-1911', pp.141-162.

¹¹⁹ Allan Massie, *Glasgow: Portraits of a City*, (London: Barrie & Jenkins, 1989), p.39.

¹²⁰ Dingwall, *A History of Scottish Medicine: Themes and Influences*, p.167.

¹²¹ Fraser and Maver, 'The social problems of the city', p.362.

¹²² Fraser and Maver, 'The social problems of the city', p.362.

skin's exposure to ultraviolet light from the sun.¹²³ Consequently, it is likely that the urban environment in which some of the children in Glasgow lived contributed towards the presence of rickets amongst them. The extent of this influence is not clear. As has already been mentioned, after the 1860s many of these buildings were removed and new legislation was introduced to ensure that they were no longer built so close together. Any attempt at understanding the importance of this factor would also have to take into account the day-to-day activities of children during this period. The time children spent indoors at home and at work would need to be accounted for, as would the time they spent playing outside and whether they remained in the vicinity or went further into areas where they were exposed to the sun. In any case, this was not the only factor that is likely to have been involved in the presence of rickets in the population of Glasgow.

Air pollution was a problem for the industrial centres of Britain during the nineteenth century.¹²⁴ Invisible emissions, such as the acidic vapours of chemical works, caused concern, but it was the highly visible smoke produced by coal fires that is relevant here. The lack of exposure to sunlight was most likely exacerbated by the emissions from industrial works and domestic fires, which cast a shadow over the streets below. Hugh McLean refers to social commentaries in Glasgow from the 1820s and 1850s on this topic.¹²⁵ Drawings, that were presumably exaggerated, depicted people walking the streets of Glasgow in a black fog. The sunlight-obstructing smoke was commented on throughout the nineteenth century. McLean claimed that the problem had not improved by the early twentieth century. Indeed, in 1905, James Burn Russell, the Glasgow Medical Officer of Health, described the dense air pollution as a 'sea of smoke' that resided over the city.¹²⁶ This problem would certainly not

¹²³ Michael F. Holick, 'Sunlight and vitamin D for bone health and prevention of autoimmune diseases, cancers, and cardiovascular disease', *American Journal of Clinical Nutrition*, 80 (2004), p.1678.

¹²⁴ The attempts to reduce the problem of air pollution are described in Carlos Flick, 'The movement for smoke abatement in 19th-century Britain', *Technology and Culture*, 21 (1980), pp.29-50; David Stradling and Peter Thorsheim, 'The smoke of great cities: British and American efforts to control air pollution, 1860-1914', *Environmental History*, 4 (1999), pp.6-31; and Anthony S. Wohl, *Endangered Lives: Public Health in Victorian Britain*, (London: J. M. Dent, 1983), pp.205-232.

¹²⁵ Hugh A. McLean, *The Smokeless City: A Retrospect and a Prospect*, (Glasgow: The County and Municipal Record, c.1910), pp.3-6.

¹²⁶ Quoted in Edna Robertson, *Glasgow's Doctor: James Burn Russell, MOH, 1837-1904*, (East Lothian: Tuckwell, 1998), p.114.

have helped the residents of the city achieve an adequate level of exposure to sunlight for the production of vitamin D.

Although sunlight has been identified as the principal factor by which we obtain vitamin D, it is also possible to acquire enough of this nutrient through dietary intake alone. Our knowledge of the diet of Glasgow residents in the nineteenth century is limited. It has been claimed that the general diet amongst Scotland's urban poor became less nutritious during the last third of the nineteenth century.¹²⁷ It has, however, also been argued that as real wages increased the nutrition of Glasgow's residents also improved during this period.¹²⁸ These contradictory statements indicate the difficulty of attempting to determine the nutritional levels of diet during the nineteenth century. In order to determine the affect of diet upon the existence of rickets, it would be necessary to evaluate the actual food types eaten. Discussions of the diet of Glasgow's poor often concentrate on the change from oatmeal to potatoes as the staple foodstuff. Attempting to evaluate the significance of dietary intake, the urban environment, and pollution as contributing to the incidence of rickets during this period is an extremely difficult, if not impossible, task.¹²⁹ It seems likely that the manifestation of rickets in Glasgow's population was possibly caused by a combination of these factors.

It must be remembered, however, that not all of the residents of Glasgow grew up there. In fact in 1851, when net immigration is thought to have peaked, almost 56 per cent of the population were born outside of Glasgow.¹³⁰ As rickets is a disease that occurs during childhood, this has a considerable implication with regard to ascertaining the cause of the condition amongst the population of Glasgow. Also, as Hardy and Rosen have suggested, rickets was not restricted to the poor.¹³¹ In London for example the children of the middle classes were also

¹²⁷ T. C. Smout, *A Century of the Scottish People 1830-1950*, (London: Fontana, 1997), p.125.

¹²⁸ David Hamilton, 'The nineteenth-century surgical revolution - Antisepsis or better nutrition', *Bulletin of the History of Medicine*, 56 (1982), pp.30-40.

¹²⁹ This has also been considered in Anne Hardy, 'Rickets and the rest: Child-care, diet and the infectious children's diseases, 1850-1914', *Social History of Medicine*, (1992), pp.389-412.

¹³⁰ Dupree, 'Family care and hospital care', p.197.

¹³¹ Anne Hardy, *The Epidemic Streets: Infectious Disease and the Rise of Preventative Medicine, 1856-1900*, (Oxford: Clarendon Press, 1993), p.20; and George Rosen, 'Disease, debility, and death', in *The Victorian City: Images and Realities*, ed. by H. J. Dyos and Michael Wolff, vol. 2 (London: Routledge & Kegan Paul, 1973), p.655.

described as having rickets. It was, however, amongst the poor living in industrialised cities that this condition was most prevalent.¹³² Being able to document the prevalence of rickets and any changes it underwent would help determine the role these factors had. Robert Cage has asserted that a decline in rickets at the end of the century occurred even though smoke pollution increased. He concludes that this can only mean that dietary deficiency was the likely cause.¹³³ This deduction assumes that there actually was a decline in rickets. Cage does not provide a reason for this opinion. It is notable that descriptions about rickets in Glasgow tend to suggest that it was endemic up until the end of the century.

The prevalence of rickets in Glasgow during the nineteenth century is difficult to determine.¹³⁴ Whereas in the twentieth century a blood test was developed to diagnose this condition, its presence before this period could be determined only upon observation of the physical malformations it produced.¹³⁵ The deformity resulting from rickets exists in varying degrees of severity, and therefore establishing its existence was not always a straightforward task. It is also recognised that medical diagnosis is not an objective measurement. It has been demonstrated by sociologists that our knowledge of the 'prevalence, incidence, treatment, and meaning of disease' are shaped by many factors including class, gender, and cost.¹³⁶ The remarks of individuals from the nineteenth century are used here to develop an understanding of the prevalence of rickets and contracted pelves. The evidence cannot be taken as an exact depiction of the situation, partly because of the subjectivity of diagnosis. However, disproportion does exist and the deformities of sufferers of rickets are readily visible. Therefore, we can use observations that were made regarding these conditions to indicate the prevalence of them during this period. Comments about the frequency of this condition amongst the population of Glasgow began to appear

¹³² Loudon, *Death in Childbirth*, p.135.

¹³³ R. A. Cage, 'Health in Glasgow', in *The Working Class in Glasgow 1750-1914*, ed. by R. A. Cage, (London: Croom Helm, 1987), p.66.

¹³⁴ The prevalence of rickets is further complicated by the present understanding that this condition is also dependent upon levels of calcium, see D. R. Fraser, 'Vitamin D', *The Lancet*, 345 (1995), pp.104-107.

¹³⁵ A. K. Chalmers, 'Rickets: Osteotomy and Caesarean section in Glasgow, 1877-1930', *Glasgow Medical Journal*, 116 (1931), p.258.

¹³⁶ Phil Brown, 'Naming and framing: The social construction of diagnosis and illness', *Journal of Health and Social Behavior*, 35 (1995), p.34.

only during the 1880s, which in itself could be considered as evidence that previously rickets was not common. However, it is also likely that the observations on this subject were part of a growing effort to document statistics for public health, and a more concerted effort to determine the cause of the disease. These contemporary comments about rickets can be used to approximate the extent that people in Glasgow suffered from the disease, and whether this had changed.

Glasgow has been documented as having ‘the unenviable reputation of having more, and worse, rickets than anywhere else in Britain’ during the nineteenth century.¹³⁷ Historians have mentioned the high prevalence of rickets in Glasgow on several occasions. George Rosen and Anthony Wohl make perhaps the most surprising claim about rickets and Glasgow. They both refer to research carried out by the British Medical Association (BMA), which began in 1884 and was published in 1889. This study attempted to examine the aetiology of cancer, chorea, rheumatism, rickets, and urinary calculus in Britain, by analysing the geographical distribution of these diseases. Rosen states that ‘in the Clydeside,..., every child examined was found to be rachitic’ in 1884.¹³⁸ Wohl reiterates this statement in his book examining public health in Britain.¹³⁹ On closer inspection of the original source it appears that the results were misinterpreted leading to a gross exaggeration. In the BMA study questionnaires had been sent to all registered medical practitioners in Britain. When these were returned the authors of the report produced maps upon which blue was used to represent where they had received confirmation from a practitioner that a disease was common in the district. Of Glasgow and rickets it was reported that, ‘[i]n the map of Scotland the blue ... preponderates markedly in the Clyde Valley and the north of Ayrshire, and is all but universal in Glasgow and its suburbs.’¹⁴⁰ The reference to the universality of this condition here does not mean that every child examined had rickets, as suggested by Rosen and Wohl, but that the condition was widely distributed in Glasgow. In fact practitioners were told to report a disease as common in a district if they answered yes to the following

¹³⁷ Loudon, *Death in Childbirth*, p.136.

¹³⁸ Rosen, ‘Disease, debility, and death’, p.655.

¹³⁹ Wohl, *Endangered Lives*, p.56.

¹⁴⁰ Isambard Owen, ‘Reports of the collective investigation committee of the British Medical Association: Geographical distribution of rickets, acute and subacute rheumatism, chorea, cancer and urinary calculus’, *British Medical Journal*, 1 (1889), p.114.

question. '[W]ould a medical man in average practice in it be likely to meet with, on the average, a case a year?'¹⁴¹ This study certainly provides evidence that rickets existed in and around Glasgow in the late nineteenth century, but it does not provide any information as to the frequency of its occurrence. It appears likely that Rosen's assertion about rickets and the children of the Clydeside was inaccurate. This is not to argue that there were only a few cases of rickets in Glasgow. Certainly there is further evidence that contends otherwise.

In 1931 Archibald Kerr Chalmers attempted to describe a change in rickets he observed in Glasgow between 1877 and 1930.¹⁴² In 1908 Chalmers had himself, as the Medical Officer of Health for Glasgow, claimed that rickets afflicted between 21 per cent and 25 per cent of children in Glasgow.¹⁴³ He argued that the incidence of severely contracted pelvis in this city reached its highest towards the end of the nineteenth century.¹⁴⁴ Chalmers pointed to the work, from the 1870s, of William Macewen in the Glasgow Royal Infirmary as proof of the prevalence of rickets in the late nineteenth century. Macewen had developed his technique of osteotomy at this hospital to correct the limb deformities of children.¹⁴⁵ Chalmers stated that within the three major general hospitals in Glasgow, the Glasgow Royal Infirmary, Western Infirmary, and Victoria Infirmary, the operation was used on 1675 occasions between 1871 and 1900. While the deformed limbs were not always the result of rickets Chalmers argued that this indicated that the condition was present in large numbers. He also referred to two other sources, burial records and a paper written by James Thomson, to affirm his assertion regarding the peak in the prevalence of rickets.

Chalmers referred to the burial records of two districts in Glasgow between 1838 and 1840. The number of deaths ascribed to childbirth for the High Church had been, he contended, 'considerably below that of recent years'.¹⁴⁶ He inferred

¹⁴¹ Owen, 'Geographical distribution of rickets', p.113.

¹⁴² Chalmers, 'Rickets: Osteotomy and Caesarean section in Glasgow, 1877-1930', pp.257-266.

¹⁴³ Glasgow Corporation, *Report of the Medical Officer of Health of the City of Glasgow*, (Glasgow: Robert Anderson, 1908), pp.32-33.

¹⁴⁴ Chalmers, 'Rickets: Osteotomy and Caesarean section in Glasgow, 1877-1930', p.265.

¹⁴⁵ A. K. Bowman, *The Life and Teaching of Sir William MacEwen: A Chapter in the History of Surgery*, (London: William Hodge, 1942), pp.167-194.

¹⁴⁶ Chalmers, 'Rickets: Osteotomy and Caesarean section in Glasgow, 1877-1930', p.265.

that the increase in childbirth related deaths was as a result of an increase in complications caused by rickets. Chalmer's use of the burial records does not lend itself to an accurate extrapolation to the incidence of rickets. This inference is problematic for a number of reasons. As has been demonstrated by historians the accuracy with which deaths were recorded before registration began in 1854, and to an extent afterwards, is questionable in terms of both the numbers documented and the cause ascribed to each death.¹⁴⁷ Indeed, even if the increase in the number of deaths attributed to childbirth was correct, the possibility of this change relating to complications caused solely by rickets is remote. The prevalence of other causes, such as puerperal fever, would also have been a significant factor in the number of deaths associated with childbirth. The third source that Chalmers used, and perhaps the most useful in terms of understanding the prevalence of rickets, was a study James Thomson undertook.

Thomson, a geologist, presented a paper to the Philosophical Society of Glasgow in 1884 that considered the prevalence of rickets in Glasgow and the West of Scotland.¹⁴⁸ It is notable that Thomson wrote that he had been 'struck with the prevalence and alarming increase of late years in the physical deformities in the limbs of children in and around Glasgow'.¹⁴⁹ This observation led him away from his geological work and he carried out a survey of these deformities. In order to do this he visited various locations in Glasgow and the West of Scotland and watched the children as they played outside and went to school. Over a period of two and a half years he counted the children and noted any deformities they had and the extent of this deformity. Thomson had been helped by William Macewen to understand the nature of problems rickets caused. No doubt Thomson, without any medical experience, was aware that the involvement, however minor, of Macewen in this study would further validate his findings. Thomson acknowledged that this was not a survey that could be considered exhaustive. In some areas he observed between 30 and 40 per cent of the children as having deformed limbs. The accuracy of the results he produced is

¹⁴⁷ See for example Loudon, *Death in Childbirth*; and Anne Cameron, 'The establishment of civil registration in Scotland', *The Historical Journal*, 50 (2007), pp.377-395.

¹⁴⁸ James Thomson, *Address On the Prevalence of Rickets in the City of Glasgow and the West of Scotland, and the Relation of Rickets to Food and Water Used*, (Glasgow: Robert Anderson, 1884), pp.1-45.

¹⁴⁹ Thomson, *Address on the prevalence of rickets in the city of Glasgow*, p.5.

questionable. For example in many areas he observed only small numbers of children. One also wonders if he mistakenly counted some children more than once. The figures he provided do indicate, however, that rickets was present across Glasgow and it was not difficult to spot a child afflicted by the condition. There was not one street in which he recorded the absence of any children with deformed limbs. Thomson's figures also point to rickets being present in the areas outside of the original 'slum' parts of the city. He had also visited streets in generally prosperous burghs, such as Partick and Pollokshields, which were later to become part of the Glasgow municipality.

Further anecdotal evidence exists confirming the existence of rickets in Glasgow, and pointing to its relatively high prevalence. The Glasgow correspondent for the *Lancet*, responding to Thomson's paper, stated that '[t]here can be no doubt as to the very great prevalence of this disease in our midst'.¹⁵⁰ Thomson's assertion that this had been a recent change was also supported by the later comments of medical practitioners. Rickets was discussed during the Annual Meeting of the BMA in 1888, which was held in Glasgow. During this, James Finlayson who had been a physician at the Glasgow Hospital for Children in 1867 is reported to have claimed that:

It used to be recognised that rickets was singularly rare, not only in Glasgow but in Scotland generally, so that, say thirty years ago, this disease was far from common in Glasgow, but he was sorry to say that the same could not be said for now.¹⁵¹

William Brailey, a London-based ophthalmic surgeon, gave a similar time frame for this change at the Medical Society of London in 1889. During a discussion of the BMA report on the geographical distribution of rickets he reportedly 'alluded to the fact that when the pure water from Loch Katrine was brought into Glasgow, the increase of rickets was very marked'.¹⁵² Queen Victoria opened the

¹⁵⁰ [Anon.], 'Glasgow: Rickets', *The Lancet*, 1 (1884), p.732.

¹⁵¹ 'A discussion on rickets, in the section of diseases of children at the Annual Meeting of the British Medical Association, held in Glasgow, August, 1888', *British Medical Journal*, 2 (1888), p.1151. Although reported as Dr. Finlayson it is likely that this was James Finlayson. Two other Finlayson's were recorded in the medical directory for this year, Alexander and Henry. Neither of which had any associations with child health in their listings and one lived in Inverness and the other was listed as being a ship surgeon at the time.

¹⁵² [Anon.], 'Medical Society of London', *The Lancet*, 1 (1889), p.125.

Loch Katrine Works in 1859 to supply Glasgow with clean water.¹⁵³ The validity of the association between Loch Katrine and rickets is up for discussion, but the timing corresponds with Finlayson's and Thomson's assertions.

As hospitals published statistics of their cases at the end of the nineteenth century, some revealed the incidence of rickets within their patient population. These figures, biased by the types of patients presenting to each hospital, cannot be used to infer the general incidence in the whole population, but do provide an indication of the prevalence of this condition. For example, in 1889 the Glasgow Hospital for Sick Children reported that of the 540 patients admitted in the previous year, 4 per cent had rickets. In 1905, of the children admitted to the Belvidere Fever Hospital for measles and whooping cough, 40 per cent showed signs of rickets.¹⁵⁴ In 1907 this percentage had seemingly dropped, as Alexander MacGregor found the presence of rickets in 31 percent of males between 2 and 10 years of age and 26.7 per cent of girls of the same age range at this hospital.¹⁵⁵ These figures infer a high prevalence of rickets in Glasgow during this period, though they should not be considered to represent Glasgow children as a whole. Anne Hardy has argued that whooping cough is considered to be a marker of nutritional disease, and hence the level of rickets amongst the children at the fever hospital would be expected to be higher than in the general population.¹⁵⁶ Reports from children's hospitals elsewhere in Britain at the beginning of the twentieth century suggest that Glasgow was not alone in having a high prevalence of rickets. For example, in 1909 it was reported that 44.6 per cent of children under three presented to Great Ormond Street with rickets, and figures for Manchester and Edinburgh of 30.3 per cent and above 50 per cent respectively were also recorded.¹⁵⁷

In 1904 both Alexander Scott, a certifying factory surgeon in Glasgow, and Chalmers gave evidence to the Inter-Departmental Committee on Physical Deterioration arguing that the prevalence of rickets was actually decreasing.

¹⁵³ W. Hamish Fraser and Irene Maver, 'Tackling the problems', in *Glasgow Volume II: 1830 to 1912*, ed. by W. Hamish Fraser and Irene Maver, (Manchester: Manchester University Press, 1996), p.409.

¹⁵⁴ Fraser and Maver, 'The social problems of the city', p.362.

¹⁵⁵ Corporation, *Report of the Medical Officer of Health*, pp.32-33.

¹⁵⁶ Hardy, *The Epidemic Streets*, pp.19-21.

¹⁵⁷ Hardy, *The Epidemic Streets*, p.20.

They both referred to fewer osteotomies being performed upon the children of Glasgow. Scott claimed that ‘statistics prove that there were hundreds of cases for every ten that there are now’.¹⁵⁸ Chalmers also made a further comment on the prevalence of rickets in 1904 that is of particular relevance. He stated that the staff at the Glasgow Maternity Hospital had told him that the number of pregnant women with contracted pelves that they encountered had increased in recent years.¹⁵⁹ Chalmers took this to its logical conclusion and argued that these women were of the generation that had required osteotomies when they were children. The differences in the prevalence of rickets can be attributed to differences in the age of the population being observed. The majority of observations noted here were of children. It therefore follows that the observations of medical practitioners regarding the number of women giving birth who were afflicted by rickets would follow a delay of possibly fifteen years from these figures. So that if there had been an increase in rickets affecting children during the 1860s consequently the women of the 1880s would have been more likely to have contracted pelves than before.

2.3 Women and the dangers of childbirth

Rickets afflicted boys and girls alike, resulting in problems of poor overall growth, weak muscle development, risk of bone fracture, and restricted mobility. The pelvic deformities associated with this disease meant that the consequences were potentially far greater for women, when they reached childbearing age, than they were for men. Nineteenth-century medical practitioners identified many other complications associated with childbirth and the exposition in medical case notes, textbooks, and journal articles tended to concentrate on these problematic incidents. Basing our view of nineteenth-century childbirth on contemporary midwifery and obstetric literature can make it seem like this was an event fraught with danger. It would be entirely possible to conclude from an overview of these publications that labour was an event likely to be difficult, and that disproportion caused by contracted pelves, in particular, was often a reason for the attendance of medical practitioners at

¹⁵⁸ Inter-Departmental Committee on Physical Deterioration, *Minutes of Evidence Taken Before the Inter-Departmental Committee on Physical Deterioration: Vol. II List of Witnesses and Minutes of Evidence*, HMSO, 1904, p.73.

¹⁵⁹ Deterioration, *Minutes of Evidence Taken Before the Inter-Departmental Committee on Physical Deterioration: Vol. II List of Witnesses and Minutes of Evidence*, p.240.

childbirth. Just how hazardous giving birth was during the nineteenth century is difficult to deduce from the limited source material available.

Our quantitative knowledge of the risk associated with childbirth rests primarily upon maternal, and to a lesser extent infant, mortality rates. Irvine Loudon's much-lauded book *Death in Childbirth* provides an extensive examination of maternal mortality during the nineteenth century. The mortality rates associated with bearing children were certainly high when compared with present day figures. The records of the Registrar General for Scotland from 1856 show the maternal mortality rate remained close to 50 deaths per 10,000 births throughout this period.¹⁶⁰ In comparison the maternal mortality rate for the United Kingdom in 2005 was estimated to be 0.8 per 10,000 live births.¹⁶¹ The most common causes of maternal mortality, Loudon states, were sepsis (33-50 per cent), toxæmia (20 per cent), and haemorrhage (15-20 per cent).¹⁶² Other causes included abortion, ectopic pregnancy, deep-vein thrombosis, pulmonary embolus, and puerperal psychosis. Puerperal fever remained the most common cause of maternal death until 1937 when sulphonamides and penicillin were introduced.¹⁶³ Deaths in childbirth did occur but as Loudon has pointed out, it should also be remembered that, 'in the context of total deaths maternal deaths were uncommon'.¹⁶⁴ Infant mortality in Scotland also did not decrease during the second half of the nineteenth century. In fact, it was reported that whereas between 1855 and 1859 118 children under the age of one died per 1000 live births, by 1899 this had risen to 130 per 1000 in Scotland.¹⁶⁵ The lack of

¹⁶⁰ Loudon, *Death in Childbirth*, pp.546-549. There were peaks in 1874 (66.3 per 10,000) and 1883 (63.4 per 10,000). Loudon postulates that these were due to changes in the virulence of streptococcus.

¹⁶¹ World Health Organisation, *Maternal Mortality in 2005: Estimates Developed by WHO, UNICEF, and the World Bank*, (Geneva: World Health Organisation, 2005), p.27.

¹⁶² Loudon, *Death in Childbirth*, p.43. Loudon states that lying-in hospitals were an exception to this rule as on occasion the maternal deaths as a result of sepsis reached 80 per cent or more of the total deaths.

¹⁶³ Irvine Loudon, 'Deaths in childbed from the eighteenth century to 1935', *Medical History*, 30 (1986), p.22.

¹⁶⁴ Loudon, *Death in Childbirth*, p.38.

¹⁶⁵ Olive Checkland, 'Maternal and child welfare', in *Health Care as Social History: The Glasgow Case*, ed. by Olive Checkland and Margaret Lamb, (Aberdeen: Aberdeen University Press, 1982), p.126.

improvement in the maternal and infant mortality rates was notable given the simultaneous fall in the general death rate.¹⁶⁶

Mortality statistics provide as close to a black-and-white opportunity for historians to make judgements about the danger associated with childbirth as can be achieved. Death is, however, not the only unfavourable outcome associated with childbirth. Maternal and infant morbidity, although perhaps difficult to measure, also occurred. Women and their children may have experienced any of the aforementioned problems and fortunately not succumbed to them. Instead they had to live with the consequences, which included fistulas, perineal tears, and prolapsed uterus.¹⁶⁷ The risk of morbidity was particularly high as women on average had several confinements. The risks associated with childbirth for the prospective mother are high for a first birth, decrease for the second and third and rise again for later confinements.¹⁶⁸ Even so childbirth was not and is not an inherently dangerous event. The vast majority of deliveries, even those attended by medical practitioners, did not involve any intervention.

Irvine Loudon has argued that cases of childbirth involving contracted pelvis were afforded a disproportionate amount of attention in British medical publications when compared to the actual prevalence of the condition.¹⁶⁹ Loudon has attempted to estimate the incidence of deliveries affected by contraction of the maternal pelvis in Britain and elsewhere during the nineteenth century. He tackles the difficult task of inferring estimates of the incidence and mortality of contracted pelvis using the surviving data of the incidence of, and the mortality associated with, the surgical measures associated with the treatment of this condition.¹⁷⁰ He also uses reports that provide a record of the contracted pelvis cases encountered. Loudon concludes from this information that, though rickets was comparatively common during the nineteenth century, only between 1 and 5 in every 1000 deliveries could be described as involving a grossly contracted

¹⁶⁶ Tew, *Safer Childbirth?* p.5.

¹⁶⁷ Edward Shorter, *Women's Bodies: A Social History of Women's Encounter with Health, Ill-Health, and Medicine*, (New Brunswick: Transaction, 1991), pp.268-275.

¹⁶⁸ Loudon, *Death in Childbirth*, p.242.

¹⁶⁹ Loudon, *Death in Childbirth*, p.130.

¹⁷⁰ Loudon, *Death in Childbirth*, p.138.

pelvis.¹⁷¹ In the chapters that follow a similar task is undertaken with an examination of the reports of Glasgow-based institutions and practitioners.

Loudon contends that Glasgow was ‘exceptional’ in terms of the number of women with contracted pelves encountered by medical practitioners. He refers particularly to a comment in 1898 made by Robert Jardine, a physician to Glasgow Maternity Hospital, who revealed that approximately 10 per cent of the hospital’s indoor cases involved contracted pelves. This was certainly high when compared to the figures Loudon provides for obstetric practice elsewhere during the nineteenth century. Whilst Jardine’s figures were higher than other available statistics of the period, whether we can conclude from this that Glasgow had a significantly higher prevalence of rickets compared to other industrial cities in Britain is debateable. As Loudon acknowledges, his reliance upon hospital statistics might exaggerate the incidence of contracted pelvis cases encountered, especially as by the second half of the nineteenth century hospital cases included a higher proportion of selected high-risk cases and emergency admissions. Later in his book Loudon also refers to the figures for the same hospital during 1852 where only 0.09 per cent of births were said to involve contracted pelves. This was a dramatic increase that could be explained by an increase in the number of cases happening in general in Glasgow. It is also possible that it became much more likely for women with this condition to be admitted to the hospital than before. The examination that follows considers this statement within the context of institutional births that took place in Glasgow.

2.4 Location of birth

Over 97 per cent of births in the UK currently take place within an institutional setting.¹⁷² This bias towards hospital births is a situation that developed during the twentieth century. Until the 1940s the vast majority of births in Britain

¹⁷¹ This is based on hospital statistics from cities. Loudon rightly argues that the incidence of rickets in these locations would have been higher than in rural areas. These figures are, however, very much an estimate, as conceded by Loudon. They are based on figures provided by hospitals that dealt with the minority of births and to a great extent selected their cases. The surgical procedures Loudon uses to extrapolate from were also not necessarily only performed because of a contracted pelvis. As such these figures almost certainly over exaggerate the incidence of disproportion. Loudon, *Death in Childbirth*, p.141.

¹⁷² J. L. Cresswell and E. Stephens, *Royal College of Obstetricians and Gynaecologists/Royal College of Midwives joint statement No.2, April 2007*, p.1.

occurred at home.¹⁷³ Loudon has estimated that in England and Wales during the 1880s, 3.5 per cent of all births took place within institutions; 0.3 per cent in voluntary hospitals and 3.2 per cent in workhouse infirmaries.¹⁷⁴ Furthermore, 4 per cent of births were attended as outpatient deliveries on behalf of institutions. Therefore approximately 92.5 per cent of births took place at home and were independent of institutional attention. Comparable estimates for Scotland have not been produced but the types of institutional lying-in provision available to prospective mothers in Glasgow were similar to those described by Loudon for England and Wales. Outwith the home childbirth took place in poorhouse, specialist lying-in, and general hospitals.¹⁷⁵

The nineteenth century saw an increase in general in the number of hospitals established in Britain.¹⁷⁶ This development was linked to the growth of urban areas and an increase in the social mobility of patrons and doctors.¹⁷⁷ Clinical developments and medical and surgical training increasingly occurred within these institutions.¹⁷⁸ Glasgow was no different and many hospitals were established throughout this century.¹⁷⁹ Few births occurred in the large general hospitals. It was common for these types of institution to rule against the admission of pregnant women along with children and infectious disease cases.¹⁸⁰ The association of puerperal fever with childbirth with its risk to the hospital's other patients, and the perceived impropriety of women giving birth in the vicinity of other patients often led to this decision. These hospitals did on occasion allow emergency cases in, and sometimes the hospital staff did not realise that a woman was pregnant before she was admitted. The majority of institutional deliveries took place within specialist maternity wards and hospitals (see Appendix 1).

¹⁷³ Oakley, *The Captured Womb*, pp.118-119.

¹⁷⁴ Loudon, *Death in Childbirth*, p.196.

¹⁷⁵ Births that took place in other people's houses and on the street as happened occasionally would also be included within the description of home births.

¹⁷⁶ Granshaw, 'The rise of the modern hospital', p.206.

¹⁷⁷ Granshaw, 'The rise of the modern hospital', p.199.

¹⁷⁸ Dingwall, *A History of Scottish Medicine: Themes and Influences*, p.178.

¹⁷⁹ Rona Helen Gaffney, 'The development of hospital provision in Glasgow between 1867 and 1897' (PhD, University of Glasgow, 1979), p.10.

¹⁸⁰ John Woodward, *To Do the Sick No Harm: A Study of the British Voluntary Hospital System*, (London: Routledge & Kegan Paul, 1974), p.45.

Hospitals that specialised in particular complaints, such as for the ears, eyes, and the diseases of women and children, opened throughout the nineteenth century.¹⁸¹ The expansion in their number and range mostly occurred after the 1830s.¹⁸² The first specialist hospitals established in Scotland were those that provided lying-in care.¹⁸³ Both Glasgow and Edinburgh were home to a small lying-in hospital opened during the 1790s. This was considerably later than elsewhere in Britain where similar institutions were first established in the 1740s.¹⁸⁴ The Glasgow hospital was opened before the city's first general voluntary hospital, the Glasgow Royal Infirmary, was established.¹⁸⁵ In 1840 this maternity hospital, known as the Glasgow University Lying-in Hospital, still existed to provide both indoor and outdoor attendance at childbirth.

2.5 Glasgow University Lying-In Hospital

James Towers, a lecturer of midwifery at the University of Glasgow, opened the first lying-in hospital in Glasgow in 1792 at his own expense.¹⁸⁶ This action is unlikely to have been a philanthropic venture. Specialist hospitals were a 'route to power, prestige, and wealth' for medical men.¹⁸⁷ Indeed, in 1815 Towers was appointed as the first Regius Professor of Midwifery at the University of Glasgow. Five years later he died and his son John Towers succeeded him in his position at the University and continued to run the lying-in hospital. The University itself did not provide any assistance, financial or otherwise, for the upkeep of the hospital during this time. It was intended that this hospital would provide

¹⁸¹ Gaffney, 'The development of hospital provision in Glasgow', p.345. This thesis describes in detail the administrative details of Glasgow hospitals and their inception. No mention is made of either the University Lying-in Hospital or the General Lying-in Hospital.

¹⁸² Granshaw, 'The rise of the modern hospital', p.207.

¹⁸³ Olive Checkland, *Philanthropy in Victorian Scotland: Social welfare and the voluntary principle*, (Edinburgh: John Donald, 1980), p.183.

¹⁸⁴ London had the British Lying-In Hospital (1748) and the General Lying-In Hospital (1752) while the Dublin Lying-In Hospital was also opened earlier in the eighteenth century (1745), see Checkland, *Philanthropy in Victorian Scotland*, p.198.

¹⁸⁵ The Glasgow Royal Infirmary was established in 1794 and four years previously James Tower's Lying-In Hospital had opened, see Derek A. Dow, *The Royal Samaritan Hospital for Women, Glasgow: Centenary 1886-1986*, (Glasgow: Royal Samaritan Hospital Centenary Committee, 1986), p.7.

¹⁸⁶ For an overview of the administration of the Glasgow University Lying-in Hospital see Dow, *The Rottenrow*, pp.1-58.

¹⁸⁷ Lindsay Granshaw, 'Fame and fortune by means of bricks and mortar': The medical profession and specialist hospitals in Britain, 1800-1948', in *The Hospital in History*, ed. by Lindsay Granshaw and Roy Porter, (London: Routledge, 1989), p.199.

students of the University with the opportunity of experiencing practice at childbirth. Seventy women were delivered within this hospital during its first four years of existence.¹⁸⁸ By the late 1820s the number of women delivered at the hospital had reportedly increased to over sixty each year. In 1840 the hospital contained fourteen beds.¹⁸⁹

Following the death of John Towers in 1833 the University decided to maintain this hospital, which had been connected with it by association if not by administration. It then came under the authority of the new Professor of Midwifery, William Cumin. Robert Jardine has previously stated that James Towers' hospital closed in 1796, after four years of work.¹⁹⁰ The Glasgow University Lying-in Hospital established in 1834 was supposedly an entirely different institution from the former. However, Dow and Checkland have demonstrated that the original lying-in hospital remained open into the nineteenth century.¹⁹¹ Dow also makes a strong case for the Glasgow University Lying-in Hospital being a continuation of this institution. As well as undergoing a change in administration and name, the hospital also moved to a building next to the University in the centre of Glasgow.¹⁹² This coincided with the establishment of a Dispensary for Females and Children in association with the hospital.

The annual reports for this hospital exist for the first decade after 1834. They provide information about the number of women attended by the hospital, but little explanation of why. The number of indoor deliveries at the Glasgow University Lying-in Hospital increased gradually during this ten-year period without ever going beyond 200 (see Table 2.1). The most obvious feature of the statistics was the considerable growth in the number of deliveries attended outdoors by staff associated with the hospital from the late 1830s.

¹⁸⁸ Dow, *The Rottenrow*, p.17.

¹⁸⁹ Charles R. Baird, *Report on the General and Sanatory Condition of the Working Classes and the Poor in the City of Glasgow*, HMSO, 1841, p.13.

¹⁹⁰ Robert Jardine, 'The Glasgow maternity hospitals: Past and present', *Glasgow Medical Journal*, 55 (1901), p.31.

¹⁹¹ Dow, *The Rottenrow*, pp.14-31 and Checkland, *Philanthropy in Victorian Scotland*, p.184.

¹⁹² Glasgow University Lying-in Hospital and Dispensary, *First Annual Report Of The Glasgow University Lying-in Hospital and Dispensary for Females and Children*, (Glasgow: Aird and Russell, 1836), p.2.

Table 2.1: Indoor and outdoor deliveries of the Glasgow University Lying-in Hospital and Dispensary, 1834-1835.¹⁹³

Years	Number of indoor deliveries	Number of outdoor deliveries
1834-1835	91	49
1835-1836	84	160
1836-1837	105	188
1837-1838	125	297
1838-1839	143	403
1839-1840	136	410
1840-1841	198	414
1841-1842	181	621
1842-1843	166	548

In addition, the hospital's dispensary also attended patients in much larger numbers than were attended for confinement. For example, in 1838, 1837 patients were seen by the dispensary service. This combination of indoor and outdoor confinements and dispensary cases led the anonymous author of the annual report in 1842 to claim that the hospital had, 'grown to be second only to the Royal Infirmary among the medical charities of the city'.¹⁹⁴ The author of this annual report was evidently confident in the reputation of the hospital, as he did not confine this comparison to institutions in Glasgow. The author also suggested that:

The vast amount of practice which the students of the university have an opportunity of witnessing in this department of practical medicine, renders the University Hospital a most important public institution, second to none of the same kind, it is confidently asserted, in Great Britain.¹⁹⁵

Whether this statement was a fair assessment is difficult to tell without knowing the provision afforded to medical students at other lying-in institutions in Britain. Between 1842 and 1845, the Liverpool Lying-in Hospital delivered 339

¹⁹³ These figures were obtained from the annual reports for the hospital. Note that all years use the details from December to December except for 1834-1835, which ran from November until December.

¹⁹⁴ Glasgow University Lying-in Hospital and Dispensary, *Eighth Annual Report of the Glasgow University Lying-in Hospital and Dispensary*, (Glasgow: Bell and Bain, 1842), p.3. The Royal Infirmary was far bigger in size with over 400 beds available to patients, see John Patrick, *A Short History of Glasgow Royal Infirmary*, (Glasgow: Glasgow Royal Infirmary, 1940), p.9.

¹⁹⁵ Dispensary, *Eighth Annual Report of the Glasgow Lying-in Hospital*, pp.3-4.

women and between 1842 and 1845 University College Hospital in London delivered 467 women. Staff from the Glasgow University Lying-in Hospital certainly attended more births than staff at either of these other institutions. However, all three of these institution's numbers pale in comparison with the Dublin Lying-in Hospital, which between 1842 and 1844 attended 6634 women in childbirth.¹⁹⁶

The annual reports reveal little about the reasons why women were attended by the hospital either indoors or outdoors. The 'extreme destitution' of the patients, to which some deaths were attributed, suggests that the women came from poor backgrounds.¹⁹⁷ This is no surprise as until the twentieth century hospitals in general were perceived as suitable for the deserving poor only, particularly those without homes.¹⁹⁸ Hospitals carried the stigma of charity and as a result the middle and upper classes preferred to be treated at home.¹⁹⁹ The desire to give birth outside hospital was also fuelled by the sporadic episodes of puerperal fever that occurred within lying-in hospitals. In fact the first annual report for the University hospital noted that puerperal fever was thought to have caused the death of all nine women who died during the year. The existence of puerperal fever was to have a sizeable influence on the direction of the hospital in future years.

Following the resignation of William Cumin in 1840, John MacMichan Pagan was appointed as Professor of Midwifery at the University. He retained this position until his death in 1868. In an obituary for Pagan it was claimed that he had closed the wards of the Glasgow University Lying-in Hospital some years previously.²⁰⁰ His views on the spread of puerperal fever and his support for a cottage hospital system, like that described by Sir James Young Simpson, were given as his reason for doing this. His opinion was perhaps related to the wider

¹⁹⁶ Robert Woods, 'Lying-in and laying-out: Fetal health and the contribution of midwifery', *Bulletin of the History of Medicine*, 81 (2007), pp.739-742.

¹⁹⁷ Glasgow University Lying-in Hospital and Dispensary, *Fifth Annual Report Of The Glasgow University Lying-in Hospital and Dispensary*, (Glasgow: George Brookman and Co., 1840), p.3.

¹⁹⁸ Gordon McLachlan, ed. *Improving the Common Weal: Aspects of Scottish Health Services 1900-1984* (Edinburgh: Edinburgh University Press, 1987), p.23; and Granshaw, 'The rise of the modern hospital', p.201.

¹⁹⁹ Granshaw, 'The rise of the modern hospital', p.201.

²⁰⁰ [Anon.], 'Obituary - The late Dr. Pagan, Professor of Midwifery, Glasgow University', *Glasgow Medical Journal*, 1 (1869), p.130.

movement by lay reformers to close city hospitals because of their links with spreading disease amongst patients, a movement that, according to Lindsay Granshaw, occurred during the 1850s.²⁰¹ His decision was no doubt influenced also by his own experiences within this hospital. Pagan offered his thoughts on the worth of indoor hospital provision, and the risks associated with it, in 1854 when he published a report on the hospital's work between 1840 and 1852. He compared the maternal mortality rates in the hospital (1 died in every 77 deliveries) with the hospital's deliveries outdoors (1 died in every 325.5 deliveries). This led him to state that:

These facts, which are only a corroboration of all previous experience, render lying-in hospitals, even the richest and best appointed, institutions of very questionable utility, if we are not justified in characterizing them by a more decided epithet.²⁰²

Jean Donnison has claimed that it was during the 1860s and 1870s that the high rates of maternal mortality associated with the lying-in hospitals were highlighted and hospitals were closed with outdoor dispensaries being established in their place.²⁰³ That the Glasgow University Lying-in Hospital already had an outdoor service that dealt with many more births than the indoor service may have enabled Pagan to make this decision earlier than most. He was safe in the knowledge that the University's students would still have the opportunity to acquire practical obstetric experience.

The closure of the indoor service appears to have been a permanent one while the outdoor service was retained. The author of Pagan's obituary also revealed that in the years before his death, the hospital's students and nurses had conducted approximately 750 deliveries a year within patients' homes.²⁰⁴ The term 'nurses' was not defined, but its usage in association with the lying-in institutions in Glasgow suggests that both general nurses and midwives who attended for midwifery training were being referred to. The date when the

²⁰¹ Granshaw, 'The rise of the modern hospital', p.211.

²⁰² J. M. Pagan, 'Contributions to midwifery statistics and practice', *Glasgow Medical Journal*, 1 (1854), p.216.

²⁰³ Jean Donnison, *Midwives and Medical Men: A History of the Struggle for the Control of Childbirth*, 2nd edn, (New Barnet: Historical Publications, 1988), pp.106-107.

²⁰⁴ [Anon.], 'Obituary - The late Dr. Pagan, Professor of Midwifery, Glasgow University', p.130.

indoor service of the hospital was closed has not been found in source material. Dow contends, based on circumstantial evidence, that it took place around 1853.²⁰⁵ The University had shown willingness to move the hospital to a better location when a request regarding leasing the building in which it was based was received in 1852. In 1854 a report in the *GMJ* gave figures for the patients attending three lying-in hospitals in Glasgow. Only one of these was split into indoor and outdoor cases, and these figures match up with one of the other hospitals. The words of Pagan published in 1854 seem to support the assertion by Dow that this circumstantial evidence points to its closure at this time. Indeed, within the next report of the hospital's work between 1852 and 1860 there is no mention of hospital-based deliveries taking place.²⁰⁶ The average number of deliveries attended each year had also fallen from 661 in his first report, to 376 in his second. This change could be explained by the closure of the indoor service.

Although the hospital no longer had any lying-in wards, it retained an address where those seeking assistance could contact the staff. In 1870, the University of Glasgow moved to the more salubrious setting of Gilmorehill in the West of Glasgow. The hospital remained in the city centre at this time, and talks commenced with the Glasgow Maternity or Lying-in Hospital and Dispensary with regards to merging the two institutions. While both sets of directors supported the merger, it was rejected at a vote of the subscribers to the Glasgow Maternity or Lying-in Hospital and Dispensary. The University established the Western Infirmary, a general hospital, next to it in the West End in 1874. In 1878 it was agreed that the Glasgow University Lying-in Hospital would be amalgamated with the Western. This involved the balance of funds that the lying-in hospital held being transferred to the Western Infirmary, and in return the general hospital established an outdoor maternity service.²⁰⁷ Following this service's inception the number of deliveries attended remained small in comparison with the figures for previous years (see Table 2.2).

²⁰⁵ Dow, *The Rottenrow*, p.41.

²⁰⁶ John M. Pagan, 'Statistics of the Glasgow University Lying-In Hospital, from 1st November 1852, till 1st January, 1860', *Glasgow Medical Journal*, 8 (1861), pp.198-203.

²⁰⁷ Loudon MacQueen and Archibald B. Kerr, *The Western Infirmary 1874-1974*, (Glasgow: John Horn, 1974), p.10.

Table 2.2: Number of deliveries attended by the outdoor lying-in service of the Western Infirmary between 1878 and 1887.²⁰⁸

Year	Number of outdoor deliveries
1878-1879	35
1879-1880	26
1880-1881	32
1881-1882	25
1882-1883	15
1883-1884	50
1884-1885	61
1885-1886	46
1886-1887	68

It was decided in 1888 that this service would be stopped, as it was no longer seen as worthwhile for the few deliveries that were involved. Except for a few women being admitted to the Western infirmary for caesarean sections from 1897 the hospital did not provide a maternity service for the rest of the nineteenth century. These operations were performed by the Professor of Midwifery, Murdoch Cameron, and will be discussed further in Chapter 5. While the Glasgow University Lying-in Hospital underwent these changes in provision during the second half of the nineteenth century, another lying-in hospital replaced it as the principal specialist maternity care provider in Glasgow. This hospital, the Glasgow Lying-in Hospital and Dispensary, was to be the location for several important developments in British obstetric practice.

²⁰⁸ These figures were obtained from the minute books of the Western Infirmary. NHSGGCA, Records of Western Infirmary Hospital, GB 812 HB 6/1/5, 'Western Infirmary minute book', 1879-1880, p.269; NHSGGCA, Records of Western Infirmary Hospital, GB 812 HB6/1/6, 'Western Infirmary minute book', 1880-1881, p.220; NHSGGCA, Records of Western Infirmary Hospital, GB812 HB6/1/7, 'Western Infirmary minute book ', 1881-1882, p.180; NHSGGCA, Records of Western Infirmary Hospital, GB812 HB6/1/8, 'Western Infirmary minute book', 1882-1884, p.12 and 259; NHSGGCA, Records of Western Infirmary Hospital, GB812 HB6/1/9, 'Western Infirmary minute book', 1884-1886, p.105 and 354; NHSGGCA, Records of Western Infirmary Hospital, GB812 HB6/1/10, 'Western Infirmary minute book', 1886-1887, p.203; NHSGGCA, Records of Western Infirmary Hospital, GB812 HB6/1/11, 'Western Infirmary minute book', 1887-1888, p.116.

2.6 Glasgow Lying-in Hospital and Dispensary (later known as Glasgow Maternity Hospital and Dispensary)

In the same year that the University made the decision to take on the responsibility of maintaining its own associated lying-in hospital, another lying-in hospital also opened in the city. As a result of a request from a group of Glasgow's leading men that a lying-in hospital should be established that was not connected with any of the city's medical schools, the Glasgow Lying-in Hospital and Dispensary was founded in 1834.²⁰⁹ This was apparently a result of the troubled relationship between the University of Glasgow and the Faculty of Physicians and Surgeons of Glasgow.²¹⁰ The hospital was located in Greyfriars Wynd, close to the University, and within a densely populated area.²¹¹ At this time the hospital contained eighteen beds, four more than the Glasgow University Lying-in Hospital.²¹² The hospital remained at this site until 1842, when it was moved to St. Andrews Square in order to save on rental costs. The hospital moved again in 1860 to the corner of Rottenrow and Portland Street. According to Dow this move was proposed, because the building no longer fulfilled the requirements of the hospital in terms of the space available and the opportunity to separate delivery from lying-in. Also the hospital was located in an area that became less attractive as the streets surrounding it became more congested.²¹³ Except for a temporary relocation in 1879 to allow the building to be reconstructed, the hospital stayed at Rottenrow until it was closed in 2001.²¹⁴ The hospital's continued association with this street explains why the hospital was affectionately known as 'The Rottenrow'. The official name of the hospital was changed in 1866 to the Glasgow Maternity or Lying-in Hospital and Dispensary.²¹⁵ During the 1880s 'Lying-in' was dropped from the title.²¹⁶

²⁰⁹ Dow, *The Rottenrow*, p.27.

²¹⁰ See Geyer-Kordesch and MacDonald, *Physicians and Surgeons in Glasgow*, p.274 for an examination of the fractious relationship between the University and the Faculty of Physicians and Surgeons of Glasgow. This stemmed mostly from the efforts of each institution to ensure that their medical qualifications entitled them to practise in Glasgow at the expense of graduates of their rivals.

²¹¹ Dow, *The Rottenrow*, pp.35-37.

²¹² Baird, *Report on the General and Sanatory Condition*, p.13.

²¹³ Dow, *The Rottenrow*, p.46.

²¹⁴ In 2001, the hospital's maternity provision relocated to premises in the Glasgow Royal Infirmary.

²¹⁵ Dow, *The Rottenrow*, p.50.

Unlike the Glasgow University Lying-in Hospital, the Glasgow Maternity Hospital provided an indoor service throughout the nineteenth century. This provision grew gradually with each move. Twenty-four beds were available in the hospital during the 1870s and this grew to 34 beds during the 1880s.²¹⁷ This growth provided the opportunity for more women to be attended within the hospital, and was no doubt welcomed as the hospital struggled for bed space. In addition, the hospital also offered a domiciliary service. Medical students and nurses attended the outdoor confinements. Although the hospital was originally established with the intention that it be separate from any medical schools, it maintained a link with medical education. Medical students from all of the Glasgow medical schools were offered the opportunity to observe cases within the hospital and to undertake deliveries outdoors. It was made clear in 1875, when the hospital's constitution was revised, that education was an important role of the hospital. It was stated that the Glasgow Maternity Hospital had two objectives. These were to provide impoverished women with relief during confinement and to provide practical instruction in obstetrics.²¹⁸ During the 1870s the teaching function of the hospital was emphasised in the annual reports. By the late 1870s, the hospital had become the only institution in Glasgow that provided medical students with clinical obstetric instruction.²¹⁹

It was because of clinical education that the Glasgow Maternity Hospital expanded its outdoor service during the 1880s. Following the closure of the outdoor service provided by the Western Infirmary, the directors of the Glasgow Maternity Hospital answered a request made on behalf of the University students and opened a branch away from the city centre in the west-end of Glasgow in 1888.²²⁰ The West-End Branch of the hospital did not contain any beds for lying-in, but was a base from which women could be attended in their homes. This

²¹⁶ The hospital received Royal approval in 1914 and became the Glasgow Royal Maternity and Women's Hospital, Dow, *The Rottenrow*, p.83.

²¹⁷ *Hand-Book of the Glasgow Charities Giving Full Information as to the Objects of Above One Hundred and Eighty Societies*, (Glasgow: Charity Organization Society, 1876), p.50; and Association for Organizing Charitable Relief and Repressing Mendicity, *Hand-Book of Glasgow Charitable and Beneficent Institutions, Giving Full Information as to the Objects of Two Hundred and Seventy-Four Societies*, (Glasgow: Charity Organization Society, 1888), pp.95-96.

²¹⁸ *The fortieth annual report of the Glasgow Maternity or Lying-in Hospital and Dispensary, North Portland Street*, (Glasgow: Bell & Bain, 1875), p.11.

²¹⁹ [Anon.], 'Glasgow Maternity Hospital', *Glasgow Medical Journal*, 8 (1876), p.431.

²²⁰ *The fifty-fourth annual report of the Glasgow Maternity Hospital and Dispensary, North Portland Street*, (Glasgow: James Lumsden Son & Co, 1889), p.5.

branch was intended to provide additional opportunities for the medical students and nurses to gain experience of childbirth in addition to what they were already required to have achieved via the hospital at Rottenrow.²²¹ The opening of this branch had the effect of further increasing the number of women attended outdoors by the hospital, although this number had already been increasing for some time previously and continued to do so afterwards (see Fig. 2.1).

Fig. 2.1: Total number of indoor and outdoor deliveries carried out by the Glasgow Maternity Hospital, 1834-1900.²²²

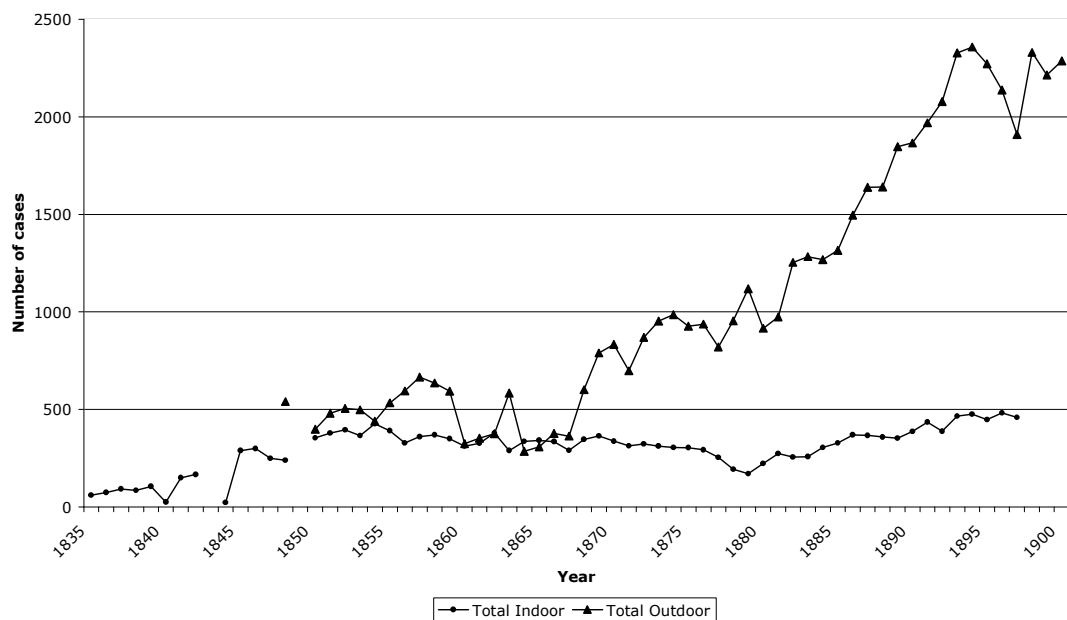


Fig. 2.1 was produced using the surviving annual reports and patient registers of the Glasgow Maternity Hospital. The records for before 1850 are sparse, and records for the indoor service from 1898 into the early years of the next century have not been located. The gaps in the graph reflect this lack of information. The surviving records, however, still allow the overall pattern of indoor and outdoor patient provision to be documented throughout this century. In 1841 it was reported in a parliamentary paper examining the sanitation of Glasgow, that 104 deliveries had occurred in the hospital and 90 outdoors during the previous

²²¹ Robert Jardine, 'Notes of 1,028 confinement cases, being the report of two years' work at the West End Branch of the Maternity Hospital', *Glasgow Medical Journal*, 39 (1893), p.32.

²²² The data for this graph is taken from the annual reports and patient registers of the Glasgow Maternity Hospital for this period held at the NHSGCA.

year.²²³ This suggests that during the early years of the hospital's existence the number of indoor cases approximated, if not exceeded, those performed outdoors.²²⁴ Figure 2.1 clearly shows that this state of affairs did not continue during the second half of the nineteenth century.

Following the gradual increase observed in indoor cases at the hospital after it was established, in 1854 over 400 births took place within it. The number of indoor cases remained steady during the next 45 years reaching its largest intake in 1896 at 482. The peaks and troughs can be explained, in part, by the moves in location the hospital made in 1843, 1860, and 1879. In addition, the hospital was closed on a number of occasions to be cleaned and fumigated on account of a patient being found to have an infectious disease. For example, in 1864 the hospital was closed for three weeks as a result of puerperal fever, and in 1867 it was closed for ten days because a patient was found to have scarlet fever.²²⁵ Bed space was also a limiting factor regarding indoor provision. The maximum number of women admitted to the hospital was also restricted by other factors, including the length of time it was considered necessary for lying-in and the requirement, to help prevent the spread of disease, that each bed should be left empty for a few days after a patient left.²²⁶

While the number of indoor cases never went above 500 during this period, the number of outdoor cases rose significantly beyond this figure. This overall trend of growth also included several dips. The directors attributed the decline in outdoor cases after 1860 to the hospital's change of location. They claimed that women were not as willing to seek help from the hospital now that it was no longer on their doorstep. They were at a loss when trying to explain the drop in

²²³ Baird, *Report on the General and Sanatory Condition*, p.13.

²²⁴ Geyer-Kordesch and MacDonald have stated that 369 women were confined in the hospital's first year (1835), and 635 in their own homes totaling 1004 women, see Geyer-Kordesch and MacDonald, *Physicians and Surgeons in Glasgow*, p.287. This seems erroneous as the hospital only delivered 51 women in its first ten months and 48 outdoors, as Geyer-Kordesch and MacDonald acknowledge. The figures they quote for the first year are in fact exactly the same as the number of deliveries that the hospital attended in 1858.

²²⁵ *The twenty-ninth annual report of the Glasgow Lying-in Hospital and Dispensary, North Portland Street*, (Glasgow: William MacKenzie, 1864), p.6; and *The thirty-second annual report of the Glasgow Lying-in Hospital and Dispensary, North Portland Street*, (Glasgow: William MacKenzie, 1867), p.6.

²²⁶ *The forty-third annual report of the Glasgow Maternity or Lying-in Hospital and Dispensary, North Portland Street*, (Glasgow: James Lumsden, Son & Co, 1878), p.6.

1864.²²⁷ The substantial increase that happened after 1870 is, in part, explained by the opening of the West-End Branch. Of course, the increasing population of Glasgow documented earlier would also have created a larger pool of potential patients. However, the directors ascribed the increase to a rise in the number of students enrolling at the hospital.²²⁸ In 1873, 80 medical students enrolled at the hospital in addition to the regular contingent of student nurses and midwives, whereas in 1891 132 students enrolled, 53 graduates and former students came back, and 42 nurses and midwives also passed.²²⁹ The director's claim appears to hold true, as the fall in cases attended outdoors in 1875 and 1880 coincided with a drop in the number of students enrolling.²³⁰

The number of outdoor deliveries attended by staff from the Glasgow Maternity Hospital was not as great as some outpatient lying-in charities in Britain. For example, between 1857 and 1861 the Royal Maternity Charity in London attended 12,143 women in their homes.²³¹ However, of the hospitals that provided both types of service, outdoor and indoor, it seems that the Glasgow Maternity Hospital's outdoor service was larger than many towards the end of the century. The City of London Maternity Hospital had approximately 553 inpatients and 1658 outdoor births in 1900.²³² The Edinburgh Royal Maternity Hospital in 1850 took care of 291 women indoors and 564 outdoors. By 1890, 294 women were admitted to this hospital and 666 women were attended outdoors.²³³ In 1889, staff supervised the delivery of 995 women indoors and 1179 women outdoors at Queen Charlotte's Hospital, the 'Mecca of obstetrics in

²²⁷ *The thirtieth annual report of the Glasgow Lying-in Hospital and Dispensary, North Portland Street*, (Glasgow: William MacKenzie, 1865), p.6.

²²⁸ *The thirty-sixth annual report of the Glasgow Maternity or Lying-in Hospital and Dispensary, North Portland Street*, (Glasgow: James Lumsden & Son, 1871), p.7.

²²⁹ *The thirty-ninth annual report of the Glasgow Maternity or Lying-in Hospital and Dispensary, North Portland Street*, (Glasgow: James Lumsden & Son, 1874), p.6; and *The fifty-seventh annual report of the Glasgow Maternity Hospital and Dispensary, North Portland Street*, (Glasgow: James Lumsden, Son & Co, 1892), p.6.

²³⁰ *The forty-first annual report of the Glasgow Maternity or Lying-in Hospital and Dispensary, North Portland Street*, (Glasgow: James Lumsden, 1876), p.6; and *The forty-sixth annual report of the Glasgow Maternity or Lying-in Hospital and Dispensary, North Portland Street*, (Glasgow: James Lumsden, Son & Co, 1881), p.6.

²³¹ Woods, 'Lying-in and laying-out', pp.739-742.

²³² Lara Marks, *Model Mothers: Jewish Mothers and Maternity Provision in East London, 1870-1939*, (Oxford: Clarendon, 1994), p.132.

²³³ Nuttall, 'Passive trust or active application: Changes in the management of difficult childbirth and the Edinburgh Royal Maternity Hospital, 1850-1890', p.361 and 369.

London'.²³⁴ The growth of the Glasgow Maternity Hospital's outdoor provision was significant in terms of numbers and, as will be considered later, also in terms of the types of cases the hospital received into its lying-in wards.

2.7 General Lying-in Hospital

Ten years after the opening of the Glasgow Maternity Hospital and the reinvention of the Glasgow University Lying-in Hospital, a third lying-in institution was added to the hospital provision of Glasgow. Opened on 1 July 1844, the General Lying-In Hospital was located on North Albion Street. All three lying-in hospitals were situated just streets away from each other. In the prospectus published to announce this hospital's arrival, it was claimed that the number of beds provided by the two existing lying-in hospitals was not enough when compared to what was available in Edinburgh.²³⁵ The number of beds and the assertion that teaching was inadequate at the other hospitals were given as the reasons behind the foundation of the General Lying-in Hospital. Apart from the prospectus, any records that were produced for this hospital no longer appear to exist, and we know very little of its work. The only comment found that refers to the number of patients dealt with at this hospital is within an 1855 account of medical education in Glasgow. Anonymously authored, this account states of the lying-in hospital provision that 'in one, 481 cases of labour were attended during last year; in a second, 547; and in the third, 366 in-door and 498 out-door patients received aid.'²³⁶ The last figures correspond with those recorded for the Glasgow Lying-in Hospital while the first two are evidently for the Glasgow University Lying-in Hospital and General Lying-in Hospital. The lack of division in this statement between indoor and outdoor cases for these two hospitals also suggests that, like the Glasgow University Lying-in Hospital, the General only provided one type of service by this point.

Any reference to this hospital within the Post Office Directory disappeared after 1855.²³⁷ Dow has suggested that its apparent closure at this time might have

²³⁴ Loudon, *Death in Childbirth*, p.195.

²³⁵ GUL Sp Coll, Ephemera, Eph K/119, James Paterson, 'Prospectus of the Glasgow General Lying-In Hospital', 1844, pp.1-3.

²³⁶ [Anon.], 'The Medical School of Glasgow', *Glasgow Medical Journal*, 2 (1855), p.323.

²³⁷ The last reference to the General Lying-in Hospital (known as the Glasgow Maternity Hospital at the time) can be found in *Glasgow Post-Office Annual Directory for 1855-1856*, (Glasgow:

reflected the concerns of subscribers after Pagan closed the indoor service of the Glasgow University Lying-in Hospital.²³⁸ It is notable that in 1855 the number of women attended by the outdoor service at the Glasgow Maternity Hospital jumped significantly (see Fig. 2.1). The increase in women being attended by the Glasgow Maternity Hospital perhaps provides further evidence that the General Lying-in Hospital closed at this point after only ten years of activity. While these three specialist lying-in hospitals provided for much of the institutional maternity care provision in Glasgow, other hospitals were also involved.

2.8 The midwifery education of medical students in Glasgow

The lying-in hospitals in Glasgow provided medical students with the opportunity to attend labours as part of their medical education during this period. Although the 1886 Medical Amendment Act made midwifery a required part of the medical curriculum in Britain, it had already been so in Glasgow for many years.²³⁹ The teaching of some form of midwifery to medical students had been required by the medical curriculum set down by the Faculty of the Physicians and Surgeons of Glasgow and University of Glasgow before this national legislation was introduced. By 1812 both the Faculty and University had made midwifery a necessary requirement for their medical qualifications.²⁴⁰ In 1838 the Faculty required more specifically attendance at a six-month midwifery course consisting of 110 lectures.²⁴¹ In 1857 discussions amongst the Colleges in Scotland led to the Faculty and both of Edinburgh's Royal Colleges of Surgeons and Physicians including practical midwifery in their required curriculum. The syllabus of the Faculty expanded to include six cases of practical midwifery.²⁴² The attendance of medical students at births in association with the lying-in hospitals reveals that they were able to obtain practical midwifery experience if

William MacKenzie, 1855), pp.118-119. Dow has claimed that the last reference to this hospital was in the 1854-55 directory, but it was included for one further year.

²³⁸ Dow, *The Rottenrow*, p.41.

²³⁹ The teaching of midwifery in the late eighteenth and early nineteenth century Glasgow is well described in Cameron, 'From ritual to regulation?'.

²⁴⁰ Geyer-Kordes and MacDonald, *Physicians and Surgeons in Glasgow*, p.343.

²⁴¹ Geyer-Kordes and MacDonald, *Physicians and Surgeons in Glasgow*, p.254.

²⁴² Andrew Hull and Johanna Geyer-Kordes, *The Shaping of the Medical Profession: The History of the Royal College of Physicians and Surgeons of Glasgow, 1858-1999*, (London: Hambledon Press, 1999), p.10 and p.15.

they were willing before these changes to the curriculum of the Colleges. By 1898 students at the University had to either attend twelve cases under the superintendence of a registered medical practitioner, or spend three months in a maternity ward or a lying-in hospital and personally conduct six cases of labour.²⁴³

The majority of the Glasgow-based practitioners documented in this thesis studied in Glasgow. This is unsurprising as Scottish medical education played an important role in the teaching of medical practitioners in Britain. During the nineteenth century more than half of British medical graduates graduated in Scotland, and between 1871 and 1880 8 per cent of all medical students registered were in Glasgow.²⁴⁴ It has been suggested that the cost of a Scottish medical education when compared to elsewhere may have been the reason why many would-be medical students considered Scotland. For example, in 1894 a London medical education cost approximately £587 whilst the equivalent in Scotland was £350.²⁴⁵ The provision of medical education was not solely in the hands of the examining institutions. In addition medicine could be studied at Anderson's College Medical School (1796); Portland Street Medical School (1826-1844); Glasgow Royal Infirmary Medical School (1876), later incorporated into St. Mungo's College Medical School; and Queen Margaret College (1883-1892) which established the first women's medical school in Scotland in 1890.^{246,247} The students of the University of Glasgow took the examinations held by the University, whilst those who successfully undertook the curriculum provided by the other institutions were able to take the examinations held at the Faculty. Students often passed between institutions as education was flexible and essentially modular.²⁴⁸

²⁴³ John Edgar, 'Is there room for improvement in our present mode of clinical instruction in midwifery?', *Glasgow Medical Journal*, 50 (1898), pp.177-178.

²⁴⁴ James Bradley, Anne Crowther, and Marguerite Dupree, 'Mobility and selection in Scottish University medical education, 1858-1886', *Medical History*, 40 (1996), p.4.

²⁴⁵ David Hamilton, 'The Scottish medical schools', in *Improving the Common Weal: Aspects of Scottish Health Services 1900-1984*, ed. by McLachlan, Gordon, (Edinburgh: Edinburgh University Press, 1987), p.498.

²⁴⁶ David Hamilton, *The Healers: A History of Medicine in Scotland*, (Edinburgh: Mercat Press, 2003), p.150.

²⁴⁷ Hull and Geyer-Kordesch, *The Shaping of the Medical Profession*, p.46.

²⁴⁸ Bradley, Crowther and Dupree, 'Mobility and selection', p.6.

A search for exam questions and lecture notes that were relevant to this thesis was not fruitful. As such it is difficult to make any direct assertions regarding the influence that a practitioner's medical education had on his later obstetric practices. An examination of obstetric textbooks produced by Glasgow practitioners provides an indication of the influence of these authors in the following chapters. The effect that practical instruction had on the later work of a practitioner is also difficult to determine. It appears that while requirements were made of students to attend a certain number of cases, there was little consideration of what this should entail. In 1897 John Edgar, Professor of Midwifery and Diseases of Women at Anderson's College, produced a paper asking whether improvement was needed in clinical midwifery instruction. His thoughts on this topic were obvious for all to see when he stated that 'no one, even after the most superficial enquiry, will, I am afraid, be able conscientiously to deny that there is room for improvement'.²⁴⁹ He criticized the lack of any definitive statement within the university curriculum on the clinical instruction of midwifery or the direct supervision of students when they attended cases. He referred back to the inadequacy of his own education at the University of Glasgow, by stating that of the eight cases he attended (only six were required) only the first three were supervised and the first was over before he arrived. During the other two the house surgeon informed him that there was no need to bother about the position of the child.²⁵⁰ This example demonstrates the inconsistent and problematic nature of the practical instruction received by students during this period.

2.9 Other institutions

The nineteenth century witnessed the foundation and consolidation of specialist lying-in hospitals in Glasgow. These were not, however, the only institutions that provided medical attendance during childbirth. As has already been mentioned, the Western Infirmary became a provider of this type of service. It will also be shown in the chapters that follow that a very small number of deliveries also took place at other general and private hospitals, such as the Glasgow Royal Infirmary and the Glasgow Training Home for Nurses, during this period. In

²⁴⁹ Edgar, 'Room for improvement', p.174.

²⁵⁰ Edgar, 'Room for improvement' , p.179.

addition a sizable number of deliveries occurred within the city's Poor Law institutions during the second half of the century. The 1845 Poor Law (Scotland) Amendment Act laid out a statutory obligation to provide medical help to the sick poor.²⁵¹ As part of this role, lying-in provision was made available within the hospitals of the poor houses located in the parishes of Glasgow. Three hospitals existed of this type in the city providing for the four parochial boards; Glasgow City, Barony, Govan, and Gorbals.

In 1874 the directors of the Glasgow Maternity Hospital claimed that the number of women admitted had dropped as a result of lying-in wards being opened within poorhouse hospitals.²⁵² While women may have given birth within the poorhouses before this, the establishment of beds allocated for this purpose was a change considered worthy of noting by the Glasgow Maternity Hospital. Records of the births within these institutions are sparse. Our knowledge of the extent to which women used this provision is based upon a couple of surviving annual reports and the observations of commentators of the period. No references to deliveries in the Barnhill Hospital, which serviced Barony, have been found, and it may not have provided this service. The Govan (Merryflats) Poorhouse Hospital provided for both Govan and Gorbals. This institution set aside ten beds specifically for lying-in within its general hospital. Between 1896 and 1900 an average of thirty-three women gave birth within this hospital each year.²⁵³ The Glasgow City Poorhouse was reported in 1888 as having dealt with between eighty and a hundred births annually.²⁵⁴ The number was alleged to have been much higher than this before the Glasgow Maternity Hospital relocated close-by, when women then chose to go the lying-in institution instead.²⁵⁵ The reason for this choice is not given but we can speculate that the

²⁵¹ McLachlan, ed. *Improving the Common Weal*, pp.8-9.

²⁵² *The fortieth annual report of the Glasgow Maternity or Lying-in Hospital and Dispensary, North Portland Street*, p.7.

²⁵³ NHSGGCA, Records of Southern General Hospital, GB812 HB 17/4/1, 'Govan Combination Parochial Board: Statements Regarding Poorhouse, Hospital, & Asylum Accommodation at Parochial Buildings, Merryflats', 1877, p.7; and NHSGGCA, Records of Southern General Hospital, GB812 HB17/2/110, 'Maternity Register', 1896-1931.

²⁵⁴ James Christie, *The Medical Institutions of Glasgow: A Handbook, Prepared for the Annual Meeting of the British Medical Association Held in Glasgow, August 1888*, 2nd edn, (Glasgow: Maclehose, 1889), p.78.

²⁵⁵ A. R., 'The Town's Hospital or City Poorhouse', in *The Medical Institutions of Glasgow*, ed. by James Christie, (Glasgow: James Maclehose & Sons, 1888), p.77.

women perceived the specialist provision as better or were perhaps happier to enter a hospital that was not stigmatised to the same degree as the poorhouse.

2.10 Institutional-associated childbirth

Throughout the nineteenth century specialised institutional lying-in provision was available to destitute women in Glasgow. The number of women admitted to hospital for childbirth and lying-in grew steadily. In 1842, 347 women gave birth within the walls of the Glasgow University Lying-in Hospital and Glasgow Maternity Hospital and by the time the former had closed its lying-in wards, the latter was admitting a similar number of women. As the end of the century neared, the Glasgow Maternity Hospital admitted almost 500 women annually, and the poorhouse hospitals also dealt with over 100 births. The ability of managers of these institutions to increase the number of beds available for this purpose explains, in part, why this happened. The increase in the number of women seeking care can also be explained by the simultaneous growth in the population and the increase in the number of births that happened as a result. In 1856 15,243 births took place in Glasgow, by 1875 this number had climbed to 20,828, and in 1900 it had reached 24,362.²⁵⁶

Before 1855, baptism registers were often used to estimate the number of births that took place in Glasgow. Not all children born in Glasgow were baptised, and these figures are not an accurate record. The 6076 births that took place in Glasgow during 1848, and the 8735 recorded for 1854, were probably considerable underestimates of the number of actual births. Robert Cowan, Professor of Medical Jurisprudence and Forensic Medicine, noted that ‘the register of baptisms is very defective, as a great number of dissenters decline to register the baptism of their children, and many members of the Establishment omit to do so from carelessness’.²⁵⁷ In 1847, James Stark, an Edinburgh practitioner, claimed that the baptism registers in Scotland, including Glasgow, recorded less than a third of all births.²⁵⁸ Estimating the proportion of institutional births during this period is therefore problematic. After 1855 it

²⁵⁶ *Detailed Annual Report Of The Registrar-General Of Births, Deaths And Marriages In Scotland.*

²⁵⁷ Robert Cowan, *Vital Statistics of Glasgow, Illustrating the Sanatory Condition of the Population*, (Glasgow: s.n., 1840), p.6.

²⁵⁸ Cameron, 'The establishment of civil registration in Scotland', pp.380-381.

became a legal requirement for births in Scotland, as well as deaths and marriages, to be registered, and the figures we have for these years are likely to approximate better to the actuality.²⁵⁹ However, these numbers were still likely to be underestimated as it is a common supposition that births were often not recorded when a child died during a home delivery. In addition stillbirths did not have to be registered until 1939. It is estimated that between 5 and 7 per cent of all births were stillbirths.²⁶⁰

Taking into account the likely number of stillborn children not registered the average number of deliveries that took place within Glasgow's voluntary hospitals during the 1880s is estimated to be 1.5 per cent.²⁶¹ This figure grows to 1.9 per cent during the 1890s. The poorhouse hospitals appear to have accounted for a smaller proportion of births in Glasgow. This figure is difficult to estimate, as we do not have any records for the Barnhill Hospital. While hospital-based births clearly continued to be a small minority of all deliveries during this century, the number of outdoor deliveries associated with these institutions was greater. On average, during the 1880s approximately 7 per cent of Glasgow's births took place at home, but in the attendance of hospital staff or students. During the 1890s this had increased to approximately 9 per cent.

Comparing these figures with those provided by Loudon (see p.58), it seems that the Glasgow Maternity Hospital dealt with a greater proportion of deliveries than was the average for voluntary hospitals in England and Wales. Loudon did not differentiate between the highly populated urban areas, in which the majority of large lying-in hospitals and charities were based, and rural areas when calculating his figures. As was pointed out earlier the institutions located elsewhere in Britain also dealt with large volumes of deliveries. It is therefore likely that the estimates based in Glasgow closely reflect what happened within cities like London, Birmingham, Manchester, and Liverpool where large charitable bodies were active; whereas the number of hospital-associated births in the less populated parts of Britain were likely to be much smaller. The term

²⁵⁹ Centre for the History of Medicine, 'The Scottish way of birth and death', <<http://www.gla.ac.uk/departments/scottishwayofbirthanddeath/>>, [accessed 14 December 2008].

²⁶⁰ Fraser and Maver, 'The social problems of the city', p.360.

²⁶¹ These calculations were made using the figures provided by the hospitals for the number of deliveries they dealt with and the number of births recorded by the Registrar General. The latter were amended to include a still-birth rate of 7 per cent.

hospital-associated births refers to deliveries attended by staff and students employed by lying-in hospitals indoors and as part of the hospital's outdoor service. As hospital-associated births evidently remained a small proportion of the total births during this period it is necessary to consider why women ended up going against the norm.

2.11 Difficult births

Having outlined the institutional provision in Glasgow, it is now possible to consider what role this type of care had in dealing with what were perceived as difficult births. Without the testament of the women who gave birth it is difficult to be sure of their perceptions of hospital care. Thomas Ferguson has stated that to 'a certain extent the maternity hospitals were used for normal midwifery, but this was incidental to their proper function'.²⁶² However, it has also been argued that the medical functions of lying-in hospitals formed only a small part of their work. Historians have used hospital records to show that lying-in hospitals performed a primarily social function.²⁶³ It is thought that the majority of women who entered the lying-in hospitals of the nineteenth century did so because of the benefits they received in terms of free food, accommodation, and support. As further proof of this, the early annual reports of the Glasgow University Lying-in Hospital and the Glasgow Lying-in Hospital and Dispensary placed emphasis upon the extreme poverty of the women who were admitted. In 1860 the latter hospital's directors reaffirmed this when writing of the types of women that had sought help in the previous year.

As in former years, the patients who received shelter and maintenance during their confinement were of the most destitute

²⁶² Thomas Ferguson, *Scottish Social Welfare: 1864-1914*, (Edinburgh: E. & S. Livingstone, 1958), p.513.

²⁶³ Nuttall, 'Passive trust or active application: Changes in the management of difficult childbirth and the Edinburgh Royal Maternity Hospital, 1850-1890', pp.351-372; Alison Nuttall, 'Because of poverty brought into hospital.' A casenote-based analysis of the changing role of the Edinburgh Royal Maternity Hospital, 1850-1912', *Social History of Medicine*, 20 (2007), pp.263-280; This was also the case during the eighteenth century, see Versluysen, 'Midwives, medical men and "poor women labouring of child"', p.21.

class, several having been actually brought in by the police from the street in a state of labour.²⁶⁴

The constitutional objective of the hospital to provide a service for impoverished women remained throughout the century. The directors wrote of the women admitted in 1868 that:

Many of them belong to the most destitute class of the community, and, as may readily be conceived, the temporary respite from the discomforts of their own houses during this critical period is regarded as a blessing for which they cannot be too grateful.²⁶⁵

The use of the term lying-in within the title of these hospitals indicated that it was the provision of bed rest rather than medical care that was their primary purpose. Although women with obstetric difficulties did enter these hospitals, these were a minority of cases and were not stressed as the reason for these institutions' existence. Of 8587 deliveries supervised between 1843 and 1852 by the Glasgow University Lying-in Hospital, 97 involved instrumental delivery. In addition a larger proportion, although still less than 10 per cent, ended prematurely (467 cases) and/or the child was still-born (502 cases).²⁶⁶ In 1848 at the Glasgow Lying-in Hospital, 239 women were delivered indoors and intervention was carried out twice (turning once and forceps once); outdoors 540 women were delivered and intervention was used thirteen times (turning on six occasions and forceps used seven times).²⁶⁷ The extent to which medical practitioners had been able to decide who used the hospital's facilities has not been deduced. Women were admitted on other grounds than for medical purposes as the previous comment about police bringing women to the hospital demonstrates. In addition, the subscribers were entitled to recommend one

²⁶⁴ *The twenty-fifth annual report of the Glasgow Lying-in Hospital and Dispensary, North Portland Street*, (Glasgow: William MacKenzie, 1860), p.6.

²⁶⁵ *The thirty-fourth annual report of the Glasgow Maternity or Lying-in Hospital and Dispensary, North Portland Street*, (Glasgow: James Lumsden & Son, 1869), p.5.

²⁶⁶ Pagan, 'Contributions to midwifery statistics and practice', pp.207-216.

²⁶⁷ NHSGGCA, Records of Glasgow Royal Maternity Hospital, GB 812 HB45/1/1, 'Glasgow Lying-in Hospital: Directors Meetings', 1834-1856, p.58.

patient for admission into the Hospital each year. Hence their opinions influenced the type of women entering the hospital also.²⁶⁸

What of the patients attended outdoors by the hospital? Both Nuttall and Loudon have demonstrated that women delivered in lying-in hospitals and those delivered at home by maternity charities were very similar in terms of their clinical need.²⁶⁹ Loudon has also argued that this was also true of their social background. However, Nuttall has been able to show for the Edinburgh Royal Maternity Hospital that while both sets of patients were impoverished, the social circumstances of the two were different. The records of the Glasgow Maternity Hospital also show this to be true. For example, James Wilson, the senior medical superintendent, attempted to explain the reason why four maternal deaths occurred in the hospital between 1851 and 1852 when there were no fatalities of those delivered by the outdoor service. He suggested that this was a result of the character of the patients received in the hospital. He claimed that:

[T]hese individuals are a more destitute and wretched class than the others [women delivered at home], the greater proportion of them being without homes of any description. Often diseased from exposure, irregular living, starvation, and harsh treatment from their husbands, who have deserted them, they are ill prepared to pass through child bed confinement favourably.²⁷⁰

That Wilson made this claim around the time that the University's Professor of Midwifery, Pagan, had questioned the existence of indoor lying-in facilities is not likely to be coincidental. The subscribers would have most probably expected some explanation as to why the hospital should retain its indoor service when other lying-in hospitals were closing theirs.

The costs of the hospital were met mainly by the donations of subscribers and contributors. The annual reports were used as a method of justifying the

²⁶⁸ 'The twenty-seventh annual report of the Glasgow Lying-In Hospital', *Glasgow Medical Journal*, 10 (1863), p.7.

²⁶⁹ Loudon, 'Deaths in childbed from the eighteenth century to 1935', p.21.

²⁷⁰ James Wilson, 'Report of the Glasgow Lying-In Hospital and Dispensary, for the year 1851-52, with an address to the students attending the hospital', *Glasgow Medical Journal*, 1 (1854), pp.2-3.

hospital's work to appease current, and potential, benefactors. Aspects of the hospital work were described for this reason, and as a result we have further evidence of the difference between the indoor and outdoor patient population. One element that was mentioned several times was the birth of illegitimate children within the hospital. When the Glasgow Lying-in Hospital and Dispensary was established, the rules and regulations recorded in the directors' meeting minute book, during the hospital's first year, stipulated that:

This institution may not in any degree lead to the encouragement of improvidence, none shall be admitted but those who are married and are really destitute, being unable to pay for medical attendance.²⁷¹

As well as confirming the hospital's intention to provide help to the impoverished members of Glasgow's respectable poor, it was also stated that the children born would have married parents. It was not unusual for unmarried women to be excluded from lying-in hospitals, as to admit them would have intimated that immoral acts such as giving birth outside of wedlock were accepted by the institution.²⁷² Potential benefactors would not have considered this favourably. The Edinburgh Royal Maternity Hospital was atypical by not having any bar against admitting unmarried women.²⁷³ It has been argued by Marks, that it was in the 1880s that voluntary hospitals began to help unmarried women in their first confinements and in exceptional circumstances also.²⁷⁴ Evidence suggests, however, that while the official line was to prevent unmarried women giving birth under the auspices of these charitable institutions, it happened anyway. The Glasgow Lying-in Hospital's minutes reveal that in its first year a few unmarried women were admitted. This defiance of the rules was defended on the basis that it would have been inhumane to turn the women away.²⁷⁵

After the middle of the nineteenth century the majority of the indoor patient population of the Glasgow Maternity Hospital was made up of unmarried women.

²⁷¹ Records of Glasgow Royal Maternity Hospital, Glasgow, Scotland, GB812/HB45/1/1, 'Director's meeting minute book, 1834-1856', 1856, p.10.

²⁷² F. B. Smith, *The People's Health 1830-1910*, (London: Weidenfeld and Nicolson, 1990), p.35.

²⁷³ Nuttall, 'Because of poverty brought into hospital', p.265.

²⁷⁴ Marks, *Model Mothers*, p.137.

²⁷⁵ GB812/HB45/1/1, 'Director's meeting minute book, 1834-1856', pp.39-40.

Of the women who gave birth in the hospital between December 1868 and September 1869, 21.3 per cent were married, 10.1 per cent were widowed, and 68.6 per cent were recorded as single.²⁷⁶ In sharp contrast for the same period, of the 610 women delivered outdoors, 85.4 per cent were married, 2.1 per cent were widowed, and 12.5 per cent were reported as single. The Edinburgh Royal Maternity Hospital had a similar difference between the two patient populations. Nuttall has been able to show that the married women who gave birth inside the hospital in Edinburgh did so instead of at home because of 'broken relationships, family mobility, ill-health and poverty'.²⁷⁷ At the very end of the nineteenth century the proportion of married women entering the Edinburgh hospital increased. The records of the Glasgow Maternity Hospital provide evidence that this was true for this hospital also.

While married women continued to make up the vast majority of patients attended outdoors, the patient population indoors changed during the final decades of the nineteenth century. An increasing proportion of married women entered the Glasgow Maternity Hospital. Between 1868 and 1878 27.36 per cent of the patients were married. This proportion increased slightly between 1879 and 1888 when 28.65 per cent of the women were married, and the proportion increased further to 36.16 per cent of the patients between 1889 and 1898. By the end of the century the situation was very different as implied in 1901 by Robert Jardine, an obstetric physician at the hospital, when he stated that 'to the medical officers the presence or absence of a marriage ring should be immaterial. Married or unmarried, the woman requires attention'.²⁷⁸ Nuttall has argued that this change, as well as a change in age distribution, indicated a shift at the Edinburgh Royal Maternity Hospital from that of having a 'social purpose to a medical function'.²⁷⁹

An examination of the number of cases that involved some form of obstetric intervention at the Glasgow Maternity Hospital points to this being true for this institution also (see Table 2.3). Between 1869 and 1878, both indoors and

²⁷⁶ 'Glasgow Maternity Hospital quarterly report', *Glasgow Medical Journal*, 1 (1869), pp.427-428; 'Glasgow Maternity Hospital quarterly report', (1869), p.563; and 'Glasgow Maternity Hospital quarterly report', *Glasgow Medical Journal*, 2 (1870), p.139.

²⁷⁷ Nuttall, 'Because of poverty brought into hospital', p.271.

²⁷⁸ Jardine, 'The Glasgow maternity hospitals: Past and present', p.33.

²⁷⁹ Nuttall, 'Because of poverty brought into hospital', p.277.

outdoors, just over 3 per cent of cases involved medical intervention. It was the duty of the hospital's matron to attend to what were termed 'ordinary' deliveries that made up the majority of cases.²⁸⁰ This also supports the contention that clinically the indoor and outdoor patient populations were similar up to this point. In the years that followed, it is apparent that while there is an overall trend of increasing intervention the use of these procedures became different for the indoor and outdoor patient populations.

Table 2.3: Number of operative procedures used to effect delivery at the Glasgow Maternity Hospital's indoor and outdoor service between 1869 and 1898. The percentage total is given for each procedure in relation to the appropriate indoor and outdoor total number of cases.²⁸¹

	1869-1878		1879-1888		1889-1898	
Procedure	Indoor (%)	Outdoor (%)	Indoor (%)	Outdoor (%)	Indoor (%)	Outdoor (%)
Forceps	68 (2.30)	188 (2.22)	307 (10.60)	518 (4.18)	650 (15.04)	759 (3.77)
Version	21 (0.71)	64 (0.75)	39 (1.35)	116 (0.94)	154 (3.56)	129 (0.64)
Induction	2 (0.07)	0 (0.00)	10 (0.35)	0 (0.00)	90 (2.08)	3 (0.01)
Craniotomy	2 (0.07)	4 (0.05)	38 (1.31)	20 (0.17)	112 (2.59)	16 (0.08)
Caesarean section	0 (0.00)	0 (0.00)	3 (0.10)	0 (0.00)	56 (1.30)	0 (0.00)

An examination of the hospital's statistics suggest that not only were the procedures performed more frequently towards the end of the nineteenth century, but that they were also increasingly performed in the hospital rather than outside. The 1880s saw an increase in their use both indoors and outdoors, although they were now used more frequently within the hospital when compared with the outdoor service. Significantly, the number of procedures being performed indoors had increased at a faster rate than those used outdoors. The last decade of the century saw this difference between indoor and

²⁸⁰ *The fortieth annual report of the Glasgow Maternity or Lying-in Hospital and Dispensary, North Portland Street*, p.13.

²⁸¹ Original figures used to produce this table taken from Robert Jardine, 'Statistics of thirty years' work (1869 to 1898 inclusive) in the outdoor and indoor departments of the Glasgow Maternity Hospital', in *Glasgow Hospital Reports*, ed. by George S. Middleton, Henry Rutherford and Walter K. Hunter, vol. 3 (Glasgow: James Maclehose and Sons, 1901), pp.29-56.

outdoor practice amplified, as the proportion of indoor procedures increased while simultaneously the proportion used outdoors decreased for the first time.

The increasing use of intervention overall by the hospital can be explained, in part, by a change in the perception of practitioners towards the need for such action. The increase in the application of forceps is particularly striking. Nuttall has argued effectively that after 1870 the increase in measures of intervention used by practitioners at the Edinburgh Royal Maternity Hospital can be ascribed to a change in the perception of medical practitioners towards interventionist theories.²⁸² Robert Jardine stated that:

It goes without saying that the forceps is applied very much more frequently than formerly, and with the happiest results. No woman is now allowed to linger on in agony until she is exhausted.²⁸³

This remark portrays a change from non-intervention to practitioners being willing to act earlier and not allowing time for nature to take its course. This does not explain why the number of procedures performed outdoors fell proportionally during the last decade, while they increased indoors.

Several explanations exist for what appears to be a move towards difficult deliveries taking place within the hospital as opposed to outside. It becomes clear that the directors and practitioners of the Glasgow Maternity Hospital at the end of the century did not have the same opinion as Pagan had in the middle of the nineteenth century regarding the safety of hospital births. It was now asserted, that the hospital was in fact the best place for difficult deliveries to take place. In 1887 the annual report stated that '[i]n difficult and operative cases it would be impossible for poor women to obtain the necessary medical skill and attention elsewhere than in the hospital.'²⁸⁴ This was reasserted in the 1891 annual report that stated that '[i]t stands to reason that such cases have an infinitely better chance of recovery in the Hospital than if they were treated in

²⁸² Nuttall, 'Passive trust or active application: Changes in the management of difficult childbirth and the Edinburgh Royal Maternity Hospital, 1850-1890', pp.351-372.

²⁸³ Jardine, 'Statistics of thirty years' work', p.52.

²⁸⁴ *The fifty-second annual report of the Glasgow Maternity Hospital and Dispensary, North Portland Street*, (Glasgow: James Lumsden, Son & Co, 1887), p.5.

the patients' own homes.'²⁸⁵ These remarks, very much in favour of hospital-based birth, came about during a period when the maternal death rate in hospitals fell as antiseptic methods were introduced.²⁸⁶ It had been argued previously that hospital-based childbirth was more dangerous than home births, but this was no longer considered to be the case.

The apparent move to indoor intervention cannot be explained solely by a change in opinion of the staff of the hospital. It would require an active campaign on behalf of the hospital to ensure that difficult labours were sent to them rather than dealt with elsewhere. It would also require a change in the attitude of those outside of the institution with regards to what was considered the proper course of action in these circumstances. Perhaps the simplest way in which the hospital could ensure that difficult labours took place indoors than out was to make sure that their own staff, students, and nurses were aware of this belief. In 1885, the Glasgow Maternity Hospital employed an outdoor assistant (known later as an outdoor house surgeon) who was to attend the first three cases that students were sent to.²⁸⁷ They were also to visit all outdoor cases 'to see that the case has proper attention' and attend when a student or nurse sent an emergency card.²⁸⁸ Whilst this position was introduced to ensure that students were learning and practising as prescribed, it also had another effect. It was revealed by the hospital's directors after the post had existed for a year that 'since the appointment of an outdoor assistant serious and necessitous cases are more likely to be brought into the hospital for treatment'.²⁸⁹

It was also documented that as well as a change in the opinion of the hospital's medical staff, there had also been a change of the perception of the women who were now expected to go into the hospital. Jardine referred to the increase in married women attending the hospital. He explained that previously women objected to enter into the hospital because of its bad reputation but '[h]apply

²⁸⁵ *The fifty-sixth annual report of the Glasgow Maternity Hospital and Dispensary, North Portland Street*, (Glasgow: James Lumsden, Son and Co, 1891), p.7.

²⁸⁶ Donnison, *Midwives and Medical Men*, p.138.

²⁸⁷ *The fifty-first annual report of the Glasgow Maternity Hospital and Dispensary, North Portland Street*, (Glasgow: James Lumsden, Son & Co, 1886), p.10.

²⁸⁸ James Stevenson, 'Notes and observations on cases of midwifery' (MD, Glasgow University, 1891), p.2.

²⁸⁹ *The fifty-first annual report of the Glasgow Maternity Hospital and Dispensary, North Portland Street*, pp.10-11.

that is now becoming a thing of the past'.²⁹⁰ As a result he argued that women were more likely to be transferred into the hospital when procedures such as craniotomy were deemed necessary. The hospital's obstetric physicians Samuel Sloan and William Loudon Reid first noted this change in 1886.

The indoor work during the year has been more than usually anxious. This has, we believe, arisen in great part from an increased readiness on the part of the women to enter the hospital when increased care and more than the usual skill are required.²⁹¹

Their words point to a change in women's attitudes to the hospital when childbirth was believed to be problematic. Perhaps the most convincing evidence of this was a claim that the hospital's directors made in 1900. They informed the readers of the annual report that the hospital was now being 'taken advantage of even more than ever by wives of the working classes in difficult cases, many of whom put donations into the subscription box as a mark of gratitude'.²⁹² This is not to be confused with the twentieth-century change when working-class women entered the hospital for childbirth generally, although a woman paying to enter a voluntary hospital was perhaps the foundation of this movement.

The apparent change in women's perception of the hospital as a place for dealing with problematic childbirth, was preceded by a change in the perception of medical practitioners of the hospital and seemingly also of private practitioners. The annual report for 1881 stated that:

From our increase being chiefly that of cases of unusual severity and danger, it is evident that the hospital is being appreciated not only by the class of women for whom it is designed, but also by the profession. These cases, sent in to us by medical men, have greatly

²⁹⁰ Jardine, 'Statistics of thirty years' work', p.40.

²⁹¹ *The fifty-first annual report of the Glasgow Maternity Hospital and Dispensary, North Portland Street*, p.10.

²⁹² *The sixty-fifth annual report of the Glasgow Maternity Hospital and Dispensary, North Portland Street*, (Glasgow: James Lumsden, Son & Co, 1900), p.5.

increased our anxiety, and have demanded the exercise of all our skill and care.²⁹³

This was evidently a gradual change, as eight years later it was noted within the annual report that there had been an 'increasing number of severe cases sent into the wards by private practitioners'.²⁹⁴

It is possible that some women and their medical attendants from out with the hospital considered the hospital as an appropriate location for problematic births, because of a growing perception that these institutions were safer.²⁹⁵ However, this change in perception was not absolute at this point. The hospital continued to struggle for funds from subscribers to accommodate the more difficult births it dealt with. In addition, the lying-in wards within the poorhouse hospitals and the hospital's own outdoor service also continued to deal with the occasional difficult birth. The register for this period for the Govan Poorhouse Hospital reveals that forceps were used on ten occasions and craniotomy once.²⁹⁶

The movement of difficult births into the Glasgow Maternity Hospital was evidently a gradual shift, which, if the Edinburgh Royal Maternity Hospital is also taken as an example, occurred within the rest of Scotland, if not Britain. One aspect of the Glasgow hospital that would have ensured that this change occurred and possibly at a faster rate than elsewhere was the expansion of the outdoor service it provided. The hospital had effectively increased the network of its overall practice and as a consequence, it is suggested that, this increased the number of difficult cases that were encountered by its own staff. By expanding its outdoor service the Glasgow Maternity Hospital had effectively ensured that more abnormal cases came under its remit. Even if private practitioners did not see the benefit of sending their patients to the hospital, the institution itself had made sure that its own attendants did exactly that.

²⁹³ *The forty-seventh annual report of the Glasgow Maternity or Lying-in Hospital and Dispensary, North Portland Street*, (Glasgow: James Lumsden Son & Co, 1882), p.10.

²⁹⁴ *The fifty-fifth annual report of the Glasgow Maternity Hospital and Dispensary, North Portland Street*, (Glasgow: James Lumsden, Sonn & Co, 1890), p.9.

²⁹⁵ Loudon, 'Deaths in childbed from the eighteenth century to 1935', p.21.

²⁹⁶ Maternity care and Poor Law provision during the nineteenth century in Britain is documented in Lara Marks, 'Medical care for pauper mothers and their infants: Poor Law provision and local demand in East London, 1870-1929', *The Economic History Review*, 46 (1993), pp.518-542.

Loudon's assertion that the number of cases of contracted pelvis at the hospital demonstrates that Glasgow was exceptional is therefore questionable. It may well have been the Glasgow Maternity Hospital itself that was exceptional. At the beginning of the twentieth century an anonymous reviewer highlighted a significant difference between the Glasgow hospital and those based in London. Referring to the large number of unmarried women admitted to the Glasgow Maternity Hospital, he wrote:

This is a lesson to London, where a strong prejudice still exists among hospital committees on this point, so that most of these women go into the poor-law infirmaries. Doubtless this is one of the reasons why there is such a wealth of obstetric material collected in Glasgow under one charity.²⁹⁷

2.12 Conclusion

Anecdotal evidence suggests that the prevalence of rickets increased in Glasgow during the second half of the nineteenth century. However, this condition was perhaps not as prevalent as has previously been thought. Nevertheless, the nature of the lying-in hospital arrangements, with referrals of patients by the outdoor staff, may have tended to highlight this problem. It may also have led to a greater concentration of rachitic patients within the maternity hospital towards the end of the nineteenth century.

The chapters that follow examine the comments that Glasgow medical practitioners made with regards to the prevalence of rickets and more particularly the frequency with which they encountered it within their obstetric practice. This will add to our understanding of the extent to which this condition afflicted the residents of Glasgow and whether this changed over time. It has been shown here that women experiencing childbirth that was perceived to be difficult were increasingly admitted into Glasgow's lying-in hospital during the last decades of the century. An examination of the practices used when disproportion was encountered will enable this change to be evaluated at the level of individual cases. Being able to do this for both domestic and hospital-

²⁹⁷ [Anon.], 'Reviews of recent books: Clinical Obstetrics by Robert Jardine', *Journal of Obstetrics and Gynaecology of the British Empire*, 9 (1906), p.238.

associated births will provide an opportunity to understand what factors influenced the decision of a woman going into the hospital for treatment rather than being dealt with outside. Hospitals have been described as a place where medical practitioners had authority and were thus able to take control of decision-making in their relationship with their patients. The move from home births to hospital births would have been subject to a woman and her family rescinding the authority they held within their own home. By examining these encounters we can consider whether this change was problematic, and how much authority women actually had within their homes when a medical practitioner was called to attend a difficult birth.

Chapter 3 – 1840-1870

This chapter examines evidence concerning the prevalence, diagnosis, and treatment of disproportion in childbirth between 1840 and 1870 in Glasgow. It is argued that severe cases of disproportion that warranted operative intervention were rare. The majority of medical practitioners encountered this problem infrequently when engaged to attend a woman in labour. Practitioners with considerable obstetric experience, often holding midwifery teaching positions, dealt with a greater proportion of these cases through referrals. Even so, only a minority of the total cases they attended overall, and a small proportion of the difficult cases they were called to, involved disproportion. Practitioners faced a difficult task when it came to the diagnosis and treatment of this condition. Unless a woman had experienced disproportion in a previous confinement, practitioners were not confident that they could predict the severity of this condition. Hence labour was often trialled before disproportion was diagnosed. When it was determined that the fetal head was not able to pass through the pelvic canal, it was then a matter of deciding on the best course of action. A choice of procedures was available to complete delivery, each with potential risks for both mother and child. In this examination of obstetric practice the complicated nature of medical decision-making, and the factors that influenced the choices made by practitioners are considered. Social, medical, and scientific factors played a role in the decisions that were made.

3.1 The prevalence of disproportion

Nineteenth-century obstetric practitioners identified many complications associated with childbirth. The exposition in obstetric case notes, textbooks, and journal articles tended to concentrate on problematic events. In British publications conditions such as eclampsia, haemorrhage, puerperal fever, and disproportion were often described and frequently referred to. Having read this literature it would be reasonable to conclude that labour was an event likely to be difficult. Hiddinga and Blume have described disproportion as one of the main causes of difficulty occurring in delivery during the nineteenth century.²⁹⁸ Descriptions of contracted pelvis and the methods used in cases of disproportion

²⁹⁸ Hiddinga and Blume, 'Technology, science, and obstetric practice', p.159.

certainly stand out. The graphic nature of some of the procedures used, for example caesarean section and craniotomy, and the volume of text devoted to describing how to perform them, made them particularly prominent. As a consequence, it was implied that medical practitioners attending childbirth often encountered cases where the fetal head was unable to pass through the pelvic canal because of abnormalities of the maternal pelvis.

The only obstetric textbook to be written by a Glasgow practitioner between 1840 and 1870 certainly gives the impression, on first examination, that disproportion was frequently met with. John Burns became the first Regius Professor of Surgery at the University of Glasgow in 1815. He held this post until his death in 1850. Prior to this appointment he published several articles in which he described himself as a lecturer of midwifery.²⁹⁹ In 1809 he published a textbook entitled *The Principles of Midwifery*, clearly demonstrating his interest in the subject. He continued to amend this book throughout his career, and it was published for the tenth and final time in 1843.³⁰⁰ Six of the final edition's first seven chapters focussed on the structure of the fetal head and structure and deformities of the maternal bony pelvis. Disproportion, between a contracted pelvis and fetal head, was mentioned several times. Later chapters included a section on rickets, and concentrated on the procedures used to diagnose and treat the condition. On the very first page of Burns's textbook he stated that:

One of the first, and not the least important, of the parts concerned in parturition, is the pelvis, which must be examined, not only on its account of its connexion [sic] with the uterus and vagina, but also of its own immediate relation to the delivery of the child, and the obstacles which, in many instances, it opposes to its passage.³⁰¹

²⁹⁹ John Burns, 'Observations on the formation and structure of the human ovum', *The Edinburgh Medical and Surgical Journal*, 2 (1806), pp.1-4; and John Burns, 'Observations on the cow-pox', *The Edinburgh Medical and Surgical Journal*, 3 (1807), pp.157-159.

³⁰⁰ John Burns, *The Principles of Midwifery; Including the Diseases of Women and Children*, 10th edn, (London: Longman, Brown, Green, and Longmans, 1843).

³⁰¹ Burns, *The Principles of Midwifery*, p.1.

Upon reading this textbook, it is easy to be convinced that deformities of the bony pelvis were likely to be implicated in complications that occurred during childbirth.

Irvine Loudon has argued that, relative to the incidence of this condition, cases of childbirth involving contracted pelvis were afforded a disproportionate amount of attention in British medical publications during the nineteenth century.³⁰² This begs the question as to what was a true reflection of the frequency with which medical practitioners encountered disproportion. Loudon's findings were discussed in Chapter 2. He concluded that less than 0.5 per cent of deliveries involved a grossly contracted pelvis, and that this figure is likely to have been an over exaggeration.³⁰³ The relative rarity of such cases, as described by Loudon, is not apparently reflected within the obstetric textbooks of the period. The focus on this condition by the authors of these texts requires an explanation.

The disparity between Loudon's observations and the content of medical literature can be explained by the motives of authors of these works. Medical practitioners published in order to disseminate information about their practices and knowledge. Textbooks were written and designed to teach students, and inform fellow practitioners, about the cases they might encounter. The actions required during an uncomplicated labour, requiring no intervention, took little time to describe. Even though 'normal' everyday cases made up the majority of a practitioner's work, it was mostly their unusual experiences that were discussed. Page upon page was given to descriptions of the variety of procedures available for problematic deliveries. It was often not possible to gauge what proportion these difficult cases made up of a practitioner's workload. In Burns's book, for example, no figures were provided of the types of cases he encountered. The focus on difficult cases was not only a feature of medical textbooks. Medical journals also encouraged this bias towards unusual cases. For example, it was claimed by the editors of the *Association Medical Journal* that the *GMJ* 'intended to be a medium for recording the many rare and interesting

³⁰² Loudon, *Death in Childbirth*, p.130.

³⁰³ Loudon, *Death in Childbirth*, p.141.

cases of disease'.³⁰⁴ Selling a journal or textbook that only contained descriptions of cases that did not involve any intervention would, of course, have been difficult.

It would also be wrong to assume that practitioners published solely for the altruistic motive of imparting knowledge and improving practice. There would have been career benefits from writing-up unusual cases. Professional reputations profited from producing publications that publicised a practitioner having reached a certain level of ability and experience.³⁰⁵ When seeking to expand his practice or apply for a medical position, it would have been to a practitioner's advantage to make others aware of his work. It was certainly in practitioners' interest to advertise, through publication, when they encountered a difficult and unusual case. Indeed, it can be argued that the existence of literature that discussed the diagnosis and treatment of cases of disproportion did not reflect the frequency with which medical practitioners faced the condition, but may in fact do the exact opposite and be a sign of the condition's atypicality. It is in this context that we should consider the contents of this medical literature.

The writing on contracted pelves and disproportion within obstetric texts was part of this overall focus on difficult cases. This condition appeared to be given more attention, partly, because it required several pages to describe various methods available for dealing with it. A further possible explanation for the focus on disproportion rests in the individual background of authors of this work. For example, Burns had established himself as a teacher of anatomy and surgery, as well as midwifery.³⁰⁶ He purportedly founded the College Street Medical School in 1797 where he taught these subjects. He was also a surgeon at the Glasgow Royal Infirmary, and was appointed in 1799 to teach anatomy and

³⁰⁴ [Anon.], 'New medical journals not always signs of sectarianism', *Association Medical Journal*, (1853), p.288.

³⁰⁵ Medical journal writing has not received a great deal of historical attention. See W. F. Bynum, Stephen Lock and Roy Porter, eds, *Medical Journals and Medical Knowledge: Historical Essays* (London: Routledge, 1992) and P. W. J. Bartrip, *Mirror of Medicine: A History of the British Medical Journal*, (Oxford: Oxford University Press, 1990).

³⁰⁶ For John Burns' biographical details see [Anon.], 'Memoir of Dr. Burns, F.R.S., Regius Professor of Surgery in the University of Glasgow', *The Medical Times*, 1 (1850), pp.148-150; Cameron, 'From Ritual to Regulation?' pp.183-186; Alexander Duncan, *Memorials of the Faculty of Physicians and Surgeons of Glasgow*, (Glasgow: Maclehose and Sons, 1896), pp.265-266; Campbell F. Lloyd, 'Burns, John (1774-1850)', *Oxford Dictionary of National Biography*, Oxford University Press, [<http://www.oxforddnb.com/view/article/4092>, accessed 22nd January 2007].

surgery at the Anderson's Institution. His decision to teach only midwifery during the early years of the nineteenth century appears to have been imposed upon him. According to an anonymous memoir in *The Medical Times*, Burns handed his anatomy teaching to his brother, Allan, after the local magistrates quashed a grave-robbing case against him, on condition that he stopped lecturing in anatomy.³⁰⁷ With his extensive experience of anatomical dissection and surgery it is, therefore, not surprising that his textbook began with detailed anatomical descriptions of the pelvis and its deformities, nor that he was content to describe in detail the operative procedures available.

It is difficult, if not impossible, to build a definitive picture of the prevalence of disproportion in Glasgow during this period. Comprehensive statistics on this condition do not appear to exist. As explained in Chapter 2, we also lack an authoritative quantitative depiction of the prevalence of rickets, the factor described as the most likely cause of disproportion, during this century. In any case, the severity of the 'classic' narrowing of the anteroposterior diameter of the pelvis, associated with rickets, was not consistent across all sufferers. Thus the capacity of the pelvic canal was reduced by varying degrees in size and shape. Disproportion was a very real and discernible condition but, being dependent on a number of factors, the extent to which it affected childbirth varied. A labour involving slight disproportion could be concluded without any intervention, whereas it would have been physically impossible for the fetal head to progress in very extreme cases. Although it is not possible to determine for all births how many were affected by disproportion, using the evidence available to us, we can construct some form of understanding of the relative frequency with which more severe forms of the condition were encountered.

Some medical practitioners produced detailed accounts of their obstetric practice. These demonstrate that confinements were attended by practitioners from a variety of backgrounds, and with differing levels of obstetric experience. It should be noted that not all births occurred in the presence of a medical practitioner. Women were able to engage a midwife, or local women

³⁰⁷ [Anon.], 'Memoir of Dr. Burns', p.149. For an excellent account of the difficulties faced by medicine in obtaining bodies for teaching see Ruth Richardson, *Death, Dissection and the Destitute*, (London: Routledge & Kegan Paul, 1987).

experienced in helping with childbirth, to help during their labour.³⁰⁸ The Obstetrical Society of London reported that midwives attended 75 per cent of deliveries in Glasgow in 1870.³⁰⁹ Many women gave birth without the attention of the professional assistance of either a midwife or medical practitioner.³¹⁰ As late as 1908, it was reported by the Medical Officer of Health that medical practitioners did not attend 55 per cent of births in Glasgow.³¹¹ This differed significantly between areas. For example, in affluent Kelvinside 92.1 per cent of births were attended medically, whereas in poorer Broomielaw only 20.3 per cent were medically attended.³¹² This reflected the fact that a woman's ability to pay was a considerable factor in the attendance of either a practitioner or midwife.³¹³ This thesis is concerned with the practice associated with intervention during difficult labours. Although poverty stricken women, the most likely sufferers of contracted pelves, would have been unlikely to have enlisted the service of a medical practitioner at first, once a complication in labour was apparent a doctor would then have been consulted.

Obstetric cases were an important part of ordinary medical practice from the mid- to late nineteenth century.³¹⁴ Indeed, Anne Digby has described childbirth as 'the key to Victorian general practice'.³¹⁵ Attending a woman during her confinement provided a practitioner with the opportunity of being favoured in the future, when a woman and her family wanted medical advice. The profession considered obstetric cases to be poorly paid because of the length of time that was required of a practitioner. Even if a doctor did not remain in attendance for an entire labour, he would have to return to check on his patient for however long it continued. However, the indirect advantage that these cases brought for overall practice meant that childbirth became integral to the

³⁰⁸ *Report from the Select Committee on Protection of Infant Life; Together with the Proceedings of the Committee, Minutes of Evidence, Appendix and Index*, HMSO, 1871, p.207.

³⁰⁹ Loudon, *Death in Childbirth*, p.176.

³¹⁰ Loudon, 'Deaths in childbed from the eighteenth century to 1935', p.8.

³¹¹ Corporation, *Report of the Medical Officer of Health*, p.41.

³¹² Glasgow Corporation, *Report of the Medical Officer of Health of the City of Glasgow*, (Glasgow: Robert Anderson, 1909), p.xiii.

³¹³ For an examination of the socio-economic history of medical practice see, Anne Digby, *Making a Medical Living: Doctors and Patients in the English Market for Medicine, 1720-1911*, (Cambridge: Cambridge University Press, 1994).

³¹⁴ Loudon, *Medical Care*, p.99.

³¹⁵ Digby, *Making a Medical Living*, p.254.

success of many general practices. Digby argues that practitioners had different opinions about this work. Some encouraged it as part of a varied practice in order to benefit financially; some disliked it and did little of it; and others attended many cases for both professional gain and human satisfaction.³¹⁶ Some who attended a large number of confinements as part of their practice saw fit to summarise their entire experience.

The literature that, reportedly, depicted the entire obstetric experience of individual practitioners and lying-in hospitals, provides an opportunity to estimate how often disproportion was dealt with. One such account by John Thomson, a surgeon based in Kilmarnock, clearly demonstrates the small number of labours involving gross disproportion faced by practitioners in the West of Scotland who practised outside of Glasgow. He reported only one case of contracted pelvis amongst 3300 obstetric cases he had attended before 1856.³¹⁷ In 1865 he reviewed a further 1700 cases and listed only two additional instances of contracted pelvis amongst, what he described as, a fair presentation 'of the difficulties that may be expected in the ordinary course of obstetric practice'.³¹⁸ He also stated that he had used forceps in 104 cases, mostly because of problems with uterine contraction. The lack of cases of contracted pelvis described by Thomson is unsurprising given the location of his practice, in the town of Kilmarnock.³¹⁹ Within the West of Scotland the factors outlined, in Chapter 2, as intrinsic to the prevalence of rickets imposed particularly upon the residents of parts of Glasgow. It is likely that practitioners working outside of the highly populated, and polluted, areas of the city did not have to contend with severe cases of contracted pelvis very often.

There is evidence that practitioners on the outskirts of Glasgow were also confronted with few cases of disproportion. For example, in 1844, John Stewart, a practitioner based in Maryhill, gave details of 730 obstetric cases he had

³¹⁶ Anne Digby, *The Evolution of British General Practice 1850-1948*, (Oxford: Oxford University Press, 1999), p.202.

³¹⁷ John Thomson, 'Statistical report of three thousand three hundred cases of obstetricy', *Glasgow Medical Journal*, 3 (1856), pp.129-130.

³¹⁸ J. Thomson, 'Statistical report of five thousand cases of obstetricy', *Glasgow Medical Journal*, 12 (1865), pp.27-28.

³¹⁹ Kilmarnock was a town with a population in the region of 20,000 at this time. James A. Mackay, *Kilmarnock: A History of the Burgh of Kilmarnock and of Kilmarnock & Loudoun District*, (Darvel: Alloway Publishing, 1992), p.34.

attended in his neighbourhood.³²⁰ At this time it was an impoverished district on the outskirts of Glasgow, with a population approaching 3000. Maryhill became part of the Glasgow municipality in 1891.³²¹ Stewart did not specifically mention any cases of disproportion in his paper. He stated that ‘of the 712 natural presentations, 83 were of a lingering character’.³²² Of these, he wrote that the two most frequent causes he met with were irregular uterine contraction and ‘soft, flabby, and oedematous’ os uteri.³²³ He did state in one case that the ‘pelvis was well formed’, suggesting an awareness that the pelvis could be different from this. However, the summary of his cases implies that he did not encounter disproportion all that often.³²⁴ We can perhaps reason that this silence is indicative of a low frequency of these cases. Stewart used forceps in nine cases, craniotomy once, and turning once. He did not describe what led him to use these procedures, except for three instances in which forceps were used for uterine inertia. If we were to consider that he intervened on all other occasions because of disproportion, then up to 1.1 per cent of his total cases might have involved this condition. This figure is most likely an over estimation given his comment that other problems were most frequently met with.

Stewart’s claim, that other problems were more frequently encountered, appears to support Loudon’s contention that disproportion was relatively rare, even if medical texts at the time gave a different impression. Other practitioners based within the centre of Glasgow, who had considerable experience of attending obstetric cases, also compared the prevalence of contracted pelves to other complications of childbirth. James Wilson, a lecturer in midwifery at the Portland Street Medical School, was well placed to comment on obstetric practice in Glasgow. In an article entitled ‘Deficient or deranged uterine action the chief cause of the delays and difficulties experienced in parturition’ he wrote that:

I am aware that the opinion expressed in the above title is not the one generally entertained, but, on the contrary, that certain mechanical

³²⁰ John Stewart, ‘A contribution to the statistics of obstetrics, with notes of cases’, *The London and Edinburgh Monthly Journal of Medical Science*, 4 (1844), pp.273-278.

³²¹ Joe Fisher, *The Glasgow Encyclopedia*, (Edinburgh: Mainstream, 1994), p.231.

³²² Stewart, ‘A contribution to the statistics of obstetrics’, p.274.

³²³ Stewart, ‘A contribution to the statistics of obstetrics’, pp.277-278.

³²⁴ Stewart, ‘A contribution to the statistics of obstetrics’, p.275.

obstacles either in the form or dimensions of the pelvis, or some malposition, or undue bulk of the child's head, are usually considered the chief causes of protracted labours so often met with.

I am far from supposing that such causes do not exist; I know they do from having occasionally met with them: but the conviction on my mind is, that for one case of protracted labour where the pelvis or position of the head is in fault, there will be twenty occasioned by deficient or imperfect uterine action.³²⁵

The statements of Stewart and Wilson suggest that, although disproportion was a concern, other complications presented more frequently during childbirth in early- to mid-nineteenth century Glasgow.

In Chapter 2 it was suggested that, for much of the nineteenth century, women attended the lying-in hospitals in Glasgow for primarily social rather than medical reasons. This does not preclude the possibility that hospital staff were invited to attend difficult cases. In 1840, John MacMichan Pagan became Professor of Midwifery and the Diseases of Women and Children at the University of Glasgow. He had an excellent reputation within the field of obstetrics and was made an Honorary Fellow to the Obstetrical Society of London in 1864.³²⁶ His chair at the University also placed him in charge of the University's lying-in hospital. In 1854 he wrote of the cases attended by staff and students of this hospital, noting that:

[T]he proportion of instrumental and operative cases, in the following report, is not to be held as the ratio in which operative interference is called for, in the practice of midwifery, under ordinary circumstances. Many cases come under our treatment, merely because they are attended with difficulty and danger.³²⁷

³²⁵ James Wilson, 'Deficient or deranged uterine action the chief cause of the delays and difficulties experienced in parturition', *Glasgow Medical Journal*, 3 (1830), p.117.

³²⁶ [Anon.], 'Obituary - The late Dr. Pagan, Professor of Midwifery, Glasgow University', pp.129-131.

³²⁷ Pagan, 'Contributions to midwifery statistics and practice', p.208.

At the Glasgow University Lying-in Hospital for the period between November 1852 and January 1860, 2633 women were delivered, and 'contracted pelvis' was only mentioned in reference to two cases.³²⁸ In both this article and a previous one, in which Pagan provided details of the cases between 1840 and 1852, it is not entirely clear how many cases involved disproportion.³²⁹ We can however consider the number of instrumental labours that occurred during these periods. Between 1840 and 1852, craniotomy was performed on fifteen occasions (1/579 deliveries) and forceps were used eighty-two times (1/106 deliveries). Between 1852 and 1860, craniotomy was undertaken twice (1/1340 deliveries) and forceps were used in twenty-two deliveries (1/122 deliveries). These papers do not differentiate between the cases within and out with the hospital. Over this twenty-year period less than 0.2 per cent of cases resulted in intervention. These procedures were used to deal with various complications. Thus we can conclude that less than 0.2 per cent of cases associated with the Glasgow University Lying-in Hospital involved disproportion where it was considered necessary to intervene. In all likelihood it was far less than this.

Difficult cases were not routinely sent to a lying-in hospital; rather they were referred to experienced practitioners. In all but one case of disproportion found in the journals and case notes between 1840 and 1870, where the initial reasons for attendance were described, a practitioner already attending had called in a practitioner with experience of obstetric cases. These experienced practitioners often had a midwifery teaching post, but were not necessarily attached to one of the lying-in hospitals of the city. This is further evidence of a weak association between difficult births and the lying-in hospitals at this time. Pagan's chair at the University came with responsibilities to the University's lying-in hospital. However, some lectureships at the extra-mural schools had no direct connection with any of the lying-in hospitals. To be appointed as a lecturer in midwifery, practitioners would most likely have had to demonstrate an interest in the subject. As teachers of midwifery, their reputation amongst their colleagues and former students would have been established further.

Although staff attending women in association with the lying-in hospitals encountered few cases of disproportion, this did not necessarily mean that they

³²⁸ Pagan, 'Statistics of the Glasgow University Lying-In Hospital', pp.198-203.

³²⁹ Pagan, 'Contributions to midwifery statistics and practice', pp.207-216.

had little experience of this condition. Positions in voluntary hospitals were not obviously attractive to practitioners as a method of making money. These hospitals were funded through charity and the staff positions were often not paid. Practitioners sought employment in these institutions because they gave the holder social status, provided direct access to clinical material, and indirectly expanded their private practice.³³⁰ Practitioners with hospital posts continued with their own private practice for an income. It is possible that while a practitioner might not have encountered many difficult cases of childbirth during his day-to-day work at a lying-in hospital, his reputation would have brought these cases to his private practice. For example, in his review of the University lying-in hospital, Pagan noted that he had performed turning three times in cases of disproportion in his own practice, but not once in association with the hospital. Unfortunately, we are unable to determine how often Pagan encountered disproportion in his private practice as, but for this statement, no records of Pagan's work outside of the hospital have been located.

It would be expected that these experienced obstetric practitioners, who worked with women from the densely populated areas of the city, and were referred to in cases of difficulty, would have dealt with a higher proportion of births involving maternal pelvic deformities than other practitioners. Indeed, this does seem to have been the case. In 1844 Alexander Maxwell Adams, a lecturer on midwifery at the Portland Street Medical School, described having attended 628 labours either as part of his own practice or the practice of others.³³¹ He did not hold a position at one of the lying-in hospitals. He intended that this article would provide a public reference of his collection of obstetric cases, in order that it might be compared with the work of others. Claiming that he was 'in the habit of carefully noting any peculiarity which distinguished any of them [cases] from what are denominated natural cases', his analysis can be viewed as a reliable example of the complicated cases encountered as part of his practice.³³² He also revealed that he attended difficult cases at which other practitioners were already present. As an experienced medical practitioner, who was referred to when difficulties arose, the number of cases of disproportion he

³³⁰ Digby, *Making a Medical Living*, p.3.

³³¹ Alexander Maxwell Adams, 'Obstetric memoranda', *The London and Edinburgh Monthly Journal of Medical Science*, 4 (1844), p.930.

³³² Adams, 'Obstetric memoranda', p.913.

noted is revealing.³³³ He included the referral cases within his figures and stated that of 628 deliveries, 6 of the cases involved disproportion caused by pelvic contraction.³³⁴ This was less than 1 per cent of the cases he was involved with.

The comments of practitioners, including those who held midwifery teaching and lying-in hospital positions in Glasgow, suggest that cases involving disproportion were a small proportion of the overall cases they attended. These reports of obstetric practice intimate that, prior to at least the 1860s, medical practitioners in Glasgow did not frequently meet with gross disproportion. Burns noted, in the footnotes of his book, that he had not had to perform caesarean section, and that he 'never have yet been so unfortunate, as to meet with what may be considered as the smallest pelvis admitting of delivery *per vias naturales*'.³³⁵ Perforation was rarely performed. Indeed, Wilson suggested that the crotchet was needed so infrequently in Glasgow and the West of Scotland, that 'on average... not more than one such case, in general, has occurred in the practice of any individual, during his lifetime'.³³⁶

It is more difficult to determine the prevalence of less severe cases of disproportion that hindered labour but ended without practitioners intervening, as these cases would not necessarily have been attributed to disproportion, or noted at all. The following comment by James Blundell, a London obstetric practitioner, is perhaps revealing in this context:

The distorted pelvis contracted in high degree, is by no means frequent in obstetric practice; but these coarctions, which are accompanied with little or no distortion, and in which the contraction is slighter, are by no means uncommon. More especially are they liable to be met with in large manufacturing towns; such as Glasgow, Leeds, Manchester, and this metropolis.³³⁷

³³³ Adams was the Professor of the Institutes of Medicine at Anderson's University between 1846 and 1850, see Duncan, *Memorials of the Faculty*, p.288.

³³⁴ Adams, 'Obstetric memoranda', p.931.

³³⁵ Burns, *The Principles of Midwifery*, p.500.

³³⁶ Wilson, 'Report of the Glasgow Lying-In Hospital and Dispensary, for the year 1851-52', p.7.

³³⁷ James Blundell, *The Principles and Practice of Obstetric Medicine*, (London: Joseph Butler, 1840), p.31. The term 'coarctions' was an obstetric term used to describe constriction.

That Blundell did not mention Glasgow as distinct from these other locations is, perhaps, revealing. The observations about contracted pelves in Britain, referred to in Chapter 2, suggest that at the end of the century Glasgow's problem was greater than elsewhere. Blundell's comment indicates that he did not perceive the prevalence of this condition to be greater in Glasgow than the other cities he mentioned.

It certainly appears that even though, as seen in Burns's textbook, disproportion and the obstetric practices associated with the condition received considerable attention, the actual impact this condition had on the volume of work of practitioners who attended childbirth was minimal. Indeed the majority of practitioners' work was described as normal and did not result in any intervention whatsoever.³³⁸ For example, Adams stated that 569 of the 628 deliveries he attended were 'natural labours' without any unusual occurrences. Furthermore, during this period, medical practitioners in Glasgow were far more likely to describe encountering complications other than disproportion, such as uterine inertia. Of those practitioners who did mention disproportion, many of the cases were described at length, making it possible to examine what practices Glasgow practitioners advocated in these circumstances.

3.2 Obstetric practice and disproportion

Glasgow practitioners used a variety of procedures in attempts to complete labour when obstructed by contracted pelves. Descriptions of cases involving disproportion reveal that caesarean section, forceps, induction of premature labour, perforation, and turning were all carried out. Several factors influenced the decision to use each of these methods. Individual practitioners indicated that they favoured particular techniques. Their reasons for preferring one procedure to another were wide-ranging. Individual experience, the experience of other practitioners, and perceptions regarding the risk associated with each technique were important. The literature examined also makes it clear that practitioners' preferences were shaped by their opinion of the value of the mother's life compared to that of her unborn child.

³³⁸ Adams, 'Obstetric memoranda', p.914.

While practitioners had pre-existing ideas about each method, it is also apparent that their decisions were very much dependent upon the circumstances of each case. The severity of disproportion, and a practitioner's ability to determine the degree of obstruction was central to any decisions made. In addition, the stage that a practitioner was invited to become involved in a woman's pregnancy, and the location in which this encounter took place, also directly affected what methods were available and how they were used. Moreover, individual practitioners did not have sole authority for making these decisions. Other practitioners, the pregnant woman, and her family were also able to influence the choices made at the bedside. By considering the different factors that influenced decisions made about treatment in cases of childbirth involving disproportion, the examination with which this chapter is engaged demonstrates the complex nature of medical decision-making during this period.

John Burns's *The Principles of Midwifery* is a valuable source for this examination of obstetric practice. This book was regarded as a standard work of obstetrics in Britain. In 1841, for example, a review in *The British and Foreign Medical Review* included Burns's work amongst a list of other acclaimed texts. These included works by London practitioners; Samuel Merriman, John Tricker Conquest, James Reid, James Blundell, and Robert Gooch; as well as books by Henry Maunsell of Dublin, and William Campbell of Edinburgh. The review noted that:

The modern medical literature of England contains many valuable isolated essays and iconographs on particular departments of midwifery, but comparatively few general synopses of the principles and practice of this branch of the profession. We point out, however, with pleasure, as exceptions to this dearth of systematic compendia of obstetric science, the well-known and esteemed work of Dr. Burns

...³³⁹

Medical practitioners from outside of Glasgow made reference to this book. In one example, James Whitehead, a Manchester practitioner, quoted Burns when explaining his decision to use caesarean section in a case involving a

³³⁹ [Anon.], 'Rigby, Ramsbotham, Davis on midwifery', *The British and Foreign Medical Review*, 12 (1841), p.462.

considerably contracted pelvis.³⁴⁰ The widespread success of this book is clearly demonstrated by its subsequent publication in the United States, and the existence of French and German translations. Burns amended the textbook throughout his career producing ten editions, until his sudden death in 1850.³⁴¹ It was not until the 1870s that another obstetric textbook of repute was written by a Glasgow practitioner.³⁴²

Given the excellent reputation that Burns's work had within Glasgow, Britain, and abroad, its content is a useful indicator of opinions held about practices employed at the time. Whilst much of Burns's textbook remained unchanged between the first and tenth editions, the chapters describing the diagnosis and treatment of disproportion underwent extensive revision. References to Burns's opinions, given in this chapter, are, unless stated, from the final edition published in 1843. Although it is seldom clear whether he had actually used the techniques he wrote of, he patently pointed out whether or not he advocated them. He also referred to the work of other renowned practitioners of the period. Burns made reference to the work of practitioners from Britain and abroad. He demonstrated his wide reading by mentioning the work of Thomas Denman, William Smellie, Robert Collins, Jean Louis Baudelocque, and Franz Karl Naegele. He also mentioned lesser-known practitioners who were published in medical journals. He advocated caesarean section, forceps, induction, perforation, and the lever in cases of disproportion. He wrote against using diet restriction, symphysiotomy, and turning in these circumstances. These last three he argued would not achieve what they intended, and as such should not be attempted. For example, the restriction of a pregnant woman's diet, first suggested in the late eighteenth century, was intended to limit the growth of the child.³⁴³ Of this method, Burns wrote that 'this is a very uncertain and precarious practice. It is romantic'.³⁴⁴ There is no evidence that any Glasgow

³⁴⁰ James Whitehead, 'Case of caesarean section', *London Medical Gazette*, 28 (1841), p.971.

³⁴¹ Burns was a passenger on the Orion steam ship (owned by the Burns Shipping Company founded by two of his brothers), upon which he was travelling from Liverpool to Glasgow, when it sank near Portpatrick. For an account of this event see [Anon.], 'Loss of the Orion steamer', *The Scotsman*, 22nd June 1850, p.3.

³⁴² The next midwifery textbook written by a Glasgow practitioner was William Leishman, *A System of Midwifery: Including the Diseases of Pregnancy and the Puerperal State*, 1st edn, (Glasgow: James Maclehose, 1873).

³⁴³ Leeds practitioner James Lucas suggested its use in 1788, see Theobald, 'The induction of labour'.

³⁴⁴ Burns, *The Principles of Midwifery*, p.502.

practitioners ever performed this method. Although Burns appeared to favour the induction of premature labour, the choice between these procedures was evidently contingent upon several factors.

3.3 *Diagnosis*

The decision to intervene, and how to do so, was firstly dependent upon diagnosing the existence, or probable future occurrence, of disproportion. Burns noted that the condition was associated with slow progress of the second stage of labour, the fetal head failing to descend, and the woman experiencing more pain than usual.³⁴⁵ He also mentioned, briefly, the possibility of measuring the pelvis. During the eighteenth century distinguished practitioners, including William Smellie and Jean-Louis Baudelocque, described measuring contracted pelvises.³⁴⁶ Internal and external pelvimeters were devised to determine the pelvic capacity, and hence the extent of any deformity.³⁴⁷ These instruments, similar in design to callipers, came in various forms.³⁴⁸ Estimates of the conjugate diameter were mostly referred to. This measurement, also known as the conjugate vera or true conjugate, represents the shortest diameter through which the head must pass when descending through the pelvis.³⁴⁹ It is physically impossible to use a pelvimeter to measure the conjugate diameter of the pelvis directly. Other measurements were taken instead, such as the diagonal conjugate, and the conjugate diameter was inferred from this by subtracting a uniform quantity (see Fig 3.1). Burns noted the existence of these devices. However, it seems that Glasgow practitioners rarely, if ever, used pelvimeters between 1840 and 1870. Burns remarked that ‘this method is so uncertain, that I do not know any person who makes use of it in practice’.³⁵⁰

³⁴⁵ Burns, *The Principles of Midwifery*, pp.457-458.

³⁴⁶ Kae D. Bendixen, 'Historical representations of the pelvis', *British Journal of Obstetrics and Gynaecology*, 102 (1995), p.442 and Hiddinga and Blume, 'Technology, science, and obstetric practice', p.159.

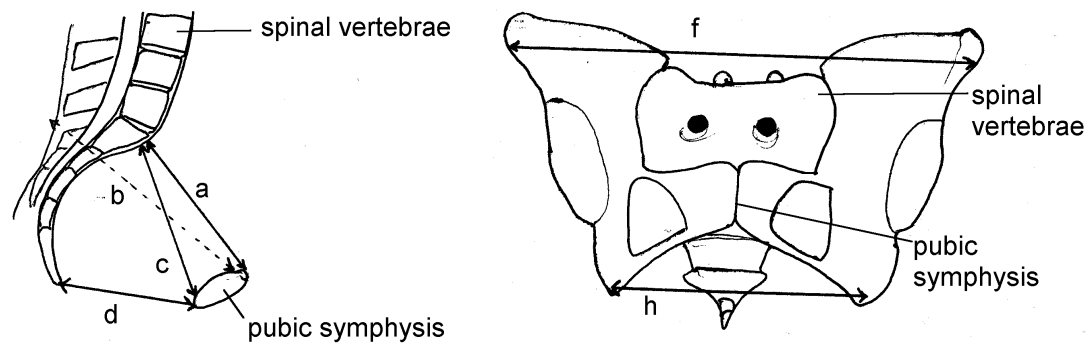
³⁴⁷ Burns, *The Principles of Midwifery*, p.38.

³⁴⁸ For examples of these instruments see Bryan M. Hibbard, *The Obstetrician's Armamentarium: Historical Obstetric Instruments and Their Inventors*, (San Anselmo: Norman, 2000), pp.265-274.

³⁴⁹ In 1881 the conjugate diameter was thought to measure $4\frac{1}{4}$ inches (10.8 cm) in healthy European women, see J. G. Garson, 'Pelvimetry', *Journal of Anatomy and Physiology*, 16 (1881), p.132.

³⁵⁰ Burns, *The Principles of Midwifery*, p.38.

Fig. 3.1: Bony pelvis from side and front views, showing diameters measured by obstetric practitioners.



a) conjugate diameter b) external conjugate c) diagonal conjugate d) distance between coccyx and pubic symphysis f) interspinous diameter h) distance between ischial tuberosities.

The case descriptions of medical practitioners appear to confirm that little faith was placed in being able to measure the pelvis. For example, although referring to the size of the pelvis in his case descriptions, Alexander Adams did not mention specific pelvic measurements. Instead he used more general terms to describe the extent of pelvic deformity. The pelvis was described as being ‘unusually small’, ‘partially deformed’, having ‘rather small dimensions throughout’, and in one case he commented on ‘the smallness of the outlet’.³⁵¹ Evidently Adams did not consider it important to provide the reader with pelvic measurements. Similarly, two surviving Glasgow Maternity Hospital case notes, from 1868, although detailed do not mention measurements. They instead note ‘considerable contraction’ and ‘the general small cast of the pelvis and abnormal size of the head’.³⁵² A further example demonstrates the importance placed on experience, rather than examination and pelvimetry. In 1856 Alexander Morton, a medical practitioner in Glasgow, wrote of a woman he attended in her third confinement. Unknown to Morton at this time, after her first labour, the woman had suffered pelvic deformity from what he described as ‘a severe attack of what was considered rheumatism about the pelvis’.³⁵³ Morton went on to state that:

³⁵¹ Adams, ‘Obstetric memoranda’, pp.921-935.

³⁵² NHSGGCA, Records of Glasgow Royal Maternity Hospital, GB 812 HB45 6/1, ‘Glasgow Lying-in Hospital: Case notes’, 1866-1881, pp.33-36.

³⁵³ Alexander Morton and James Wilson, ‘Case of turning as a substitute for craniotomy’, *Glasgow Medical Journal*, 3 (1856), p.394.

If I had attended Mrs. C. in her second confinement, nature would have taught me the course to pursue in the third. Not expecting any obstruction from a contracted pelvis, labour was allowed to progress until the waters were evacuated.³⁵⁴

Apparently, neither observation nor physical examination had brought him to this conclusion.

It was not only because of a lack of belief in the accuracy of pelvimetry that little emphasis was given to making measurements. Burns was of the opinion that being able to determine these measurements would not provide an accurate method of understanding of how severe disproportion was.

It is difficult to draw the line of distinction, betwixt that degree of contraction, which will render it impossible, for delivery to take place naturally, and that which will only render it extremely difficult. It has been proposed to ascertain this, by a rule founded on the dimensions of the pelvis. But this method cannot be brought to a sufficient degree of perfection, for the result of cases is much influenced by the size of the child, the pliability of its head, the vigour of the uterus, and other causes. Besides it is difficult, if not impossible, to determine, with minute precision, the dimensions of the pelvis, in the living subject, and they are apt to vary, according as the soft parts, within the pelvis, are more or less swelled.³⁵⁵

Attempting to determine the capacity of the pelvis, and its structure, was still necessary. To this end Burns argued that 'the hand is the best pelvimeter'.³⁵⁶ However, it was understood that multiple factors were implicated in the degree of disproportion when it occurred. It was not just the extent of pelvic contraction that determined the likely outcome of labour in these cases. It was Burns's opinion that the extent of disproportion could be determined by a combination of vaginal examination and a trial of labour, subject to 'the

³⁵⁴ Morton and Wilson, 'Case of turning as a substitute for craniotomy', p.394.

³⁵⁵ Burns, *The Principles of Midwifery*, p.465.

³⁵⁶ Burns, *The Principles of Midwifery*, p.38.

strength of the patient, and the degree of suffering'.³⁵⁷ Allowing for the other factors to take place before intervening, such as the moulding of the fetal head, can be considered part of a general philosophy of low interference. This fits with Loudon's and Nuttall's observation that a conservative approach to labour was practised before the 1870s.³⁵⁸ Practitioners did suggest that it would be wise to intervene before a woman became exhausted but this was presumably difficult, in cases of disproportion, where they were not able to determine the need for intervention until labour had been given time.³⁵⁹

Specific pelvic measurements were still noted by Burns and other practitioners. Burns provided measurements of the conjugate diameter that, he considered, marked the boundary between the uses of the different operative techniques available. He at no point, however, described using the measurements as part of his practice. Burns was of the opinion that if the conjugate diameter was $1\frac{3}{4}$ inches (4.4 cm) or less, even if the fetal head was diminished it would not be possible for the fetus to be brought through at full-term. In these instances he advocated the use of caesarean section. In cases that reached full-term where it was judged that some form of intervention was required, and that it would be possible for the fetus to move through the pelvic canal, Burns made it clear that the decision had to be taken whether to use the forceps or the crotchet.³⁶⁰ Burns advised that if the conjugate diameter measured $3\frac{1}{2}$ inches (8.9 cm) or more then the long or short forceps should be introduced. Below this size, Burns advocated the use of the crotchet to diminish the size of the fetus. He did not, however, accept that determining the measurement as below $3\frac{1}{2}$ inches (8.9 cm) should bring automatic recourse to the destruction of the fetus. He stated that:

We are not warranted, however, instantly, to open the head, merely because we estimate that the pelvis does not, in its conjugate diameter, measure fully three inches; but because we have

³⁵⁷ Burns, *The Principles of Midwifery*, p.458.

³⁵⁸ Loudon, *Death in Childbirth*, p.183; and Nuttall, 'Passive trust or active application: Changes in the management of difficult childbirth and the Edinburgh Royal Maternity Hospital, 1850-1890', p.364.

³⁵⁹ James Wilson, 'On the advantages of turning in certain cases of narrow pelvis', *Monthly Journal of Medical Science*, 1 (1848), p.778; and Pagan, 'Contributions to midwifery statistics and practice', p.208.

³⁶⁰ Burns, *The Principles of Midwifery*, p.469.

ascertained, by a sufficient, but not a dangerous trial, that the uterine action cannot force down the head, so that the forceps or the vectis may be applied, or acted with, effectively.³⁶¹

Although stating specific measurements, Burns did not wish these to be considered as absolute determinants of procedure. He had already made it clear that a trial of labour was required to gauge the level of disproportion, no matter the pelvic measurements. This would explain the omission of any pelvic measurements in an article written by David Smith, a lecturer in midwifery. He had conducted research upon recently dead women, in which he attempted to establish the extent to which the diameters of the pelvis could be enlarged with and without separation.³⁶² He made a case, in very specific instances of pelvic deformity, for symphysiotomy to be performed. Even though his research involved measuring the pelvis, he did not at any point mention specific pelvic measurements that would indicate when symphysiotomy should be used.

James Wilson, one of the most experienced obstetric practitioners in Glasgow of the first half of the nineteenth century, also offered opinions on this subject that were similar to Burns's. Having lectured in midwifery at Portland Street Medical School, in 1834 Wilson became an ordinary accoucheur at the newly established Glasgow Lying-in Hospital. He remained on the staff of this institution until his death in 1858, at which point he was the senior physician. His obituaries singled him out as a physician-accoucheur of excellent reputation.³⁶³ Wilson wrote several papers during his career on the subject of midwifery, and particularly his encounters with disproportion. In one paper he highlighted the conflicting opinions found within obstetric texts regarding the relationship between conjugate diameter size and the need for perforation. He concluded that:

³⁶¹ Burns, *The Principles of Midwifery*, p.494.

³⁶² David Smith, 'Remarks on division of the symphysis pubis in certain cases of obstructed labour', *The Northern Journal of Medicine*, 2 (1845), p.135.

³⁶³ See the following texts for James Wilson's biographical information, Glasgow Courier, 'Obituary - Wilson, James, Senior M.D.' *The London and Provincial Medical Directory*, (1858), pp.878-879; [Anon.], 'Obituary - Dr James Wilson, Sen., of Glasgow', *Edinburgh Medical Journal*, 3 (1858), p.474; [Anon.], 'Death of Dr. James Wilson', *Glasgow Medical Journal*, 5 (1858), pp.378-379; and Tom Gibson, *The Royal College Of Physicians And Surgeons Of Glasgow: A Short History Based On The Portraits And Other Memorabilia*, (Edinburgh: Macdonald Publishers, 1983), pp.114-117.

[N]o rule can be laid down to guide us in practice from the mere measurement of the pelvis. Before a safe rule could be laid down it would be necessary to ascertain the exact size, the form, and the state of ossification of the child's head - which is beyond our power.³⁶⁴

Wilson also argued that the pelvic space was not dependent entirely on the conjugate diameter. The difficulty of determining the nature of disproportion in individual cases led Wilson, as Burns did, to argue that it was proper to allow labour to proceed for a period of time before deciding that there was a need to intervene.

Although Wilson's opinion about this subject is clear he still provided estimates of the conjugate diameter in some of his case descriptions. In one example, he wrote that 'the projection was so great as to render, as far as I could judge, the inlet of the pelvis in its conjugate diameter not more than $2\frac{3}{4}$ inches'.³⁶⁵ This was a rough estimate. He described using his hand to undertake this measurement, and does not appear to have taken measurements routinely. One of Wilson's cases demonstrated the lack of any comprehensive examination. He described having carried out an 'ordinary examination [that] conveyed the impression of extreme want of space'.³⁶⁶ It was only upon introducing his hand to remove a retained placenta, several pregnancies later, that he realised that the space of the pelvis would allow for turning to be accomplished.³⁶⁷ He evidently had not performed a thorough examination during her previous labours, when he had to perforate to deliver, or early on in this delivery. As some women experienced disproportion on more than one occasion, this impacts on the use of these cases to estimate the number of women with contracted pelves in the population. It is suggested that even fewer women suffered from contracted pelves than the statistics intimate.

In these difficult cases the practitioner, having been called for by those already in attendance, invariably found the woman to have been in labour for several hours. In only one case, described by Archibald Neilson, do we gain insight into

³⁶⁴ Wilson, 'On the advantages of turning', p.782.

³⁶⁵ Wilson, 'On the advantages of turning', p.781.

³⁶⁶ Morton and Wilson, 'Case of turning as a substitute for craniotomy', p.397.

³⁶⁷ Morton and Wilson, 'Case of turning as a substitute for craniotomy', p.397.

practice before it reached this stage. He described a woman who visited him in August 1869, and engaged him for her upcoming confinement in October. Noting that she had 'lateral and antero-posterior curvature of the spine', he did not perform an examination at this point to determine if her pelvis was similarly deformed.³⁶⁸ It was only when she began labour, just over a month later, that Neilson performed a vaginal examination to determine the capacity of the pelvis. Neilson also mentioned administering chloroform, in this case, in order that he could examine the woman more thoroughly. James Young Simpson, the eminent Professor of Midwifery at the University of Edinburgh, first introduced chloroform to obstetric practice in 1847.³⁶⁹ He did so in order to deliver a dead fetus from a mother with a contracted pelvis.³⁷⁰ This anaesthetic also served to relax muscles, enabling more detailed vaginal examinations to be performed.

An explanation exists for the absence of vaginal examination early on in Neilson's case. Waddington argues that elements of medical practice would require consent that cannot be assumed. He highlights vaginal examination as one example, which 'would not normally be permitted to any other person, even perhaps to a sexual partner'.³⁷¹ Moral attitudes towards physical examination, and particularly vaginal examination, might well have prevented practitioners from undertaking such assessments. Indeed, Burns commented that 'some women, from motives of false delicacy, and from not understanding the importance, of procuring early information of their condition, are averse from examination, until the pains become severe'.³⁷² In 1865 Thomas Radford, a Manchester physician and ardent proponent of caesarean section, still lamented that practitioners were not able to perform thorough examinations before pregnancy reached full-term. He said that 'young married women can not be compelled to submit to vaginal or other examinations in order that it may be ascertained whether there is sufficient pelvic capacity for a full-grown infant to

³⁶⁸ Archibald Neilson, 'On a case of caesarean section', *The Lancet*, 1 (1870), p.335.

³⁶⁹ O'Dowd and Phillip, *The History of Obstetrics and Gynaecology*, p.437.

³⁷⁰ David Hamilton and Margaret Lamb, 'Surgeons and surgery', in *Health Care as Social History: The Glasgow Case*, ed. by Olive Checkland and Margaret Lamb, (Aberdeen: Aberdeen University Press, 1982), p.79.

³⁷¹ Ivan Waddington, 'The role of the hospital in the development of modern medicine: A sociological analysis', *Sociology*, 7 (1973), p.214.

³⁷² Burns, *The Principles of Midwifery*, pp.386-387.

pass through'.³⁷³ It was perhaps only when labour had begun, and Neilson was actively employed, that such examinations became legitimate. Practitioners were evidently not the only people at the bedside who could influence the practices that were undertaken.

3.4 Authority at the bedside

A woman's refusal to allow a practitioner to perform a vaginal examination was an illustration of medical authority not being absolute at the bedside. There are further examples of women successfully resisting the advice of attending medical practitioners. Medical men, it would appear, were more than happy to draw attention to cases where their recommendations had been opposed. The decision to publicly acknowledge their lack of authority was, no doubt, driven by a desire to ensure that their medical colleagues could not question the reasoning behind the actions they described, particularly as on several occasions the choice, and method, of treatment were directly affected by the decisions of the prospective mothers, and their family and friends. For example, after Archibald Neilson had decided that a caesarean section was required he advised the woman that she should attend hospital. She refused as, he claimed, she was 'determined to die at home, if die she must'.³⁷⁴ The woman's comment certainly suggests that the option of attending a hospital was not a comfort to her. The procedure was performed at her home, and unfortunately she did not survive. The child was alive when born but subsequently died.

The type of treatment used was also affected by the requirement for a doctor to obtain the consent of the woman upon whom it was to be performed. James Wilson, for example, noted that he had advised a woman after her first pregnancy, for which he had delivered by turning, that the induction of premature labour would be favourable in the future. He attended six of her confinements, but she 'could not be persuaded to submit to the induction of premature labour, which would have been the preferable practice'.³⁷⁵ Turning

³⁷³ Thomas Radford, 'Observations on the caesarean section and on other obstetric operations', *British Medical Journal*, 1 (1865), p.212.

³⁷⁴ Neilson, 'On a case of caesarean section', p.336.

³⁷⁵ Wilson, 'On the advantages of turning', p.780.

was used in all six of the deliveries. Three deliveries, including the first two, ended with the death of her children.

The induction of premature labour was, it appears, the procedure of choice. The artificial initiation of labour before full-term had been first introduced to Britain in the eighteenth century.³⁷⁶ The principle of the procedure was that a premature fetus, not having reached full-size, would be able to pass through a contracted pelvis. This benefit was offset by the incomplete development of the fetus, and hence the chances of its survival were reduced. The timing of this procedure during pregnancy was much debated, but most practitioners appeared to believe that a seventh month fetus was viable.^{377,378} In any case the risks to mother and child were less than those associated with caesarean section and craniotomy. Hiddinga and Blume have commented that the nineteenth century saw growing recourse to this treatment for disproportion in Britain.³⁷⁹ Burns was clearly an advocate. He stated that when a pregnancy had ended in perforation, induction was to be performed in succeeding pregnancies. He impassionedly pleaded that '[a]ll the principles of morality, as well as of science, justify the operation; they do more, they demand the operation.'³⁸⁰ David Smith, who wrote an article considering the techniques to be used in cases of disproportion, also encouraged the use of induction. He wrote:

[A]fter it has been ascertained that deformity of the pelvis exists to a degree through which a child at the full period cannot pass, the recognised duty of the accoucheur is to induce premature labour ... and thus afford a chance of preserving the offspring without subjecting the parent to a greater danger than may occur in a natural labour.³⁸¹

³⁷⁶ It is thought that the induction of premature labour was introduced to Britain in 1756. Dr George Macauley, of London, first used it later that year. He performed amniotomy (also known as the 'English' method), and induced labour prematurely in a case of suspected disproportion. Loudon, *Death in Childbirth*, p.133; and Theobald, 'The induction of labour', p.343.

³⁷⁷ [Anon.], 'Case of twins - Question of the viability of the foetus', *The Lancet*, 1 (1841), p.415.

³⁷⁸ Theobald, 'The induction of labour', pp.343-344.

³⁷⁹ Hiddinga and Blume, 'Technology, science, and obstetric practice', p.164.

³⁸⁰ Burns, *The Principles of Midwifery*, pp.502-503.

³⁸¹ Smith, 'Remarks on division of the symphysis pubis', p.142.

In spite of this support for the procedure, it was only described as being performed occasionally. Smith had alluded to the difficulty associated with this procedure as an explanation for its infrequent use. It was necessary for labour to be induced several weeks before full-term. However, often women did not employ a birth attendant, of any form, until very close to full-term or when labour had commenced. There was no formal system of antenatal visits. Furthermore, as demonstrated in the case described by Neilson, even when a woman employed an attendant early in pregnancy, the lack of any form of physical examination prevented possible disproportion from being diagnosed. In any case, practitioners believed in a trial of labour, even when it was suspected that a woman's physique might lead to disproportion. It was only after a woman gave birth to a child, and disproportion had occurred, resulting in intervention, that the induction of premature labour was advised for subsequent confinements. In such instances the onus was on a woman to inform a medical practitioner of her pregnancy, before induction became useless. Having been advised of this, some women did not accept its use, although their reasons were not given.

Practitioners were not happy that their recommendations were questioned. Pagan described having twice performed craniotomy on the same woman. He had wanted to perform induction of premature labour in the second pregnancy, but he claimed that the woman 'obstinately refused'.³⁸² The use of the word 'obstinately' in this context implied Pagan's view that the woman's attitude was unreasonable. Historians have demonstrated that within the walls of a hospital, practitioners held more authority and hence assumed more control over the decision-making process than in patients' homes.³⁸³ All of the cases where it was acknowledged that a layperson influenced the decisions made appear to have taken place outside of hospital. Pagan's article does not differentiate between the cases that took place at home and in the hospital. He was clearly not convinced by a woman's ability to act rationally and reason. He believed that the women who entered the hospital were not able to provide informed or accurate information about their situation. He wrote that:

³⁸² Pagan, 'Contributions to midwifery statistics and practice', p.209.

³⁸³ Janet McCalman, *Sex and Suffering: Women's Health and a Women's Hospital: The Royal Women's Hospital, Melbourne 1856-1996*, (Carlton: Melbourne University Press, 1998), p.15.

[T]hough columns are kept in the hospital journals for the age of the patient, the length of the labour, and the number of the birth, I place so little reliance on the accuracy of the statements made by the patients upon these points, that I have made but little use of these columns.³⁸⁴

Practitioners increasingly placed more weight upon their own observations rather than those of their patients during the nineteenth century.³⁸⁵

Practitioners were aware that the final decision was subject to a woman agreeing to submit herself to a procedure. As a result, in order to ensure that the decision of a medical practitioner was followed, advice on how to communicate with a patient was proffered. An example of this can be found in Burns's textbook. He claimed that only after much distress did patients become reconciled to the use of instruments. He advised not providing any intimation at first that instruments might be required, and only when it was decided that they would be needed was it then 'proper to prepare the mind of the relations'.³⁸⁶ He suggested that the woman predisposed against interference, should be readied through hints and explanations of how the practice was used successfully upon others. If it was observed that the patient was likely to agree readily, he advised not saying anything until close to the time of delivery. In the later editions of this book published after the 1820s, Burns referred to his 'patients'. In the earlier versions he had referred to the 'women' he attended. This change suggests that the relationship between the medical practitioner and the women he attended had altered. By this period a medical practitioner's knowledge held considerable authority, but the final decision remained in the hands of the prospective mother.

It was not only the mother and medical practitioner who influenced decisions made at the bedside. There is also evidence that family and friends of the mother were able to affect the procedures employed. For example, Alexander Morton, a practitioner in Glasgow with no apparent institutional connections, wrote of a case where he performed craniotomy. During the last twelve hours of

³⁸⁴ Pagan, 'Contributions to midwifery statistics and practice', p.207.

³⁸⁵ Nicolson, 'The art of diagnosis', pp.818-819.

³⁸⁶ Burns, *The Principles of Midwifery*, p.476.

labour it had been observed that no progress was being made. It had been a total of forty-eight hours before a failed intervention with forceps was attempted. Morton explained that '[o]wing to the reluctance of the friends to manual interference, I was not allowed to deliver until the life of the mother was at stake.'³⁸⁷ Morton did not provide the reason for their reluctance and the mother survived the experience.

In one case the reason why the woman's friends had disagreed with the medical advice was given. According to Robert Kirkwood, who assisted in this case, Professor Pagan was called to an Irish woman in labour with her first child having 'been ill for nearly three days'.³⁸⁸ It was noted that she was of less than average height, and examination revealed that the delay was due to a grossly deformed pelvis. The extent of the contraction led to the decision that delivery could not be carried out with turning or forceps. Even though the child was still alive, as evidenced by a pulsating umbilical cord, Pagan proposed craniotomy. However, this procedure 'the patient's friends, from religious scruples, refused to permit'.³⁸⁹ They only acquiesced, a day later, when the child was dead. The woman recovered from this ordeal. As an Irish woman we can assume that it was her Catholic beliefs, and that of her friends, that led to this situation. Canon law forbade the use of a procedure that resulted in the taking of an innocent life.³⁹⁰ How common this factor would have played a part in influencing decisions made in these cases is difficult to tell. We can assume that a number of the women attended in these circumstances were Irish. As according to Maver, at the height of Irish immigration, in 1851 18.7 per cent of Glasgow's inhabitants were from Ireland.³⁹¹ These women mostly ended up living in the poorer parts of the city.

One practitioner during this period, David Smith, highlighted this debate in a paper he wrote.³⁹² Little is known of him except that he practised in Glasgow and

³⁸⁷ Morton and Wilson, 'Case of turning as a substitute for craniotomy', p.394.

³⁸⁸ Robert Kirkwood, 'Case of attempted induction of premature labour, by means of the hot and cold water douche', *Glasgow Medical Journal*, 1 (1854), p.317.

³⁸⁹ Kirkwood, 'Case of attempted induction of premature labour', p.318.

³⁹⁰ Ryan, 'The chapel and the operating room', p.464.

³⁹¹ Maver, *Glasgow*, p.171.

³⁹² Smith, 'Remarks on division of the symphysis pubis', pp.129-143.

reportedly lectured on midwifery.³⁹³ In this article he made a case for dividing the symphysis pubis (symphysiotomy), in very specific cases of disproportion, when the pelvis was contracted at its outlet. Symphysiotomy received little attention from practitioners during this period other than when they commented, as Burns did, on its unsuitability.³⁹⁴ As Smith stated, the procedure was 'universally condemned'.³⁹⁵ No cases of its use by Glasgow practitioners were found during this period. Smith began his article by highlighting a substantial difference, also mentioned by Burns, in obstetric practice between British and Continental practitioners. In Catholic countries, when an unborn child was found to be alive, and it was not considered possible to bring it through the pelvic canal alive, practitioners predominantly resorted to the caesarean section rather than perform craniotomy.³⁹⁶ Religious objections to the death of an innocent life prevented Catholic practitioners from performing craniotomy. Smith argued strongly that such factors did not influence obstetric practitioners in Britain. He wrote that:

In this country, free as it long has been from the trammels which Roman Catholicism imposed upon its votaries, the extraction of the fetus in obstructed labour, by means either of the caesarian section or division of the symphysis pubis, at no time received the general assent of obstetricians.³⁹⁷

The following passage from a manuscript written by Smith a few years earlier demonstrated his views on this matter in a more forthright manner:

In our own Protestant land the intelligence of the people enables them to believe that in 'things medical' medical men are better judges of what is right and wrong than the clergy; and the propriety of performing every operation left entirely to a consultation of surgeons. The effect of this is, that, the Caesarian section is never had recourse

³⁹³ GULRA, Smith, BG33-h.11, 'Testimonials in favour of James Paterson, M.D., surgeon, candidate for the Camlachie District of City Poor', 1840. A search for Smith in the early editions of the Medical Directory was fruitless.

³⁹⁴ Burns, *The Principles of Midwifery*, p.511.

³⁹⁵ Smith, 'Remarks on division of the symphysis pubis', p.129.

³⁹⁶ Burns, *The Principles of Midwifery*, p.505.

³⁹⁷ Smith, 'Remarks on division of the symphysis pubis', p.129.

to unless the pelvis is so narrow that the child cannot be brought, even piecemeal, through the natural passages; and the result of those cases in which this operation has been performed, prove that in British midwifery it is preferable to deliver by perforation, or embryotomy, even when the fetus is known to be alive...³⁹⁸

It does not come as a surprise to find that Smith was a practising protestant as a member of the Church of Scotland.³⁹⁹ The testimonials of many of Glasgow's practitioners during this period included references written by their ministers.⁴⁰⁰ Smith appeared proud to be able to argue that his faith meant that he, as a medical practitioner, had the ability to decide upon a medical practice without the unwarranted opinions of the clergy. Smith might have been right about the influence of the clergy at the bedside, but the earlier example clearly demonstrated that the religious faith of the pregnant woman and her family was important when decisions were made during childbirth in Glasgow.

Pagan's case also highlighted a factor that was often commented on by obstetric practitioners, particularly during discussions regarding the choice of intervention when disproportion was encountered. The woman was informed, after she had recovered, that should she become pregnant again she should present to the hospital early in her pregnancy. Kirkwood claimed that she asked for some medicine to prevent her becoming pregnant again, and she said 'for sure, yer honour, ye have had a hape o'trouble wi' me this time, and its meself wouldn't like, plaze God, to be so bothersome to ye's again.'⁴⁰¹ This quote perhaps serves as a veiled comment by Kirkwood on the woman's Irish background. Four months into her second pregnancy, when she attended the hospital, it was decided that she would be induced at the beginning of the eighth month of her pregnancy.

³⁹⁸ RCPSG, 250 2/1/30/10, David Smith, 'On certain operations in obstructed labour, with new instruments', 1842, p.8.

³⁹⁹ In Smith's testimonials for a position as surgeon to the Town Hospital the first six references in his favour were from Ministers of the Church of Scotland, GULRA, Smith, BG33-h.11, 'Testimonials in favour of David Smith, M.D., at present a candidate for the surgeoncy to the Town's Hospital', 1840.

⁴⁰⁰ Callum G. Brown, *The Social History Of Religion In Scotland Since 1730*, (London: Methuen, 1987). There were few Catholics at the University during the nineteenth century even though the University was established upon the bull of Pope Nicolas V. In 1880 there were only six Catholic students at the University, five of whom were in medicine, John Durkan, David McRoberts and James McGloin, *The University of Glasgow and the Catholic Church, 1450-1950*, (Edinburgh: Scottish Catholic Historical Committee, 1950), pp.14-15.

⁴⁰¹ Kirkwood, 'Case of attempted induction of premature labour', p.318.

Kirkwood claimed the reason for this was that 'the child might possibly be saved, while the mother would be exposed to comparatively little risk.'⁴⁰² The child was not saved, but the mother left the hospital apparently well. The nature of the procedures available meant that a practitioner's choice of intervention was dependent upon, what he considered to be, the risks associated with each of the methods.

3.5 The risk associated with intervention

When practitioners documented their support for, or opposition to, a procedure they often referred to the mortality figures associated with the technique. Glasgow practitioners wrote of their own limited experience. Attempts to consider large numbers of cases required consideration of the work of practitioners in other areas. To produce a substantial account of the use of craniotomy, for example, required someone to compile the figures from reports published by practitioners from various places. This information enabled the relative maternal, and fetal, mortality risks of each procedure to be amassed and assessed (see section 2.3). The accuracy of such information, which relied upon practitioners publishing their failures as well as successes, is questionable. Individual experience, and the collective results of cases encountered elsewhere, demonstrated that each method was associated with different degrees of risk to the mother and fetus. As such, discussions regarding the procedures available in cases of disproportion often led to debate about the perceived value of the life of the mother in comparison to that of her unborn child.

Caesarean section was notoriously dangerous to the mother, and was therefore generally considered a procedure of last resort. John Harley Young claims that there are several examples where British practitioners, wary of performing the operation, did not use caesarean section resulting in mutilation of the child, uterine rupture, and death of the mother.⁴⁰³ There were a few British practitioners, Thomas Radford being the most notable, who supported the use of caesarean section during the first half of the nineteenth century.⁴⁰⁴ Based in

⁴⁰² Kirkwood, 'Case of attempted induction of premature labour', p.319.

⁴⁰³ Young, *Caesarean Section*, p.78.

⁴⁰⁴ Young, *Caesarean Section*, p.81.

Manchester, Radford was located in a city whose residents also suffered from the results of industrialisation and immigration. The high risk of mortality associated with caesarean section led the vast majority to advise against its use. Reports suggest that, due to infection and haemorrhage, the maternal mortality rate associated with caesarean section was over 80 per cent in Britain and Ireland before 1840.⁴⁰⁵ This had not improved to any worthwhile extent by 1865 when, according to Nicholas Eastman, it was approximately 85 per cent in Britain.⁴⁰⁶ Burns advocated its use, but only in exceptional circumstances. He wrote that:

In balancing the Caesarean operation, against the use of the crotchet, or the induction of abortion, we must form a comparative estimate, of the value of the life of the mother and her child. By most men, the life of the mother has been considered as of the greatest importance, and therefore, as the Caesarean operation is full of danger to her, no British practitioner will perform it, when delivery can, by the destruction of the child, be procured per vias naturales.⁴⁰⁷

Underlining the aversion to caesarean section, the only other occasion where Burns suggested that this operation should be used was to save a child in cases where the mother had already died. Few post-mortem caesarean sections were recorded during the nineteenth century in Glasgow.⁴⁰⁸ Of these, disproportion was not involved, except possibly for one case when the labour was described as being protracted because of the 'extra-size of the child'.⁴⁰⁹

Caesarean section on living women was rarely performed. Burns stated that he had not used the operation, and that the last case he knew of in Glasgow was

⁴⁰⁵ Burns, *The Principles of Midwifery*, p.505.

⁴⁰⁶ Nicholson J. Eastman, 'The role of frontier America in the development of cesarean section', *American Journal of Obstetrics and Gynaecology*, 24 (1932), p.129.

⁴⁰⁷ Burns, *The Principles of Midwifery*, p.505.

⁴⁰⁸ Post-mortem caesarean sections were found in Wilson, 'Deficient or deranged uterine action', p.119; John Maxwell, 'Case of uterine hemorrhage from placental placenta, complicated with irregular uterine contraction; with remarks', *Glasgow Medical Journal*, 1 (1833), p.330; and NHSGGCA, Records of Glasgow Royal Maternity Hospital, GB 812 HB45/5/16, 'Glasgow Maternity Hospital: Register of Patients Obstetrical Department (indoor) from 15 Jan 1881 to 31 Dec 1898', 1881-1898.

⁴⁰⁹ Maxwell, 'Case of uterine hemorrhage', p.330.

sixty-eight years earlier in 1775.⁴¹⁰ He did however suggest that the more successful results noted on the Continent meant that it might be used more often in the future. Burns cited the compilation of figures carried out by the Danish medical practitioner and statistician Carl Kayser, who wrote that between 1750 and 1839 in 338 cases of caesarean section 210 women died, the successes being attributed to operating within twenty-four hours of labour commencing.⁴¹¹ With this information Burns wrote that 'I shall not be surprised if, in a few years, British practitioners come to resort more frequently, especially in extreme cases, to the section'.⁴¹² There was not long to wait before Glasgow was host to the procedure again. In 1845, William Lyon, surgeon for the Glasgow Royal Infirmary, performed the operation, alongside John MacFarlane, Professor of Medicine at the University of Glasgow, and James Wilson. This was not because of disproportion but in a case where a pelvic tumour had obstructed delivery.⁴¹³ According to James Young Simpson, Edinburgh's esteemed Professor of Midwifery, in 1854 James Lawrie, Professor of Surgery at Anderson's University, performed the procedure in Glasgow. Unfortunately no further records, or details, of this were found.⁴¹⁴ It was not until 1869, that the first use in Glasgow of caesarean section for disproportion was reported.⁴¹⁵ Archibald Neilson performed this operation upon a woman with a grossly deformed pelvis; both the mother and child died.

It is not surprising that few cases of caesarean section were reported as having been performed in Glasgow. Of those reported, none of the women survived, and it is unlikely that practitioners wished to try the operation as a result. Peer influences are discussed further in section 3.7. However, in the most severe of cases of disproportion no alternative existed, apart from doing nothing and

⁴¹⁰ A list of caesareans carried out in Scotland in the eighteenth century was produced by John Hull. This lists the operation being used by a Mr William Whyte of Glasgow in 1775, see John Hull, *A Defence of the Cesarean Operation With Observations On Embryulcia, and the Section of the Symphysis Pubis, Addressed to Mr. W. Simmons, of Manchester*, (Manchester: R and W Dean, 1798), p.66.

⁴¹¹ Burns, *The Principles of Midwifery*, p.506.

⁴¹² Burns, *The Principles of Midwifery*, p.509.

⁴¹³ William Lyon, 'Case in which the caesarean section was performed on account of a pelvic tumour preventing delivery', *Monthly Journal of Medical Science*, 5 (1845).

⁴¹⁴ It was reported as Dr. Laurie but it seems very likely to have been Lawrie with his surgical experience. J. Y. Simpson, 'Case of contracted pelvis', *Association Medical Journal*, (1854), p.137.

⁴¹⁵ Neilson, 'On a case of caesarean section', pp.335-336.

letting the mother die. Burns commented that he had not encountered pelvis contracted to a degree that required this procedure. Thus it is likely that up to this time there were few occasions when it had been needed. Caesarean section was performed more often on the Continent where religious convictions required its use, and earlier intervention meant better mortality rates. British practitioners aversion to this procedure meant that when they did use it, they did so only after labour had continued for sometime, and, as a result, the woman was often exhausted. This hesitancy was partly responsible for the poorer mortality rates associated with the procedure.

Perforating the fetal head was considered a more favourable alternative to caesarean section. In England, craniotomy was used more frequently than abroad.⁴¹⁶ Wilson claimed that, in Britain, embryotomy was 'the general practice' for these circumstances.⁴¹⁷ Corroborating this, David Smith chastised authors of texts on obstetric surgery who recommended delaying perforation until the fetus had died. Smith stated that:

If the delay is sought merely in order that the instrument may not be thrust into the head of a living human creature, whatever horror might be felt in the act must be overcome when the safety of the patient requires it, - if it is in the idea that it is criminal to extinguish fetal existence, it is equally criminal, in my opinion, to be standing idly by, conscious that in the mean time the fetus is perishing, and the danger to the mother continually increasing ... To avoid such consequences, therefore, the perforation of the head as early in labour as the operation is determined on becomes both justifiable and is the proper practice, whether the child be dead or alive, if the condition of the mother is such as to require it.⁴¹⁸

His comments on the greater value of the mother when compared to her child explain his view.

⁴¹⁶ Loudon, *Death in Childbirth*, pp.134-135.

⁴¹⁷ Wilson, 'On the advantages of turning', p.778.

⁴¹⁸ Smith, 'Remarks on division of the symphysis pubis', pp.130-131.

The rule which has regulated British practice is founded on the belief that the life of the mother is of more value than that of the child ... and, in truth, when the question is reduced to whether shall the parent or offspring be destroyed, the one for the safety of the other, what is there in the condition of the latter *in utero*, to be compared to a woman arrived at maturity, already a useful member of society, and, it may be, the mother of a family and the centre of a circle of friends?⁴¹⁹

Smith's opinion was clear. He believed a mother to have a greater social worth than her unborn child, and was happy to consider procedures that were fatal to her fetus to save her.

Choosing between craniotomy and caesarean section was not, as Smith implies, simply a decision between saving the life of the mother or the child. There were risks to both with all of the procedures. For example, Smith wrote that of 349 craniotomies reported in Britain up to 1842, 70 of the women died.⁴²⁰ Lacerations to the vaginal wall, caused by the act of removing sharp pieces of fetal skull, could result in infection, and sometimes even maternal death, after craniotomy. Burns contended that:

We ought to be satisfied, not only that we can bring through the child, but that we can do so, without so much violence, as must in all probability, kill the mother. I question much, if extreme cases, be not as dangerous to the patient, as the Caesarean operation; certainly they are more painful.⁴²¹

The focus upon British practitioners' dislike of caesarean section and their greater use of craniotomy, when compared to practitioners abroad, implies that little regard was given to the fetus in these situations. Indeed, Francis Smith has claimed that if the mother's life was in danger, British practitioners, no matter their religious beliefs, 'did not hesitate to destroy the child to save the

⁴¹⁹ Smith, 'Remarks on division of the symphysis pubis', p.129.

⁴²⁰ David Smith, 'On the obstetric perforator', *The London and Edinburgh Monthly Journal of Medical Science*, 2 (1842), p.970.

⁴²¹ Burns, *The Principles of Midwifery*, p.501.

mother'.⁴²² However, Wilson's observation and Smith's opinion were, it appears, extreme when compared to the general practice of Glasgow practitioners described in cases during this period. Perceptions of the value of the mother and her unborn child differed between practitioners in Britain and changed during the period that this thesis examines (see section 4.5). On one occasion a case described craniotomy being performed when the fetus was still alive.⁴²³ Pagan had also suggested doing this in a case, but, because of the family's wishes, it was not performed until after the child had died.⁴²⁴ In three cases the fetal head had been perforated only after it had been deduced using a stethoscope that the fetus was already dead.⁴²⁵ On three further occasions it was explicitly stated that craniotomy was not considered as an option because the fetus was alive. Although Glasgow practitioners prioritised the life of the mother they saw their role as being to save both when possible. While perforation was used occasionally, there are several examples where other procedures were used because the fetus was still alive. Wilson for example appeared to go out of his way not to perforate a living child. In one case where turning was performed and the woman subsequently died, Wilson stated that he should have perforated 'but as there was no positive proof of the child being dead, it was considered proper to act as I did, with the view of saving the child'.⁴²⁶

The long forceps and turning were advocated as alternatives to craniotomy. The long forceps were a larger variation of the forceps, long enough to be able to grasp the fetal head when above the pelvic brim. Facilitated by the use of chloroform this type of forceps became popular towards the middle of the nineteenth century. They measured up to 15 inches (38.1 cm) in length; the 'short' forceps were rarely bigger than 11 $\frac{3}{4}$ inches (29.8 cm).⁴²⁷ Opinion about

⁴²² Smith, *The People's Health 1830-1910*, p.17.

⁴²³ J. G. Wilson, 'Two cases illustrating the advantages of turning as a substitute for craniotomy in certain instances of contracted pelvis', *Glasgow Medical Journal*, 10 (1863), p.298.

⁴²⁴ Kirkwood, 'Case of attempted induction of premature labour', p.318; James Wilson, 'Two cases in which turning could not be accomplished, in consequence of the head of the child remaining firmly fixed at the brim of the pelvis, preventing the breech coming down', *Glasgow Medical Journal*, 2 (1855), p.446; and Morton and Wilson, 'Case of turning as a substitute for craniotomy', p.394.

⁴²⁵ Adams, 'Obstetric memoranda', p.921; J. G. Wilson, 'Two cases illustrative of the advantages of turning, as an alternative or substitute for craniotomy and the long forceps, in certain cases of pelvic contraction', *Edinburgh Medical Journal*, 2 (1857), p.308; and Wilson, 'Two cases illustrating the advantages of turning', p.297.

⁴²⁶ Wilson, 'Two cases in which turning could not be accomplished', p.446.

⁴²⁷ Hibbard, *The Obstetrician's Armamentarium*, p.90.

these practices was divided. The priority was to save the mother and debate centred on what was acceptable also to save her child. Burns argued the case for the mother throughout his text. He disagreed with practitioners elsewhere that the long forceps could often be used instead of the crotchet, on the grounds that:

Whilst I endeavour to prevent the unnecessary loss of the child, I cannot place out of consideration, the danger, if not the destruction, of the mother, which may follow from improper delay, and the injudicious employment [of the long forceps].⁴²⁸

Wilson, on the other hand, argued that the fetus did not receive enough consideration when practitioners chose their methods in these circumstances. He claimed that the perforator or crotchet were favoured more than the forceps because the latter were more difficult to use. Wilson made his feelings about the use of the crotchet clear in his address to the students of the Glasgow Lying-in Hospital. He said that:

Some prefer the perforator and crotchet to the forceps. It is difficult to account for such a preference. The one being an instrument intended to save life, and the other to destroy - at least one life. Sinking all principle, the preference given to the crotchet must be owing to this, that it is much easier to use the perforator than the forceps.⁴²⁹

Wilson advocated turning in these cases. He believed that it could be used to save the child whilst not endangering the mother.⁴³⁰ In his first article on the subject of turning in 1848, Wilson claimed that he had been practising this method instead of craniotomy for over thirty years. It was his conviction that turning worked because, by bringing the body through the pelvic brim first, it resulted in the fetal head engaging with the pelvis in a different position. The pressure on the head, after having turned, caused a decrease in the transverse diameter of the cranium. When the head presented first he claimed that the

⁴²⁸ Burns, *The Principles of Midwifery*, p.495.

⁴²⁹ Wilson, 'Report of the Glasgow Lying-In Hospital and Dispensary, for the year 1851-52', p.5.

⁴³⁰ Wilson, 'On the advantages of turning', p.778-779.

transverse diameter increased, and augmented disproportion. Wilson was not alone in this opinion. James Young Simpson published an article in 1847 supporting the use of turning as a replacement for the forceps and craniotomy.⁴³¹ Wilson acknowledged having held communications with Simpson on this topic, and advised his students to read a paper Simpson published in 1845 on turning.⁴³² Wilson had such confidence in this method that he continued to argue for its use in an article that documented two cases where this procedure was used, even though in neither could it be completed. The mother and child died in one and the child in the other case. He blamed this failure on delaying the operation.⁴³³

Not all practitioners agreed with Wilson's opinion of turning. Burns had advised against it, and John Pagan mentioned his lack of success with this procedure in cases of disproportion. In Pagan's paper of 1854 on the work of the Glasgow University Lying-in Hospital, he stressed that turning had not been mentioned for cases of disproportion. He acknowledged that it was recommended by 'many of the most eminent continental accoucheurs, as well as by my friend Dr. Wilson of this city, and Professor Simpson of Edinburgh'.⁴³⁴ However, his own experience had resulted in his opposition to its use. He described having performed turning three times in cases of contracted pelves where the long forceps had failed, and in all three cases the children were stillborn. The personal experience of practitioners was often, of course, an important factor in the decisions they made.

The desire not to perforate was very much dependent upon the knowledge that the fetus was still alive. If it could be determined that the child was already dead, before any intervention was attempted, then weighing up the value of the mother versus the child was no longer required. For example, Burns wrote that:

As a general rule, it is to be remembered, that the employment of the forceps is dangerous, in proportion to the difficulty of applying them,

⁴³¹ J. Y. Simpson, 'Memoir on turning, as an alternative for craniotomy and the long forceps, in deformity of the brim of the pelvis, &c. &c.' *Provincial Medical and Surgical Journal*, 11 (1847), pp.673-676.

⁴³² Wilson, 'Report of the Glasgow Lying-In Hospital and Dispensary, for the year 1851-52', p.8.

⁴³³ Wilson, 'Two cases in which turning could not be accomplished', pp.444-447.

⁴³⁴ Pagan, 'Contributions to midwifery statistics and practice', p.210.

and the force required in acting with them. We therefore, when the child is dead, invariably prefer lessening the head.⁴³⁵

During the 1840s the repertoire of obstetric practice came to include fetal auscultation. Previously, on rare occasions when the umbilical cord had prolapsed it had been possible for the fetal pulse to be felt. The stethoscope enabled practitioners to listen for the fetal heartbeat during labour, which resulted in alterations to the method of treatment used (see for example p.124). Kergaradec introduced fetal auscultation to practice in the 1820s.⁴³⁶ Pinkerton has argued that it was not until the late 1830s that Scottish practitioners were convinced by the practice.⁴³⁷ Indeed, Nicolson has demonstrated that the stethoscope did not become fully established, even for general examination, until the 1840s and 1850s.⁴³⁸ As late as 1839 the reviewers of the *British and Foreign Medical Review* noted of a text written by a practitioner from Paisley, John Craig, that he 'does not profess to know anything about the stethoscope, as applied to midwifery, and therefore considers it useless'.⁴³⁹ Indeed up to the final edition of Burns's textbook he had questioned the ability of practitioners to hear the fetal heartbeat. However, by 1843 he had added to the chapter on instrumental labours that:

Of late, the stethoscope has been employed to decide the case, by the presence or absence of the sound of the foetal heart. Much and *unnecessary* suffering, may thus be saved... It is certainly desirable, that students should take every opportunity of becoming expert in this truly important matter.⁴⁴⁰

⁴³⁵ Burns, *The Principles of Midwifery*, p.491.

⁴³⁶ J. H. M. Pinkerton, 'Kergaradec, friend of Laënnec and pioneer of foetal auscultation', *Proceedings of the Royal Society of Medicine*, 62 (1969), pp.477-483.

⁴³⁷ J. H. M. Pinkerton, 'John Creery Ferguson: Friend of William Stokes and pioneer of auscultation of the fetal heart in the British Isles', *British Journal of Obstetrics and Gynaecology*, 87 (1980), pp.257-260.

⁴³⁸ Nicolson, 'The art of diagnosis', p.151.

⁴³⁹ [Anon.], 'Review - The Accoucheur; A Treatise on Protracted Natural Labours; Suspended Animation in new-born Infants, and Uterine Haemorrhage after birth of the Child; with illustrative Cases', *The British and Foreign Medical Review*, 8 (1839), p.472.

⁴⁴⁰ Burns, *The Principles of Midwifery*, pp.496-497.

Andrew Anderson, lecturer at Anderson's University in Glasgow, further commented upon the use of fetal stethoscopy in 1844.⁴⁴¹ He claimed that the fetal heart could be heard when a pregnancy had reached three and a half months, and it could be used to accurately indicate the state of the child. Fetal auscultation was mentioned often enough in the cases described by Glasgow practitioners, to suggest that it had become a regular part of their practice. Adams, for example, wrote that before performing perforation he confirmed that the fetus was dead, by using 'the stethoscope and other means' to ascertain this fact.⁴⁴²

As practitioners became more accustomed with fetal auscultation its use became more refined. The first example of this was found in a paper written by James George Wilson. The son of James Wilson, he followed in his father's footsteps and was employed at the Glasgow Lying-in Hospital shortly after he graduated in 1853. He remained associated with this institution until his death in 1881. Having been summoned by another medical practitioner to a woman who had been in labour for over twenty-six hours, he assessed the situation. He noted the failure of labour to progress and the diminishing strength of the patient. Moreover he stated that, in addition 'the action of the fetal heart becoming fainter and weaker' led him to make the decision to deliver without any further delay.⁴⁴³ This is the first example noted where the decision to intervene was based not only on whether the child was alive or dead, but also on the perceived changing condition of the unborn child. He decided to use the long forceps or turning, but craniotomy was not entertained because the child was still alive.

By the end of this period, fetal auscultation had become a routine element of obstetric practice. In 1869 Aeneas Munro, having spent some months working at the Glasgow Lying-in Hospital, submitted a dissertation on the subject of using the stethoscope in obstetrics. He noted the change in opinion about this practice that had occurred, writing that:

⁴⁴¹ Andrew Anderson, 'On the stethoscopic examination of the pregnant uterus', *The London and Edinburgh Monthly Journal of Medical Science*, 4 (1844), pp.103-107.

⁴⁴² Adams, 'Obstetric memoranda', pp.921-922.

⁴⁴³ Wilson, 'Two cases illustrating the advantages of turning', p.297.

The strong opposition which Professor Hamilton tried to excite, is now quite forgotten, and it is universally admitted that the presence of the sound of the foetal heart is the absolute, and only unequivocal sign of pregnancy.⁴⁴⁴

Moreover, he indicated that in cases where labour was complicated, and intervention considered possible, the use of fetal auscultation had become an essential part of the decision-making process. He wrote that:

We are wisely cautioned, before attempting any operation in midwifery, to examine the state of the child; and by means of auscultation we are not only enabled to know whether the child is in danger or not, but also to know its position.⁴⁴⁵

The enthusiasm associated with this technique, appears, to have led to further reasons for its use being suggested. Some of these pushed the boundaries of possibility. In 1870 John Aikman, house surgeon at the Glasgow Royal Infirmary and former house surgeon at the Glasgow Lying-in Hospital, published a paper in which he claimed that auscultation could be used to determine a fetus's state, its position, its gender, and whether there was more than one child.⁴⁴⁶ Fetal auscultation provided practitioners with a means of determining the state of the unborn child. When doing so it affected the decision they took regarding which procedure to use to intervene.

Much has been written about the use of fetal monitoring techniques of the twentieth century, such as ultrasound, and how these created an individual of the fetus, and resulted in attempts to save the fetus at the expense of the mother.⁴⁴⁷ There are similarities between this work examining twentieth-century practice and the observations made here. However, the life of the mother always remained as the priority even when attempts were made to also save her

⁴⁴⁴ Aeneas Munro, *Dissertation on the use of the stethoscope in obstetrics*, (Glasgow: James Maclehose, 1869), p.5. Munro was writing of James Hamilton (1767-1839), Professor of Midwifery at the University of Edinburgh.

⁴⁴⁵ Munro, *Dissertation on the use of the stethoscope in obstetrics*, p.18.

⁴⁴⁶ J. S. Aikman, 'Obstetric auscultation, with special reference to the diagnosis of foetal position', *Glasgow Medical Journal*, 2 (1870), pp.62-66.

⁴⁴⁷ For example see Monica J. Casper, *The Making of the Unborn Patient: A Social Anatomy of Fetal Surgery*, (New Brunswick: Rutgers University Press, 1998).

unborn child. The introduction and eventual employment of fetal auscultation during this period was, it seems, a significant event in the approach practitioners took towards intervention in obstetrics. It made practitioners question the methods they used in cases of disproportion.

3.6 *The limitations of location*

It was not only the types of procedure that were affected by the circumstances faced by a practitioner. Each situation shaped the way in which methods were performed. In particular the approach used in private practice appears to have been different to that taken within the hospital. A comment by Munro in his dissertation highlighted this occurrence. He wrote that:

Where the sounds are difficult to be heard it will be necessary to apply the stethoscope directly to the abdominal surface, although, in private practice, it may be, in the first instance, advisable to have the night-dress intervening.⁴⁴⁸

Societal conventions influenced the practices undertaken at the bedside during childbirth in private practice. Digby claims that due to concern over sexual impropriety, early-Victorian accoucheurs were reluctant to use the stethoscope to detect the foetal heartbeat.⁴⁴⁹ Similar anxieties, no doubt, led Burns to recommend that when attending a woman in childbirth, the room should be darkened, curtains drawn and a towel concealed under the bedclothes for wiping the practitioner's hand after delivery. He also advised that a vaginal examination should not be proposed or undertaken 'while an unmarried lady is in the room, but it is always proper that the nurse, or some other matron be present'.⁴⁵⁰ This was advice given for general obstetric practice. Whether these concerns were as prominent when a practitioner attended a case involving disproportion is not known. It seems likely that they might well not have been when urgency was key.

⁴⁴⁸ Munro, *Dissertation on the use of the stethoscope in obstetrics*, p.9.

⁴⁴⁹ Digby, *Making a Medical Living*, p.263. It was for this reason that Professor Hamilton had argued against the use of the stethoscope, see Oakley, *The Captured Womb*, p.26.

⁴⁵⁰ Burns, *The Principles of Midwifery*, pp.386-387.

The location of birth altered obstetric practices in other ways too. Susan Pitt contends that as obstetric practice involved incorporating and improvising ideas, it was likely to be different from established ideas.⁴⁵¹ Indeed, attending a woman within her home led to practitioners having to improvise when intervening. A common example of this occurred when, after having decided that intervention was necessary, a practitioner did not have the necessary tools at his disposal. Instruments such as forceps and perforators were reasonably heavy and large tools. Some practitioners would advocate different versions of them depending on the situation. It was not possible for them to carry all variations, for all occasions, at once. Thus having already arrived, and having conducted an appraisal of the situation, a practitioner often had to send for his forceps. James Wilson described a similar situation in one of his cases. Having already attempted to turn the fetus, in a case of disproportion, it was discovered that it had died. He decided that perforation was required to avoid rupturing the uterus. Wilson stated that:

We had neither perforator nor crotchet at hand, and, as the case was urgent, I without difficulty, opened the head, and broke down the brain with a pair of large scissors, and passing my finger into the cranial opening, it answered the purpose of a crotchet very well...⁴⁵²

Procedures were also altered by the physical surroundings in which birth took place. In 1854 Pagan attempted to induce premature labour in a woman thought to be in the eighth month of pregnancy.⁴⁵³ He had performed a craniotomy in her previous confinement. He decided, on the grounds of safety and effectiveness, based on reports in contemporary medical journals, to trial directing alternate currents of hot and cold water against the os uteri to effect labour. This involved creating a column of water, advised to be approximately ten feet in height, to produce what was believed to be the necessary force. A cistern attached to a tube was recommended for this purpose. The procedure was carried out in the patient's home, but 'it was so low in the ceiling that one could

⁴⁵¹ Susan Pitt, 'Midwifery and medicine: Gendered knowledge in the practice of delivery', in *Midwives, Society and Childbirth: Debates and Controversies in the Modern Period*, ed. by Hilary Marland and Anne Marie Rafferty, (London: Routledge, 1999), p.219.

⁴⁵² Wilson, 'Two cases in which turning could not be accomplished', p.446.

⁴⁵³ Kirkwood, 'Case of attempted induction of premature labour', pp.318-322.

not stand erect in it, with his hat on'.⁴⁵⁴ It was not possible to set up a fall of water of more than four feet. Thus it was decided to use enema equipment which had its nozzle replaced with an elastic rectum tube. It was believed that this would produce a greater force than that of the method described in the journals. Over a period of four days, water of 112 degrees Fahrenheit was injected for fifteen minutes, followed by cold water for twelve minutes. This was carried out once during the morning and in the afternoon. Having failed to induce labour during these four days it was decided on the fifth day to rupture her membranes. Labour began the next day and the child was born but survived only to make a few gasps; the mother survived.

Murphy-Lawless has suggested that rupturing membranes to induce labour was common during the nineteenth century because it was easy to do.⁴⁵⁵ This was done either by using a finger to dilate the os uteri and then removing some of the cervical membrane, or by piercing the membrane and evacuating the amniotic fluid. However, Pagan chose a technique that involved considerably more practical difficulties. This would rather seem to fit with Edward Shorter's observation that there was in fact a seventy-year period during the nineteenth century when rupturing the membranes fell out of favour with obstetricians.⁴⁵⁶ As well as demonstrating the improvisation that occurred when practitioners decided to intervene, this case also indicated that practitioners read about the work of others, and also implemented alterations to their own techniques based on what they took from these publications. The methods employed by practitioners in cases of disproportion were very much affected by their own experience and knowledge.

3.7 Consultation between practitioners

When it was evident that labour was not progressing, and that intervention was likely, practitioners requested the attendance of their colleagues to discuss what to do. Consultations like these were common to medicine when complications appeared. Hamilton and Lamb observed that consultations were required before

⁴⁵⁴ Kirkwood, 'Case of attempted induction of premature labour', p.319.

⁴⁵⁵ Murphy-Lawless, *Reading Birth and Death*, p.201.

⁴⁵⁶ Shorter, *Women's Bodies*.

all operations at the Glasgow Royal Infirmary.⁴⁵⁷ In difficult medical cases where practitioners had little experience, and the risks to the patient were considerable, it was no doubt sensible to seek help and advice. However, it was not only considered prudent to consult because it was believed that the best form of practice would be followed. David Smith had attempted to placate any objections to his opinion, that craniotomy should be used when the child was alive, by arguing that the decision to use the procedure should be based on a consultation between experienced practitioners. He wrote that the caesarean section had 'hitherto been so fatal in its consequences, that no rightly judging man would urge its performance on his own responsibility'.⁴⁵⁸ It was not just a matter of sharing experience, but also of sharing responsibility. If a procedure was not successful it was, no doubt, easier to explain why it was used if a collective decision had been taken, and accountability rested on several shoulders.

Within these consultations a hierarchy existed. A man with experience of unproblematic obstetric cases was often already present having been in attendance first, or after being called for by a midwife. If labour did not proceed as expected, he would then request the attendance of another practitioner. He might already have attempted to intervene himself. Generally, the last person to be consulted was the experienced obstetric practitioner. It was the decision of this man that was most influential. In the cases reported, the practitioner with the most experience made the final decision. For example, Alexander Morton wrote in one case that he decided to perform turning, having read an essay on the subject that Wilson had written and given to him previously.⁴⁵⁹ He sent for Wilson, who considered and approved Morton's proposal. Morton attempted the manoeuvre and when he failed Wilson successfully carried it out. On no occasion in these descriptions did any of the recognised obstetric practitioners consult with each other during a case. This might have been due to incomplete recording. However, these experienced practitioners were in competition with each other for cases and students. Thus it might not have been in their interests to dilute the authority they held at the bedside further.

⁴⁵⁷ Hamilton and Lamb, 'Surgeons and surgery', p.75.

⁴⁵⁸ Smith, 'Remarks on division of the symphysis pubis', p.133.

⁴⁵⁹ Morton and Wilson, 'Case of turning as a substitute for craniotomy', pp.394-395.

The remarks of one practitioner indicate that he wanted to demarcate his abilities from those of others with less experience. James Wilson repeatedly emphasised the importance of skill and ability. He suggested that many students and practitioners believed that little training was required to master obstetric techniques.⁴⁶⁰ The result of ill preparation, he argued, would damage a practitioner's reputation, and 'what is still worse - the lesson may come too late, to preserve some poor sufferer.'⁴⁶¹ He stated that '[t]he head must be perfectly informed, but the hand must be no less perfectly trained.'⁴⁶² His confidence in his own experience and skill was demonstrated when he described a case in which he had been called for at a late stage. The practitioner in attendance had attempted to turn and failed. Wilson claimed that '[w]hen I have had the management of turning from the beginning, this difficulty has never happened to me'.⁴⁶³ A group of individuals, who held positions of authority in midwifery within the teaching institutions of Glasgow, had been able to position themselves within a niche of practice. Difficult cases were referred to them, and it was they who then decided on the appropriate intervention, subject to the wishes of the woman, her family, and the circumstances of each case.

When a practitioner relatively inexperienced in difficult labours oversaw the delivery of the child, perhaps with forceps, there was no need to involve a more experienced colleague. However, in the more severe cases where forceps failed a practitioner would generally seek advice. On only one occasion when a consultation was reported as having taken place were no obviously experienced obstetric practitioners involved. Neilson, listed as a surgeon to the Glasgow Eye Infirmary, had been asked by the woman to attend her labour.⁴⁶⁴ When it was obvious to him that it would be difficult he consulted with other practitioners. These were, as far as can be ascertained, all recent medical graduates without positions in midwifery, or reputations for obstetric work. No doubt they had

⁴⁶⁰ James Wilson, 'The use, and the abuse, of the obstetric forceps: being the substance of a clinical lecture delivered on the 14th February 1846, to the students attending the Glasgow Lying-in-Hospital', *Monthly Journal of Medical Science*, 6 (1846), p.321; Wilson, 'On the advantages of turning', p.1; and Wilson, 'Report of the Glasgow Lying-In Hospital and Dispensary, for the year 1851-52', p.4.

⁴⁶¹ Wilson, 'The use, and the abuse, of the obstetric forceps', p.321.

⁴⁶² Wilson, 'The use, and the abuse, of the obstetric forceps', p.329.

⁴⁶³ Wilson, 'Two cases in which turning could not be accomplished', p.446.

⁴⁶⁴ Neilson, 'On a case of caesarean section', pp.335-336.

some experience of childbirth, as obstetrics was likely to have been a part of their general practice, but their knowledge of similar cases to this was probably negligible. Upon deciding that caesarean section was necessary they did not send for one of the established obstetric practitioners. They advised the woman to enter hospital and she refused. Neilson then went ahead and performed the procedure with the help of his colleagues.

Why they did not consult with one of the eminent obstetric practitioners of the period was not explained. A possible reason for this decision exists in the perception of the nature of a surgical procedure like this. Caesarean section was not a procedure performed by established obstetric practitioners, but by established surgeons instead. Recognised surgeons, not obstetricians, had carried out the two previous uses of this procedure in Glasgow, mentioned earlier in this chapter. Similarly in London, the obstetric accoucheur Charles West, asked Frederic Skey, an experienced surgeon, to perform a caesarean section.⁴⁶⁵ While any experience of, and success with, abdominal surgery was negligible at this time, surgeons were evidently perceived as a better bet in this situation. Surgical experience, of any sort it would seem, provided hospital surgeons with a reputation for being better equipped for this procedure than an obstetric practitioner with little operative experience. Towards the end of the nineteenth century this changed, and practitioners with obstetric backgrounds performed caesareans in Glasgow. The chapters that follow will explore this change further.

3.8 Conclusion

The statistics provided by experienced obstetric practitioners suggest that less than 1 per cent of their total cases involved disproportion that warranted intervention. It seems likely that the figure was actually considerably below 1 per cent, even for those practitioners who were referred to when childbirth was believed to be problematic. Indeed, the prevalence of this condition in Glasgow, before 1870, was apparently negligible, despite obstetric texts of the period giving the opposite impression. That fewer cases of rickets were documented

⁴⁶⁵ Charles West, 'Account of a case in which the Caesarean section was performed; with remarks on the peculiar sources of danger attendant on the operation', *Medico-Chirurgical Transactions*, 34 (1851), p.64.

during this period, relative to later in the nineteenth century, provides an explanation for this observation. In the chapters that follow a similar examination will be made of the prevalence of disproportion met with by Glasgow practitioners. The finding in Chapter 2 that rickets became more prevalent after 1870, would suggest that the medical men of the city would also encounter disproportion more frequently.

In the limited number of cases of this condition that were described, several methods were used to try and complete delivery. During this thirty-year period caesarean section was described as having been used once for this condition. Though a greater number of occasions were described when the fetal head was perforated, practitioners did not favour this procedure when it was known that the fetus was alive. The introduction of fetal auscultation during this period made it possible for the state of the fetus to play a prominent role in the decisions made in cases of disproportion. Practitioners also used forceps, induction of premature labour, and turning in these cases. The examples where craniotomy was used after forceps and turning had failed indicate an aversion to destroying the fetus. It also demonstrates the difficulty that practitioners had in determining what practices would succeed. The lack of experience of these situations cannot have helped them when they encountered the condition.

The decision to use each of these techniques was influenced by several factors. The experience of the previous confinements of an individual woman allowed practitioners to advise that labour be induced prematurely. However, for the most part disproportion was diagnosed only after labour had continued for several hours and was not progressing. Practitioners considered the risks associated with each procedure and the individual circumstances of a case before deciding on a course of action. Although established obstetric practitioners held authority over other less experienced practitioners in these situations, medical authority was not absolute. The wishes of the woman, her family, and her friends were also important to the decisions made in these cases. In the chapters that follow similar sources are examined for after 1870. During a period when difficult births became increasingly associated with the lying-in hospitals, whether and how this affected the decision-making in cases of disproportion will be considered.

Chapter 4 – 1870-1890

Between 1870 and 1890 disproportion was a subject that received a great deal of attention from medical practitioners in Glasgow. The prevalence of the condition appears to have increased, but quantifying this is problematic. Innovations from abroad in the form of new instruments, such as axis-traction forceps, and new techniques, including Porro's and Säger's modifications of caesarean section, also led to this interest. The introduction of antisepsis by Lister, and subsequent innovations to prevent post-operative infection were also important for the treatment of the severest forms of this condition. Following several failed efforts with caesarean section over these two decades in Glasgow, Murdoch Cameron managed to succeed, at his first attempt, to perform the procedure with both mother and child surviving. This operation took place at the Glasgow Maternity Hospital, and this success strengthened the hospital staff's resolve that they should be dealing with difficult cases. While all of these changes were taking place, obstetric practitioners worked to improve the standing of their field within medicine, and obstetrics slowly emerged as a specialty. The influence this had on obstetric practice was significant. Obstetric practitioners sought to demarcate their work from other medical practitioners by emphasising the experience and skill they had, but at the same time they stressed the scientific nature of their decision-making. As a result, pelvimetry became more important for decisions about treatment, and caesarean section, an operation usually performed by general surgeons, was moved into the Glasgow Maternity Hospital and eventually conducted by obstetric practitioners.

4.1 Prevalence of disproportion

After the last edition of Burns's *The Principles of Midwifery* (1843), the next major obstetric textbook written by a Glasgow practitioner was William Leishman's *A System of Midwifery*, published in 1873. Leishman, having established himself in general practice, was initially appointed as a surgeon by the Glasgow University Lying-in Hospital in the early 1860s.⁴⁶⁶ During this decade

⁴⁶⁶ For information about Leishman see, [Anon.], 'Obituary - Professor William Leishman', *Glasgow Medical Journal*, 41 (1894), pp.197-199; [Anon.], 'Obituary - Professor William Leishman, M.D. Glasg.' *The Lancet*, 1 (1894), pp.506-507; John Struthers, 'Obituary - The late Professor Leishman', *Edinburgh Medical Journal*, 39 (1894), pp.964-968; and [Anon.], 'Obituary - William Leishman, M.D., F.F.P.S.G.' *British Medical Journal*, 1 (1894), p.496.

Leishman also became the editor of the *GMJ*, in which he published several articles on the subject of midwifery. In 1863 his career took another direction when he was appointed as Professor of Medical Jurisprudence at Anderson's University in Glasgow. Leishman's decision to further his career by pursuing a more senior post in a different area of medicine was not unusual during the nineteenth century. His move from midwifery to medical jurisprudence is illustrative of the fluidity of the medical profession at this time. It was quite common, especially in Scotland, for a practitioner to move from one specialty to another.⁴⁶⁷ In any case, a familiarity with midwifery provided valuable experience for working in medical jurisprudence. Leishman's experience and knowledge of pregnancy and childbirth would have helped, for example, when answering questions in court on alleged infanticide.⁴⁶⁸ Whilst in this post Leishman also held a surgical appointment at the Glasgow Royal Infirmary. It was not long before he re-established his association with midwifery. In 1868, upon the retirement of John MacMichan Pagan, Leishman successfully applied for the Chair of Midwifery at the University of Glasgow. He continued in this field of medicine for the rest of his career and his reputation led to Fellowships of the Edinburgh and London Obstetrical Societies. Leishman's textbook was first published five years into his post as Professor of Midwifery.

Leishman included a chapter on 'Deformities of the pelvis' in *A System of Midwifery*, in which he discussed what was required of a medical practitioner when these deformities resulted in disproportion. He described rickets as the most frequent cause of pelvic deformity, but also noted that in some cases abnormalities of the bony pelvis were a consequence of malacosteon.^{469,470} Following this section, Leishman devoted several chapters to describing the use of forceps, craniotomy, turning, induction of premature labour, and caesarean section. When writing of these procedures Leishman remarked on the significance of contracted pelvises to the practice of obstetric medicine. He wrote:

⁴⁶⁷ Crowther and Dupree, *Medical Lives in the Age*, pp.192-195.

⁴⁶⁸ M. A. Crowther and Brenda M. White, 'Medicine, property and the law in Britain 1800-1914', *The Historical Journal*, 31 (1988), pp.853-870.

⁴⁶⁹ Leishman, *A System of Midwifery*, pp.494-495.

⁴⁷⁰ Malacosteon, also known as osteomalacia, is the name given to the adult variation of rickets. Malacosteon can also cause deformity of bones, see Fraser, 'Vitamin D', pp.104-107.

Before passing to the more particular consideration of Operative Midwifery, it is proper that we should in the first instance turn our attention to the important subject of Pelvic Deformity; upon which condition a very large proportion of all midwifery operations depends.⁴⁷¹

Leishman did not comment on how often he encountered this condition, nor how frequently he used the operative techniques he described. Without any further comment by Leishman on the prevalence of such cases, a reader inexperienced in medical practice could be forgiven for coming to the conclusion that medical practitioners frequently faced labours complicated by disproportion.

The opinions some students formed about obstetric practice and the reality of everyday work were, apparently, quite different. Medical students in Glasgow, having read Leishman's textbook, would perhaps have embarked upon a career in general practice expecting to encounter many complicated deliveries. Although some students attended labours at the lying-in hospitals of Glasgow, their actual experience of childbirth was, until the end of the nineteenth century, brief and unregulated. William Loudon Reid, a physician at the Glasgow Maternity Hospital, commented on his perception of obstetric work when he was a student. He studied medicine at the University of Glasgow in the late 1860s, and remembered that:

I had purchased and read carefully Swayne's *Aphorisms*, and had a profound conviction that in a large city every second case of labour ought to be one of placenta praevia, inversion of the uterus, or at least a cross-birth. Parturition was, I thought, a frightfully dark valley through which most women must needs pass.⁴⁷²

The text Reid referred to was Joseph Griffiths Swayne's *Obstetric Aphorisms: For the Use of Students Commencing Midwifery Practice*, which was first published in 1856. As well as demonstrating that Glasgow medical students' reading was not confined to literature produced by practitioners from their own

⁴⁷¹ Leishman, *A System of Midwifery*, p.494.

⁴⁷² William L. Reid, 'The clinical teaching of midwifery and the diseases of women', *Edinburgh Medical Journal*, 32 (1887), p.866.

city, Reid's comment also indicates that obstetric textbooks were important forces behind the opinions students formed about medical practice.

The absence of contracted pelves from the list of problems Reid wrote of, might suggest that this condition did not attract his attention while he was a student. However, the content of Swayne's work explains why Reid did not mention disproportion. Swayne, based in Bristol, intended his book to be used by students. Swayne did not describe obstetric operative techniques in his book; there was no need to. He was of the opinion that if students encountered a labour obstructed by a contracted pelvis they were not to deal with it themselves, but instead were to seek the help of an experienced practitioner.⁴⁷³ He reinforced this message by not including information about the possible operative measures in cases of disproportion. Burns's and Leishman's textbooks were different as they were aimed at both practitioners and students; hence they also provided descriptions of operative procedures. Neither of the Glasgow texts differentiated between what they considered the practice of a student or practitioner. It is likely that students reading these considerable tomes would have formed the impression that disproportion was a common problem of childbirth. Whether this was an accurate reflection of actual experience can only be determined by examining descriptions of practical experience during this period.

In Chapter 2 it was observed that comments during the second half of the nineteenth century suggested that rickets increasingly afflicted the children of Glasgow after 1860. Women who had suffered from rickets as children during the 1860s would have reached physical maturity during the late 1870s and 1880s. If an increase in the incidence of rickets amongst the population of Glasgow had occurred during this time, it would therefore follow that a higher prevalence of disproportion would exist during the 1880s than in previous decades. There were indeed more articles produced that mentioned disproportion after 1880 in the medical literature. However, this increase in interest can be explained by the overall expansion in medical publishing during this period.⁴⁷⁴ Based on this

⁴⁷³ Joseph Griffiths Swayne, *Obstetric Aphorisms: For the Use of Students Commencing Midwifery Practice*, (Philadelphia: Henry C. Lea, 1873), p.125.

⁴⁷⁴ W. F. Bynum and Janice C. Wilson, 'Periodical knowledge: medical journals and their editors in nineteenth-century Britain', in *Medical Journals and Medical Knowledge: Historical Essays*, ed. by W. F. Bynum, Stephen Lock and Roy Porter, (London: Routledge, 1992), pp.29-48.

evidence we can be sure that practitioners in Glasgow encountered cases of disproportion. Although determining the overall prevalence of this condition remains difficult, these sources do provide some indication of how often individual practitioners had to deal with severe cases of disproportion. For example, in 1885 Samuel Sloan, a physician at the Glasgow Maternity Hospital, gave a paper to the Glasgow Obstetrical and Gynaecological Society on the subject of labour obstructed at the pelvic brim. This was the first meeting of this society after it had been established earlier in the same year. That the first paper presented to the organisation was on this topic indicates that it was a subject of concern for some Glasgow practitioners. Sloan justified the subject of his paper during his introduction: 'Obstruction in the *conjugate* diameter... is a most common cause of delay in labour; ... I have, in the course of my hospital and other practice, seen many cases of this nature'.⁴⁷⁵ Sloan did not provide any figures, but his claim that this condition was common contrasts with the opinions of Glasgow-based practitioners cited before 1870.

Other practitioners outlined their experience of this condition during the society's second meeting when Sloan's paper was discussed.⁴⁷⁶ Collectively, the comments during this discussion suggest that the majority of practitioners encountered cases involving disproportion in their obstetric practice. Alexander Miller noted that he had experience of eighteen cases of labour delayed by a contracted pelvis. He worked on the south side of Glasgow and had been an outdoor accoucheur for the Glasgow Maternity Hospital between 1876 and 1878. Severe cases remained rare, as Miller had been able to complete delivery in all of these cases using either forceps or podalic version; one of the mothers died of peritonitis and four of the children passed away. He did not mention having to resort to craniotomy.

During this discussion two other practitioners were reported to have specifically mentioned that they had not used craniotomy during their practice. The large number of obstetric cases these two practitioners had attended suggests that cases of disproportion that were severe enough to require craniotomy were unusual. George Halket stated that in approximately 3000 cases of labour he had

⁴⁷⁵ Samuel Sloan, 'On the treatment of labour delayed by obstruction at the pelvic brim', *Edinburgh Medical Journal*, 31 (1886), pp.631-632.

⁴⁷⁶ [Anon.], 'Glasgow Obstetrical and Gynaecological Society, session I meeting IV', *Edinburgh Medical Journal*, 31 (1886), pp.970-981.

attended, he had only used forceps in cases of disproportion and had never used craniotomy in his own practice.⁴⁷⁷ Halket was a general practitioner based in Anderston, a district that was incorporated into the Glasgow municipality in 1846. Having graduated in 1873 he attended these deliveries over a period of approximately thirteen years; approximately 200 confinements a year. As in previous decades obstetrics continued to be an important element of general practice. Indeed, Halket said '[w]e have all to make our living by our practice, and our success in practice depends, to a large extent at least, on our success in the practice of midwifery.'⁴⁷⁸ We do not know how many cases of disproportion Halket encountered within his practice, however, the lack of any cases involving craniotomy is striking when we consider the location of his practice. Anderston was an area of Glasgow noted for the destitution of its residents. The poverty of Anderston and its overcrowding was highlighted in 1876 by the medical officer of health, James Burn Russell.⁴⁷⁹ It would be expected that severe cases of disproportion would occur in areas such as this. Halket's experience suggests that severe disproportion was rare, although it is possible that he passed these cases over to more experienced practitioners and did not record them as part of his own practice.

James Kellock Kelly also stated that he had attended about 3000 obstetric cases.⁴⁸⁰ He revealed that he had never had to use craniotomy. Later that year Kelly published information about the 2823 confinements he had attended as part of his general practice, and revealed that he had encountered only ten cases (0.35 per cent of his total cases) of 'abnormally small pelvis' during a period of thirteen years between 1873 and 1885.⁴⁸¹ Three years later, in 1889, Kelly noted in his MD thesis that he had encountered one more case involving pelvic contraction during the further 177 confinements he attended. He also stated that 'I have as yet been so fortunate as to meet with only slight cases of

⁴⁷⁷ [Anon.], 'Glasgow Obstetrical and Gynaecological Society, session I meeting IV', p.977.

⁴⁷⁸ George Halket, 'The obstetrical and gynaecological clinics of Vienna and Berlin', *Glasgow Medical Journal*, 27 (1887), p.408.

⁴⁷⁹ Derek A. Dow and Michael S. Moss, *Glasgow's Gain: The Anderston Story*, (Carnforth: Parthenon, 1986), pp.52-70.

⁴⁸⁰ James Kelly's middle name was listed as Kellock in the *Medical Directory* and Royal Samaritan Hospital for Women, 'Glasgow Samaritan Hospital for Women: Annual Reports', 1887-1896. His entry in the *Medical Register* spelt his middle name as Kelloch.

⁴⁸¹ [Anon.], 'Glasgow Obstetrical and Gynaecological Society, session 1885-86 - A review of thirteen years' private obstetric practice', *Glasgow Medical Journal*, 27 (1887), p.386.

extreme contraction.’⁴⁸² The rarity of such cases in Kelly’s practice could be explained by a low prevalence of the condition in general. However, Kelly admitted in his thesis that during the last nine years of his practice (1410 cases) he had ‘ceased in great measure to attend the very poorest class of the community, though my practice has always been chiefly among working people’.⁴⁸³ The change in the type of patient would have resulted in Kelly being less likely to encounter women with grossly deformed pelves. His clientele, although not well off, would have experienced better living conditions than his previous patients. Kelly’s career reflects the aspirations of many general practitioners of the period. Financially it made sense to attend a woman’s confinement, as it could lead to further medical work with her and her family. Also, by attending obstetric cases of the poorer residents of the city, a general practitioner could demonstrate and improve his skill and knowledge with the intention of working with better-off patients in the future. The change in Kelly’s practice would have not only meant that his patients were less likely to have suffered from rickets, but he would also have been able to charge higher fees.

Although many of the men in attendance at this discussion stated that they had attended cases involving disproportion, their experience should be considered in the context of why they had gathered together to discuss this topic. Presumably those attending the initial meetings of the Glasgow Obstetrical and Gynaecological Society had a particular interest in obstetrics. Halket’s and Kelly’s considerable obstetric experience confirms that they had a vested interest in this area of medicine. Indeed, Halket became one of the founders of the Glasgow Samaritan Hospital for Women.⁴⁸⁴ Some of the men in attendance had established reputations amongst their colleagues that meant that they were referred to when difficult cases arose. John Stuart Nairne mentioned he had been required to carry out craniotomy when other practitioners had asked him to attend.⁴⁸⁵ He also acknowledged that some practitioners met with more cases of contracted pelves than others. The obstetric experience of these practitioners was therefore not necessarily representative of the majority of medical

⁴⁸² James K. Kelly, 'Private obstetric practice: An analysis of 3,000 consecutive cases' (M.D., University of Glasgow, 1889), p.53.

⁴⁸³ Kelly, 'Private obstetric practice', p.11.

⁴⁸⁴ Crowther and Dupree, *Medical Lives in the Age*, p.144.

⁴⁸⁵ 'Glasgow Obstetrical and Gynaecological Society, session I meeting IV', *Edinburgh Medical Journal*, 31 (1886), p.977.

practitioners in Glasgow. That many of them described having dealt with disproportion should not, therefore, be considered as an indication that most Glasgow-based practitioners had this experience. Nevertheless, this discussion did show that practitioners from various backgrounds, general practitioners and those with hospital appointments, encountered disproportion on occasion, some more often than others.

The number of women admitted to the Glasgow Maternity Hospital whose labour was affected by disproportion, and upon whom some form of intervention was used to complete delivery did increase during this period. It was shown in Chapter 2 that after the 1870s an increasing proportion of cases in the indoor and outdoor practice of the hospital involved obstetric procedures. In 1888 Sloan also made this observation, noting the use of forceps and craniotomy in the hospital; between 1855 and 1857 688 women were delivered, the forceps were used on 3 occasions and craniotomy was not used; between 1885 and 1887 736 women were delivered, the forceps being used on 115 occasions and craniotomy 11 times.⁴⁸⁶ The increase in cases involving forceps was noticeable in general practice as well as within hospitals, and was not always associated with more difficult births being encountered. Francis Smith has suggested that the forceps were used more frequently through a desire for faster deliveries and an enthusiasm for antisepsis.⁴⁸⁷ It has also been identified that an increase in the number of women admitted to lying-in hospitals for medical rather than social reasons occurred during the late-nineteenth century. Nuttall argues that this shift occurred after the 1890s at the Edinburgh Royal Maternity Hospital, and can be explained by a change in the perception of medical practitioners and the public towards lying-in hospitals. At the Glasgow Maternity Hospital this change in perception seems to have happened earlier. Indeed, Sloan contended that the reason for the increase in the use of forceps and craniotomy should be attributed to a growing confidence in the value of the hospital in severe cases. He also argued, however, that the increase was partly a result of abnormal labours occurring more often.

⁴⁸⁶ Samuel Sloan, 'The Glasgow Lying-In Hospital', *Glasgow Medical Journal*, 30 (1888), pp.35-36.

⁴⁸⁷ Smith, *The People's Health 1830-1910*.

Table 4.1: Cases of caesarean section and craniotomy at the Glasgow Maternity Hospital, November 1879 - November 1889, percentage of total cases in brackets.⁴⁸⁸

Year	Indoor cases	Outdoor cases
Nov 1879- Nov 1880	7 (2.56)	0 (0.00)
Nov 1880- Nov 1881	1 (0.39)	3 (0.24)
Nov 1881- Nov 1882	3 (1.16)	3 (0.23)
Nov 1882- Nov 1883	5 (1.64)	2 (0.16)
Nov 1883- Nov 1884	5 (1.52)	2 (0.15)
Nov 1884- Nov 1885	6 (1.63)	4 (0.27)
Nov 1885- Nov 1886	5 (1.36)	3 (0.18)
Nov 1886- Nov 1887	3 (0.84)	3 (0.18)
Nov 1887- Nov 1888	10 (2.83)	1 (0.05)
Nov 1888- Nov 1889	12 (3.10)	2 (0.11)
Total	57(1.70)	25 (0.16)

While the use of forceps more frequently, and at an earlier stage of labour during the second half of the nineteenth century can be explained by practitioners being happier to intervene, the same explanation cannot be used for the increase in cases of craniotomy. It was shown in Chapter 3 that practitioners did not revert to craniotomy without very good reason. Even in cases where it was believed that it was the proper procedure to use, if the child was thought to be alive other procedures were often tried first. It will be shown later in this chapter that after 1870 practitioners continued to try and avoid using craniotomy when possible, perhaps to an even greater extent than previously. Closer examination of the use of craniotomy and caesarean section at the hospital, the procedures that were used principally in cases of very severe disproportion, demonstrates a change in the use of these procedures that requires further explanation. Between 1869 and 1879 craniotomy was used twice indoors and four times outdoors. During the 1880s there was a substantial increase in the use of these procedures (see Table 4.1).

⁴⁸⁸ These figures are taken from the annual reports for the Glasgow Maternity Hospital held at the NHSGGCA. Each report recorded the work of the hospital over a twelve-month period beginning in November.

From the beginning of 1880 the number of severe cases of disproportion attended by staff of the hospital had increased.⁴⁸⁹ This change coincided with the observations made regarding the increased prevalence of rickets in Glasgow. Therefore, the change can be attributed to an increase in the number of women with contracted pelves giving birth. However, it should also be acknowledged that during the 1880s the hospital's annual reports began to include statements requesting that difficult labours be sent into its indoor service. Indeed, the surge in the use of craniotomy inside the hospital in 1888 occurred soon after the hospital directors first requested that difficult cases should be sent to the institution. In the 1887 annual report for the Glasgow Maternity Hospital, published early in 1888, the following statement was included.

They wish also to beg the medical men of Glasgow, both those on the Hospital's outdoor staff and others, to endeavour to ascertain as early as possible whether the case is one which should be sent to the Hospital, and if so, to send it without loss of time, and if possible without operating beforehand.⁴⁹⁰

The link between the timing of this statement and the increase from three cases of craniotomy in the previous year to ten in 1888 is compelling. The expansion in the outdoor provision of the hospital would have enabled such a change, as would a modification in the perception of practitioners not associated with the hospital. The collective evidence of comments about rickets in the Glasgow population, the interest in disproportion at the newly formed Glasgow Obstetrical and Gynaecological Society, and the increasing number of cases involving intervention at the Glasgow Maternity Hospital during the 1880s suggests that the prevalence of disproportion had increased. However, the significant increase in cases admitted to the hospital at the end of the 1880s, was more likely a result of the determination of its staff to ensure that difficult cases should be treated within the institution, rather than there having been a significant further increase in women with contracted pelves giving birth.

⁴⁸⁹ After 1880 the Glasgow Maternity Hospital annual reports included the number of cases of each operative procedure performed each year. Before 1880 the number of preterm and operative cases were listed, but these were not further divided by condition or treatment as they were in the following years.

⁴⁹⁰ *The fifty-third annual report of the Glasgow Maternity Hospital and Dispensary, North Portland Street*, (Glasgow: James Lumsden, Son & Co, 1888), p.6.

The comment by Samuel Sloan regarding the relative abundance of disproportion, cited earlier in this chapter, needs to be considered in this context. Sloan became an assistant physician at the Glasgow Maternity Hospital in 1875.⁴⁹¹ He was unsuccessful in his attempt to become a physician accoucheur at the Western Infirmary in 1878, and also failed in his application in 1881 for Professor of Midwifery at the Anderson's College.⁴⁹² However, he continued working at the Glasgow Maternity Hospital as an obstetric physician until 1899. It is therefore not surprising that he had considerable experience of this condition.

4.2 A period of change

Although Leishman's contribution to obstetric literature did not receive as many lasting accolades as Burns's textbook, it was still considered a valuable addition to the field when it was published. A review in *The Obstetrical Journal of Great Britain and Ireland* stated that:

By his present work ... he [Leishman] has added fresh honours to his name, and secured for himself a place amongst the best writers on Obstetric Medicine in this country. His book is now without doubt the most complete System of British Midwifery extant.⁴⁹³

In the preface to his book, Leishman wrote that his intention was for it to be studied by practitioners and students. He would no doubt have been pleased to read that, by the time the second edition was in circulation in 1876, the *GMJ*

⁴⁹¹ For bibliographical information about Samuel Sloan see, George Eyre-Todd, *Who's Who In Glasgow In 1909: A Biographical Dictionary Of Nearly Five Hundred Living Glasgow Citizens And Of Notable Citizens Who Have Died Since 1st January 1907*, (Glasgow: Gowans & Gray, 1909); [Anon.], 'Obituary - Samuel Sloan, M.D., F.R.F.P.S.G., Glasgow', *Glasgow Medical Journal*, 94 (1920), pp.299-301; and [Anon.], 'Obituary -Samuel Sloan M.D.' *British Medical Journal*, 2 (1920), pp.683-684.

⁴⁹² Sloan was short listed for the position at the Western Infirmary and was reportedly considered as the second best candidate for the professorial position behind Abraham Wallace, see [Anon.], 'Glasgow', *The Lancet*, 1 (1881), p.602; and NHSGGCA, Records of Western Infirmary Hospital, GB 812 HB 6/1/4, 'Western Infirmary minute book', 1877-1879, p.298.

⁴⁹³ [Anon.], 'Review - A System of Midwifery, Including the Diseases of Pregnancy and the Puerperal State', *The Obstetrical Journal of Great Britain and Ireland*, 1 (1874), p.522.

was reporting that it had 'been adopted as a text-book in the best medical schools of the country'.⁴⁹⁴

In his textbook Leishman described the procedures associated with disproportion in detail. It is difficult to establish what techniques he actually used, as he referred to his own work on very few occasions. He did express an opinion about what should be done when disproportion was encountered, and his views did not differ greatly from those of practitioners of the previous thirty years. Leishman advocated the induction of premature labour, as had his predecessors, in instances when extreme pelvic deformity was evident, or a woman's previous confinements had ended with the use of a destructive technique.⁴⁹⁵ Glasgow practitioners reported few instances of induction of premature labour during this period. At the Glasgow Maternity Hospital it was used on only ten occasions between 1879 and 1889 (see Table 2.3). Practitioners first saw the majority of cases either during labour, or so close to full-term that induction of premature labour could not be considered. In these instances Leishman advocated allowing labour to proceed to determine if it would progress.

When labour was tedious and disproportion was suspected, Leishman suggested attempting delivery with forceps. Although he was hesitant to interfere, Leishman questioned those practitioners who used the forceps in less than 4 per cent of their cases. His comment reflected the increasing emphasis placed on the use of this instrument by practitioners in obstetric practice in general during this period. When it was thought that craniotomy might be required, Leishman advocated trying turning as an alternative. Whereas Burns had discouraged the use of turning, the experience of eminent practitioners of the century, including most famously Edinburgh's James Young Simpson and of course Glasgow's own James Wilson, led Leishman to support the use of this procedure. He highlighted the use of a combined method where a hand was introduced internally and a hand was used to manipulate the position of the fetus externally. The London obstetrician John Braxton Hicks had described this technique in 1864.⁴⁹⁶ He advised that craniotomy would be necessary in some situations, but that

⁴⁹⁴ [Anon.], 'Review - *A System of Midwifery, Including the Diseases of Pregnancy and the Puerperal State*, by William Leishman, second edition', *Glasgow Medical Journal*, 8 (1876), p.89.

⁴⁹⁵ Leishman, *A System of Midwifery*, p.512.

⁴⁹⁶ Leishman, *A System of Midwifery*, pp.572-576.

caesarean section was a last resort only to be used when it was not possible for a child to be brought through the pelvic canal even after its head had been mutilated.⁴⁹⁷ Apart from his opinion regarding the use of forceps, Leishman's view largely agreed with those of practitioners described in the previous chapter.

A System of Midwifery was revised on three occasions, the fourth edition being published in 1888. Leishman did not alter to any great degree the sections of his book that discussed disproportion and its treatment. His failure to do so led the reviewers of these later editions to question Leishman's advice. For example, it was noted in the *BMJ* review of the last edition, that during the eight years since the third edition there had been significant changes in obstetric practice. Highlighted in particular, were the prophylactic treatment of puerperal fever and alterations to the practice of caesarean section. It was suggested that Leishman had not kept up with these changes.⁴⁹⁸ Reviewers questioned Leishman's advocacy of the straight forceps. For example, in the *GMJ* it was stated that '[i]n his admiration of this form of the instrument [straight forceps], Dr Leishman now stands pretty much alone in the front rank of British obstetricians'.⁴⁹⁹ The majority of practitioners now supported the use of the forceps with a pelvic curve. The pelvic curve was an eighteenth-century modification, designed to enable the forceps to follow the axis of the pelvis as it drew the fetal head out.

Loudon has asserted that until the 1880s obstetrics was in a 'phase of stagnation'.⁵⁰⁰ This claim is supported by the similarity between Leishman's opinions and those of previous practitioners, and the reviews of Leishman's textbook as it went through each edition. Furthermore, it was claimed in 1874 that Burns's textbook was 'still extensively used'.⁵⁰¹ Of course students and practitioners did not have to rely on Leishman's textbook. Practitioners outside

⁴⁹⁷ Leishman, *A System of Midwifery*, pp.515-556.

⁴⁹⁸ [Anon.], 'Review - William Leishman *A System of Midwifery, Including the Diseases of Pregnancy and the Puerperal State* fourth edition', *British Medical Journal*, 1 (1889), p.195.

⁴⁹⁹ [Anon.], 'Review - *A System of Midwifery*, second edition', p.90.

⁵⁰⁰ Irvine Loudon, 'Childbirth', in *Companion Encyclopedia Of The History Of Medicine*, ed. by W. F. Bynum and Roy Porter, vol. 2 (London: Routledge, 1993), p.1053.

⁵⁰¹ [Anon.], 'Review - *A System of Midwifery, including the Diseases of Pregnancy and the Puerperal State*', *Edinburgh Medical Journal*, 19 (1874), p.259.

Glasgow published other well-reputed textbooks that were used for reference. William Smout Playfair's *A Treatise on the Science and Practice of Midwifery*, for example, was a popular text that had nine editions between 1876 and 1898. As will be shown at several points during this chapter, the decisions of Glasgow obstetric practitioners were shaped by the experience of practitioners located abroad and elsewhere in Britain, in addition to that of their colleagues within Glasgow.

4.3 Diagnosis

Diagnosing the severity of disproportion remained problematic during this period.⁵⁰² The introduction of chloroform had enabled practitioners to perform more extensive internal pelvic examinations, but this did not alter the fact that several factors influenced the extent of disproportion between the maternal pelvis and fetal head.⁵⁰³ Practitioners before 1870 had argued that it was not possible to accurately measure the internal diameters of the pelvis of a woman in labour, and they also questioned the value of such measurements. This opinion had not changed. Leishman noted that the 'modes of practising pelvimetry are so uncertain, that it is a matter of the greatest difficulty, even to the most dextrous, to gauge [sic] a pelvis during labour'.⁵⁰⁴ Even so, he listed measurements that indicated the limits that the different methods of treatment should be used within. He stated that the long forceps were to be used when the conjugate diameter measured between $3\frac{1}{4}$ and 4 inches (8.3 cm and 10.2 cm); turning between $2\frac{3}{4}$ and $3\frac{1}{2}$ inches (7.0 cm and 8.9 cm); craniotomy between $1\frac{1}{2}$ and 3 inches (3.8 cm and 7.6 cm); and caesarean section when the conjugate diameter was less than $1\frac{1}{2}$ inches (3.8 cm).⁵⁰⁵

In the early 1880s pelvimetry was not a routine practice, even when disproportion was suspected. William Turner spent a few months working at the Glasgow Maternity Hospital in 1881, before he moved to Gibraltar and became a

⁵⁰² Mark Skippen, 'Obstetric practice in context: Techniques advocated for diagnosing cephalopelvic disproportion in Glasgow, 1870-1930', (MPhil, University of Glasgow, 2004).

⁵⁰³ Hibbard, *The Obstetrician's Armamentarium*, p.273.

⁵⁰⁴ Leishman, *A System of Midwifery*, p.569.

⁵⁰⁵ Leishman, *A System of Midwifery*, p.611. Leishman stated in this text that the average conjugate diameter of a female pelvis not deformed was $4\frac{1}{2}$ ", Leishman, *A System of Midwifery*, p.32.

member of staff at the Civil Hospital.⁵⁰⁶ In February 1881 a woman was admitted to the Glasgow Maternity Hospital having been in labour for five hours with her first child. Turner stated that the woman appeared healthy and well nourished, and none of her physical characteristics indicated that she might have suffered from rickets. She had travelled from Ireland just a few days beforehand and explained that her husband had left her, leaving her destitute. Although her labour proved to be difficult, she had initially been admitted to the hospital because of her social circumstances. An abdominal examination revealed that the fetus was breech, while a bulging of the sacrum was noted during a vaginal examination. Even though Turner anticipated difficulty in delivering the head, he stated that 'no actual measurement of the pelvis, however, was made'.⁵⁰⁷ Eight days later the woman died and her pelvic measurements were then determined during the post-mortem; her conjugate diameter measured $2\frac{3}{4}$ inches (7.0 cm).

During the 1880s, when cases were described, practitioners increasingly referred to measurements of the pelvis rather than provide qualitative assessments, as they had before. For example, in 1882, at the Glasgow Medico-Chirurgical Society, several practitioners, when debating the different approaches to delivery in labour complicated by contracted pelvis, defined deformities of the pelvis using pelvic measurements.⁵⁰⁸ An examination of the Glasgow Maternity Hospital records confirms that pelvic measurements became more important as an indicator of the degree of disproportion. The register of patients of the hospital recorded several pieces of information about each case, including the personal details of each woman, when she was admitted to, and dismissed from, the hospital, and specific details about the labour and outcome of each case. In addition, the registers last column, titled 'Remarks', provided an opportunity for any other details to be recorded. In 1881 a pelvic measurement was recorded in this column for the first time. Over the next eight years, during which forty-five cases of disproportion were specifically noted in these records, pelvic measurements were included twice. In 1889 five out of the eleven cases of

⁵⁰⁶ For biographical information see [Anon.], 'William Turner MD', *British Medical Journal*, 1 (1936), pp.776-777.

⁵⁰⁷ William Turner, 'Delivery by the breech through a greatly narrowed, flat, rachitic pelvis', *The Transactions of the Edinburgh Obstetrical Society*, 6 (1881), p.113.

⁵⁰⁸ George Buchanan, 'Discussion on contracted pelvis', *Glasgow Medical Journal*, 17 (1882), pp.141-148.

disproportion recorded included the measurement of the true conjugate of the pelvis in this column.⁵⁰⁹ These internal measurements were made by hand, but external measurements were also made.⁵¹⁰ Several British practitioners devised pelvimeters to determine external measurements during the second half of the nineteenth century, and these instruments came into more frequent use in Britain during this period.⁵¹¹

The reference to pelvic measurements was not a sign that practitioners were no longer sceptical about their ability to measure accurately. William Loudon Reid referred to pelvic measurements he made, but he did not seem confident about their accuracy. He admitted to having used craniotomy six times, 'but never in any case could he feel sure that the antero-posterior diameter was less than 2 inches'.⁵¹² A case at the Glasgow Maternity Hospital demonstrates why practitioners were cautious about their capability to ascertain accurate pelvic measurements during labour. A woman was admitted to the hospital after six hours of labour, and from her appearance and statements it was deduced that she had suffered from rickets as a child.⁵¹³ Several external measurements of the pelvis were made and abdominal and vaginal examinations were performed. The latter assessment revealed that the sacrum was restricting space within the pelvis. In this instance, five members of the hospital's staff performed vaginal examinations to estimate the internal conjugate diameter of the woman, who had been sedated using chloroform. The report did not mention who these five practitioners were, and it is possible that some of them were junior staff members using the case for experience. However, that so many practitioners attempted measurement might also indicate a lack of confidence in the ability to measure accurately. William Turner, who described this case, stated that the 'general opinion' of these practitioners was that the conjugate diameter was 3 $\frac{1}{4}$ inches (8.3 cm). Based on this measurement, the general deformity of the pelvis, and her previous difficult labour, the practitioners decided to perform

⁵⁰⁹ 'Glasgow Maternity Hospital: Register of Patients Obstetrical Department (indoor) from 15 Jan 1881 to 31 Dec 1898'.

⁵¹⁰ Samuel Sloan, 'Antero-posterior compression forceps for application at the brim of flat pelvises', *British Medical Journal*, 1 (1889), p.230.

⁵¹¹ Hibbard, *The Obstetrician's Armamentarium*, p.267.

⁵¹² Buchanan, 'Discussion on contracted pelvis', p.147.

⁵¹³ William Turner, 'Case illustrating the importance of accurate pelvimetry, with description of a new method', *The Transactions of the Edinburgh Obstetrical Society*, 7 (1882), p.71.

turning.⁵¹⁴ Unfortunately, the child did not survive and the mother died some days later. A post mortem was carried out and it was deduced that the true conjugate was actually $2\frac{1}{2}$ inches (0.6 cm), $\frac{3}{4}$ inch (1.9 cm) smaller than the measurement determined while she was alive.

That practitioners increasingly referred to pelvic measurements even though there had been no change in their ability to accurately determine them requires explanation. Hiddinga and Blume have argued that while anatomists examined the various forms of the pelvis in the early nineteenth century, pelvic mensuration and categorisation became a concern of obstetricians in the second half of the nineteenth century with the rise of clinical science.⁵¹⁵ The desire to legitimate obstetric practice on a scientific grounding led obstetric practitioners to undertake clinical research in this area. The most notable work of this type was that of Gustav Adolf Michaelis, the professor of obstetrics at the University of Kiel, and his successor Carl Litzmann. Michaelis wrote *Das Enge Becken (The Narrow Pelvis)*, published posthumously in 1851, which described pelvic mensuration in 1000 deliveries.⁵¹⁶

British obstetric practitioners made similar attempts to establish research in this subject. One example was the creation of the Standing Committee for the Collection of Specimens of Pelves by the Obstetrical Society of London in 1871. This group was tasked with collecting 'specimens of pelves of various races, of abnormal pelves, as also histories, drawings, casts'.⁵¹⁷ Glasgow's William Leishman was a member of this committee from its beginning, and remained so until 1884.⁵¹⁸ The findings of this group were not made public, but the group's existence is evidence of the desire of obstetric practitioners to further consolidate their understanding of pelvic abnormalities. Moreover, there were examples of practitioners who attempted to carry out their own individual research, aided by their access to clinical materials. For example, Turner noted

⁵¹⁴ Turner, 'Case illustrating the importance of accurate pelvimetry', p.72.

⁵¹⁵ Hiddinga and Blume, 'Technology, science, and obstetric practice', p.159.

⁵¹⁶ Graham, *Eternal Eve*, pp.544-545.

⁵¹⁷ Alfred Wiltshire and Heywood Smith, 'Report of Pelvis Committee', *Transactions of the Obstetrical Society of London*, 15 (1874), p.14.

⁵¹⁸ Leishman was also a member of the Obstetrical Society of London's Committee for the Collection of Observations on Temperature during Pregnancy, Parturition, and the Puerperal State, see [Anon.], 'Standing committees', *Transactions of the Obstetrical Society of London*, 15 (1874), p.9.

that he had examined several prepared pelves at the Glasgow Maternity Hospital, in order to determine the relationship between the true conjugate and diagonal conjugate.⁵¹⁹

The rise of clinical science was not only defined by the emergence of research work, nor the laboratory practices that were established towards the end of the nineteenth century. Instruments such as the stethoscope, sphygmograph, and thermometer, which provided a means for practitioners to quantify symptoms, were also important to this scientific endeavour.⁵²⁰ The use of measurement, as a scientific method, implied an objective and empirical nature to the diagnostic methodology. These were instruments that were perceived to have helped 'transform medicine from a mere empirical art to a science'.⁵²¹ Pelvimetry can be situated alongside these medical practices, as it provided numerical justification to obstetric decision-making. Hiddinga and Blume have suggested that the interest in pelvimetry demonstrated a concern for the perceived characteristic qualities of science namely quantification, precision, and standardization. By emphasising these elements of obstetric practice grounded in scientific expert knowledge, obstetric practitioners sought to demarcate their work from that of midwives.⁵²²

At a time when obstetrics was emerging as a specialism, several initiatives were established that strengthened its position within medicine in Britain. These included the requirement in the Medical Amendment Act of 1886 that medical students had to attend a course in midwifery.⁵²³ In addition obstetrical societies were formed to help improve the status of obstetrics.⁵²⁴ For example, the

⁵¹⁹ Turner, 'Case illustrating the importance of accurate pelvimetry', pp.989-990.

⁵²⁰ Stanley Joel Reiser, 'The science of diagnosis: Diagnostic technology', in *Companion Encyclopedia Of The History Of Medicine*, ed. by W. F. Bynum and Roy Porter, vol. 2 (London: Routledge, 1993), pp.826-851.

⁵²¹ J. Nigel Stark, 'A retrospect and prospect in obstetrics and gynaecology', *Glasgow Medical Journal*, 59 (1903), p.4.

⁵²² Hiddinga and Blume, 'Technology, science, and obstetric practice', p.162.

⁵²³ Moscucci, *The Science of Woman*, p.67. Students were already required to attend a course in midwifery by the qualifying bodies in Glasgow.

⁵²⁴ Jacqueline Jenkinson, *Scottish Medical Societies, 1731-1939: Their History and Records*, (Edinburgh: Edinburgh University Press, 1993), p.40. The Obstetrical Society of London was established in 1858. An earlier society based in London also focused on midwifery and was set up in 1825. It was the opinion of many of the practitioners at the 1858 inaugural meeting that obstetric practitioners had now gained respect from other branches of medicine, [Anon.], 'Report of the inaugural meeting of the Obstetrical Society of London', *Transactions of the Obstetrical Society of London*, 1 (1860).

Glasgow Obstetrical and Gynaecological Society was established in 1885.⁵²⁵ Yet many elite physicians and surgeons in Britain continued to describe obstetrics as 'a messy and unscientific activity'.⁵²⁶ William Bynum has argued that science was important 'as a tool of collective professional advancement and as an aid to achieving a virtual monopoly in health care'.⁵²⁷ It is therefore understandable that obstetric practitioners attempted to emphasise the scientific nature of their practice. For example, Leishman wrote, when referring to recent changes to operative obstetrics, that the 'increasing scientific accuracy of the art is daily giving precision'.⁵²⁸ Using pelvic measurements within obstetric decision-making would also have helped to establish the perception that obstetric practice was grounded in scientific techniques.

While practitioners presented pelvic measurements as an example of the scientific basis of their practice, they also highlighted the importance of experience and skill. Christopher Lawrence observed similar attitudes in medicine amongst senior British physicians. He argues that the idea of individual experience was a defence against the encroachment of scientific methodology into clinical medicine, which would 'dismantle a discipline [clinical medicine] and the patronage system on which it thrived'.⁵²⁹ In the case of disproportion, obstetric practitioners referred to both experience and quantitative analysis at the same time. Although scientific practice would help obstetrics to improve its reputation within the medical profession, there was still a need to demarcate the practices and abilities of obstetric practitioners from other medical practitioners. Scientific methods are by their very nature reproducible, and hence there was a danger that any medical practitioner would be able to determine the extent of disproportion and decide on a means of action. By also stressing the importance of skill and experience, other medical practitioners would be prevented from encroaching into the sphere of work of obstetric practitioners.

⁵²⁵ W. P. Black, 'Glasgow Obstetrical and Gynaecological Society Centenary 1885-1985', *Scottish Medical Journal*, 33 (1988), pp.378-380.

⁵²⁶ Loudon, *Death in Childbirth*, p.173.

⁵²⁷ W. F. Bynum, *Science and the Practice of Medicine in the Nineteenth Century*, (Cambridge: Cambridge University Press, 1994), p.118.

⁵²⁸ Leishman, *A System of Midwifery*, p.626.

⁵²⁹ Christopher Lawrence, 'Incommunicable knowledge: Science, technology and the clinical art in Britain 1850-1914', *Journal of Contemporary History*, 20 (1985), p.505.

4.4 Turning, forceps, or craniotomy

Textbooks provided guidelines to practitioners intended to assist them with decisions about treatment. However, readers of these texts were not always able to discern what the general consensus was, nor what the instructions advised them to do. Samuel Sloan, obstetric physician at the Glasgow Maternity Hospital, quoted several of the most eminent obstetric practitioners' opinions regarding whether to use turning, forceps, or craniotomy in cases of disproportion. He referred particularly to the advice of the American practitioners William Goodell and William Lusk, German practitioners Karl Schroeder and Otto Spiegelberg, and British practitioners Francis Ramsbotham, William Playfair, Matthews Duncan, Fleetwood Churchill, Braxton Hicks, Robert Barnes, and Alexander Simpson, including Glasgow practitioners James Wilson and Leishman. He concluded that 'not only does one authority differ from another, but that the inquirer is often left in doubt as to what he is really advised to do'.⁵³⁰

The advice Leishman provided in his textbook is an excellent example of the type of instructions that must have left many practitioners puzzled. He had advised that internal pelvic measurements were inaccurate and should not be relied upon for decision-making, yet he had provided the list of procedures with a range of conjugate diameters that they could be used within. Moreover, having stated that:

It must, therefore, be obvious, that it would be better to perforate and deliver at once, than to turn and then perforate, thereby subjecting the woman to a twofold danger.⁵³¹

Leishman advocated attempting to turn the fetus first even in situations where craniotomy was clearly indicated on the following page of his textbook. He wrote:

Besides, the operation of turning, when it can be effected, even after some time, and with some difficulty, is, there is good reason to

⁵³⁰ Sloan, 'On the treatment of labour delayed by obstruction at the pelvic brim', p.635.

⁵³¹ Leishman, *A System of Midwifery*, p.513.

believe, more safe to the life of the mother than that of craniotomy; so that, even when the child is dead, it is often to be preferred. But, when the child is dead, and turning is unusually difficult, or impracticable, we must consent to waive the objections which have just been stated, and substitute craniotomy without delay.⁵³²

It is not surprising with advice like this, and the difference of opinion between the most eminent practitioners of the period, that a range of views existed amongst Glasgow-based practitioners regarding the use of craniotomy, forceps, and turning. As a consequence, practitioners were advised to rely upon their own experience. William Turner wrote in 1881 that '[m]any authorities advise that, as a general rule, the practitioner should be guided in his choice chiefly by the relative amount of his experience and dexterity in each.'⁵³³ In 1886, John Glaister Senior, lecturer in medical jurisprudence at the Glasgow Royal Infirmary, reaffirmed this point. He said that 'experience could be our only real teacher, and the only factor likely to assist us in delivery as between forceps and version'.⁵³⁴ As has been shown, practitioners' experience of cases of disproportion varied considerably. Some practitioners altered their practice because of their experience. Robert Bell, for example, had worked alongside James George Wilson who had favoured turning in cases of disproportion. Following this experience, Bell advocated using forceps because of the unsatisfactory results he had witnessed during his time working with Wilson.⁵³⁵ Practitioners with little experience would perhaps have requested the help of another practitioner, or have decided to attempt delivery anyway sometimes adding to the misfortune of their patient.

The comments of practitioners present at the discussion of Sloan's paper in 1886 indicate that the majority held a preference for forceps over turning in such cases. Sloan himself described fifteen of his cases, the majority of which were resolved by forceps.⁵³⁶ Munro Kerr has suggested that when axis-traction forceps were introduced in the late 1870s, turning was no longer favoured in cases of

⁵³² Leishman, *A System of Midwifery*, p.514.

⁵³³ Turner, 'Delivery by the breech through a greatly narrowed, flat, rachitic pelvis', p.118.

⁵³⁴ Samuel Sloan, 'Discussion of treatment of labour delayed by obstruction at the pelvic brim', *Glasgow Medical Journal*, 25 (1886), p.480.

⁵³⁵ [Anon.], 'Glasgow Obstetrical and Gynaecological Society, session I meeting IV', p.975.

⁵³⁶ Sloan, 'On the treatment of labour delayed by obstruction at the pelvic brim', pp.738-746.

disproportion.⁵³⁷ Axis-traction forceps were introduced in 1877 by French obstetrician Étienne Tarnier.⁵³⁸ Rods were attached to the blades of the forceps and a swinging handle was attached to these rods. The movement that this design provided enabled traction to be maintained in the axis of the pelvis, and indicated to the operator the direction that traction should be made.⁵³⁹ It also allowed for movement of the fetal head, one of the advantages that many practitioners had argued turning had over forceps.

Some Glasgow practitioners described having used axis-traction forceps, and others disliked them. James Lyon, surgeon at the Western Infirmary, designed his own axis-traction rods that could be fitted onto forceps, as he did not believe that Tarnier's version would be used because of its 'complexity, its enormous size, and its high price'.⁵⁴⁰ The design and appearance of this instrument dissuaded some practitioners from using it. John Reid, physician at the Glasgow Institute for Diseases of Women and Children, was reported as saying that it 'would tend to confuse a practitioner; as it would certainly frighten the patient'.⁵⁴¹ James Kelly argued that Tarnier's invention was 'unnecessary' as he had always succeeded with straight forceps.⁵⁴² Kelly's opinion was, of course, influenced by the lack of severe cases of disproportion that he encountered. His opinion demonstrated the importance that experience had on the decisions obstetric practitioners made about obstetric techniques.

Munro Kerr has claimed that during the 1880s turning was 'eliminated as a method of treatment for contracted pelvis'.⁵⁴³ Although fewer practitioners argued the case for using turning once axis-traction forceps were introduced, it was not abolished altogether. The register for the Glasgow Maternity Hospital includes several cases during, and after, the 1880s where turning was used in

⁵³⁷ Kerr, Johnstone and Phillips, eds, *Historical Review of British Obstetrics*, p.29.

⁵³⁸ H. G. Partridge, 'The history of the obstetric forceps', *American Journal of Obstetrics and Diseases of Women and Children*, 51 (1905), p.772; Graham, *Eternal Eve*, pp.547-548; and Rhodes, *A Short History of Clinical Midwifery*, p.65.

⁵³⁹ Hibbard, *The Obstetrician's Armamentarium*, pp.170-184.

⁵⁴⁰ Jas. G. Lyon, 'Removable axis-traction rods for midwifery forceps', *British Medical Journal*, 1 (1881), p.425.

⁵⁴¹ [Anon.], 'Tarnier's forceps', *Glasgow Medical Journal*, 11 (1879), p.68.

⁵⁴² [Anon.], 'A review of thirteen years' private obstetric practice', p.387.

⁵⁴³ J. M. Munro Kerr, 'The investigation and treatment of "border-line" cases of contracted pelvis', *Journal of Obstetrics and Gynaecology of the British Empire*, 55 (1948), p.412.

cases of disproportion. No reason for the use of turning as opposed to forceps was provided. William Loudon Reid suggested that turning was only used by those who had 'failed in acquiring skill in the use of the forceps'.⁵⁴⁴ This seems unlikely to be the actual reason, as the hospital's practitioners would have been experienced with the forceps and yet still chose to perform turning in certain cases. In some situations practitioners believed that turning would provide a better outcome for mother and child than the use of forceps.

4.5 The value of the mother and her unborn child

The relative value of the mother and her unborn child remained a frequent topic of discussion amongst practitioners when debating what techniques should be used. The ability to determine the condition of the fetus had already been established as an important factor in the treatment decisions of Glasgow practitioners before 1870. However, Francis Smith has stated that until the 1880s the stethoscope was used infrequently during maternity cases because it was believed to be over elaborate.⁵⁴⁵ Leishman certainly did not advise that stethoscopy should be used during labours that were thought to be unproblematic, but he conceded that some practitioners did 'so that the risk to the life of the foetus may thus be reduced within the narrowest possible limits'.⁵⁴⁶ Leishman did advise that the stethoscope should be used 'from time to time during a tedious labour'.⁵⁴⁷ Monitoring the fetus during birth, although not routine in all labours, was a conventional part of practice when it was thought that complications, such as disproportion, existed.

The life of the mother remained the priority. There were indications, however, during this period that practitioners were placing additional emphasis on saving the unborn child as well. William Turner, for example, stated that a decrease in the pulse of the fetus was an indication of the need to deliver speedily, and he also suggested that turning should be used in the interest of the child.⁵⁴⁸ The

⁵⁴⁴ William L. Reid, 'On a new form of long forceps - With remarks on the theory of that instrument in general', *Glasgow Medical Journal*, 10 (1878), p.244.

⁵⁴⁵ Smith, *The People's Health 1830-1910*, p.19.

⁵⁴⁶ Leishman, *A System of Midwifery*, p.301.

⁵⁴⁷ Leishman, *A System of Midwifery*, p.301.

⁵⁴⁸ Turner, 'Delivery by the breech through a greatly narrowed, flat, rachitic pelvis', p.113. The normal range of fetal heart rate lies between 120 and 160 beats per minute, A. Howard John,

attention Turner gave to the fetus was remarked upon by some of the discussants to his paper at the Edinburgh Obstetrical Society. Halliday Croom, physician at the Edinburgh Royal Maternity Hospital, stated that he 'thought nowadays they attached too much importance to foetal life'.⁵⁴⁹ However, other Glasgow practitioners also revealed a willingness to risk injury to the mother in order to save her child. For example, Leishman stated that when the child was alive and turning could be attempted 'we are surely warranted in incurring this additional risk in the hope, if successful, of saving the child'.⁵⁵⁰ During a discussion regarding disproportion in 1881, Sloan spoke of his views regarding the relative value of the life of the mother and her child. He acknowledged that he was willing to risk injury to the mother to save the fetus.

Hitherto my view of the matter has been, that we are not justified in risking, to any material extent, the life of the mother, in order to increase the child's chances of life, though I do think the mother ought to be willing to risk to some extent her future health, which may, in cases of lesser degrees of contraction, be injured in attempting to save the child.⁵⁵¹

Sloan revealed that his thoughts on this matter had changed. Whereas he had previously been accused of not considering the child when he advocated craniotomy instead of turning, his aim was to now save both mother and child in these circumstances.⁵⁵² Whilst the mother always retained her position as the principal concern for obstetric practitioners, the discourse suggests that towards the end of the nineteenth century practitioners were more willing to accept risks of maternal morbidity in an effort to save the fetus. How significant a change this had on actual obstetric practice is difficult to tell. Some practitioners like Sloan might have been dissuaded from performing craniotomy, but it has been shown earlier in this thesis that before 1870 practitioners also used turning in an attempt not to perform craniotomy. These earlier practitioners had not, however, suggested that they were happy to risk injury to

'The accuracy of direct auscultation and the normal variation of foetal heart rate', *Journal of Obstetrics and Gynaecology of the British Commonwealth*, 73 (1966), p.984.

⁵⁴⁹ Turner, 'Delivery by the breech through a greatly narrowed, flat, rachitic pelvis', p.127.

⁵⁵⁰ Leishman, *A System of Midwifery*, p.569.

⁵⁵¹ Buchanan, 'Discussion on contracted pelvis', p.144.

⁵⁵² Sloan, 'Antero-posterior compression forceps for application at the brim of flat pelvis', p.232.

the mother. It was instead argued that the risk of craniotomy was equivalent to that of the other procedures they advocated.

The establishment of hospital practice changed the balance of authority in medical cases during the nineteenth century. Lying-in hospitals have been documented as the setting where medical practitioners were able to exert control over both midwives and their female patients.⁵⁵³ This conclusion is problematic as each hospital was different and operated by different policies.⁵⁵⁴ The Glasgow Maternity Hospital, for example, had a midwife who was in charge of the deliveries that did not involve any complications, and this was the majority of cases. In cases where intervention was considered necessary, practitioners had a greater degree of control within the hospital than in domestic deliveries. This difference was simply because there were fewer people involved who were able to have an input. Within the hospital a group of friends and family of the prospective mother would not be allowed to be present at her bedside. Strict visiting times applied. These cases were used by practitioners to gain experience and also for teaching purposes. Tew has argued that the women who entered lying-in hospitals, were also subjected to experiments with interventions, in return for food, rest and treatment.⁵⁵⁵ It is difficult to conclude that the women admitted to the Glasgow Maternity Hospital before 1870 were experimented on. For over thirty years few cases involving intervention occurred within this institution, even though the women being admitted were the most deprived and vulnerable. When forceps cases began to rise, this was not a change that was only observed within the hospital. General practitioners also used this instrument more readily in their practice, possibly to a greater extent than those practitioners in the hospital. Practitioners who tried new methods did not confine them to the hospital.⁵⁵⁶

It is also possible that the increasing concern for saving the fetus reflected more general anxiety regarding the high infant mortality rate observed during this period. In the beginning of the twentieth century a formalised antenatal system was established in Britain. This is often presented as a Scottish innovation. John

⁵⁵³ Oakley, *The Captured Womb*, p.29.

⁵⁵⁴ Loudon, *Death in Childbirth*, pp.156-157.

⁵⁵⁵ Tew, *Safer Childbirth?* p.44.

⁵⁵⁶ Crowther and Dupree, *Medical Lives in the Age*, p.229.

Ballantyne, an Edinburgh practitioner, pleaded for a hospital service for women to attend during pregnancy. He is acknowledged as playing a major role in the development of such a service, which focused on both the health of the mother and monitoring the fetus. The concern for the fetus was a response to the poor physical condition of British soldiers noted during the Boer War. Anxiety about the health of the British population provided the impetus that enabled antenatal care to be established. However, maternal and infant welfare movements began some years earlier, during the last decades of the nineteenth century.⁵⁵⁷ Indeed in 1876 the medical officer of health for Glasgow, James Burn Russell, published his *Report Upon Uncertified Deaths in Glasgow*, which included an enquiry into infant mortality rates.⁵⁵⁸ Clare Hanson has recently argued that the declining birth rate from the 1870s allied with a high infant mortality rate led to an increasing concern for the fetus.⁵⁵⁹ Gordon McLachlan has suggested that while the increased focus upon the infant occurred after 1870, it was only during the next century that obvious changes to medical provision occurred as a result. Certainly, the comments of Glasgow practitioners between 1870 and 1890 suggest that their concerns for the child were already impacting upon their decisions in individual cases before the end of the nineteenth century.

There is no evidence that this was a result of religious views. In fact the attention given to the fetus within the discourse of practitioners might also have been a result of the reduced maternal risk associated with some of the procedures used. Although the overall maternal mortality rate did not decline significantly until the 1930s, reports of success with caesarean section, for example, made practitioners more confident in the possibility that both mother and child could be saved in severe cases of disproportion. As a result, the scope of concern for obstetric practice could be widened to encompass also saving the fetus. In 1887 John Stuart Nairne, surgeon to the Glasgow Samaritan Hospital, pleaded for caesarean section to be used electively during a paper he gave to

⁵⁵⁷ Valerie Fildes, Lara Marks and Hilary Marland, 'Introduction', in *Women and Children First: International Maternal and Infant Welfare 1870-1945*, ed. by Valerie Fildes, Lara Marks and Hilary Marland, (London: Routledge, 1992), p.1.

⁵⁵⁸ McLachlan, ed. *Improving the Common Weal*, p.33; Checkland, 'Maternal and child welfare', p.119.

⁵⁵⁹ Clare Hanson, *A Cultural History of Pregnancy: Pregnancy, Medicine and Culture, 1750-2000*, (Hampshire: Palgrave MacMillan, 2004), p.83.

the Glasgow Obstetrical and Gynaecological Society.⁵⁶⁰ Despite no successful cases of this operation being performed in Glasgow, the results being realised on the Continent led him to make a case for saving the life of the unborn child. He stated that British practitioners had been:

Paralyzed at the prospect of cutting open a living mother to extract a living child. We in these Islands have incontinently extinguished the light, and have chosen to work in the dark, and plant the destroying murderous stab in the head or face or breast of the helpless, hapless child. Could the mother but hear one cry from her inarticulate babe, the “safety of mother” plea would vanish into thin air, and be heard no more.⁵⁶¹

Not all of the practitioners present at the discussion of Nairne’s paper reacted favourably. This was in part due to the language he had used and also because they instead advocated the use of other procedures such as induction of premature labour, forceps, turning, craniotomy, and symphysiotomy. Nevertheless, Nairne’s association between attempting to save the fetus and the increasing success of caesarean section was clear.

4.6 Caesarean section

Surgery underwent a period of considerable expansion after the 1860s.⁵⁶² In Britain surgeons’ work had traditionally comprised treating fractures, re-setting dislocations and performing amputations. Surgeons had also dealt with hernias, cataracts and bladder stones. The danger associated with abdominal surgery meant that it was rarely undertaken, except in emergencies and in occasional attempts to remove tumours and ovarian cysts.⁵⁶³ The ‘surgeon’ in the first half of the nineteenth century was a general practitioner who was able to perform limited surgery. By the end of the nineteenth century surgeons were prestigious

⁵⁶⁰ For biographical information about John Stuart Nairne, see [Anon.], 'Obituary - J. Stuart Nairne, F.R.C.S.Ed., F.F.P.S.G', *Glasgow Medical Journal*, 71 (1907), p.268; and [Anon.], 'Obituary - John Stuart Nairne F.R.C.S.Ed., F.F.P.S.G.' *British Medical Journal*, 2 (1907), p.1024.

⁵⁶¹ J. Stuart Nairne, 'The Caesarean section', *Edinburgh Medical Journal*, 32 (1887), p.986.

⁵⁶² Harold Ellis, *The Cambridge Illustrated History of Surgery*, (Cambridge: Cambridge University Press, 2009), p.92.

⁵⁶³ Ira M. Rutkow, 'The origins of modern surgery', in *Surgery: Basic Science and Clinical Evidence*, ed. by Jeffrey A. Norton, *et al.*, (New York: Springer, 2001), pp.12-13.

hospital-based specialists.⁵⁶⁴ The introduction and diffusion of new methods of anaesthesia, during and after the 1840s, enabled surgical operations to be performed with less haste. Pain-free operative procedures were no doubt a blessing for patient and surgeon alike. Not all practitioners regularly used anaesthesia because of the risk of mortality and other complications such as vomiting that it was associated with. Surgery remained dangerous, whilst the cause of infection remained a mystery. Thus caesarean section, for example, continued to be a procedure that was only performed as a last resort. The development of methods that prevented the onset of post-operative infection, and the deaths this caused, significantly improved the confidence of practitioners and the public in surgery. Consequently surgery was resorted to more frequently.⁵⁶⁵

Joseph Lister has been singled out as the person who revolutionised surgery during the second half of the nineteenth century. His introduction of the principles of antisepsis to surgery, have led to him being described as ‘the greatest surgical benefactor to mankind’.⁵⁶⁶ Having accepted Louis Pasteur’s germ theory, Lister set about attempting to prevent airborne germs from entering wound sites using a combination of dressings and carbolic acid.⁵⁶⁷ He undertook this work during the 1860s while he worked at the Glasgow Royal Infirmary and was Professor of Surgery at the University of Glasgow. Lister’s name and the use of carbolic acid were regularly included in descriptions of surgical cases during the 1870s and 1880s. However, not all practitioners accepted the theory or practices of antisepsis as Lister had promoted. Some adapted the methods he described, while others employed their own routines of cleansing that were founded upon different principles to the germ theory.⁵⁶⁸ Nevertheless, the introduction of surgical routines after the 1860s that professed to prevent infection, and in many cases did, led to improved opinions about the safety of surgery. Whereas in the early nineteenth century few operations were

⁵⁶⁴ Hamilton and Lamb, 'Surgeons and surgery', p.74.

⁵⁶⁵ Ulrich Tröhler, 'Surgery (modern)', in *Companion Encyclopedia Of The History Of Medicine*, ed. by W. F. Bynum and Roy Porter, vol. 2 (London: Routledge, 1993), pp.993-994.

⁵⁶⁶ Ellis, *The Cambridge Illustrated History of Surgery*, p.84.

⁵⁶⁷ Lindsay Granshaw, 'Upon this principle I have based a practice: The development and reception of antisepsis in Britain', 1867-90', in *Medical Innovations in Historical Perspective*, ed. by John V. Pickstone, (Basingstoke: MacMillan Press, 1992), pp.20-21.

⁵⁶⁸ Granshaw, 'Upon this principle I have based a practice: The development and reception of antisepsis in Britain', 1867-90', pp.17-46.

carried out, by the end of the century surgery was a major part of hospital practice.⁵⁶⁹

Before the 1880s women did not generally survive caesarean sections in Britain; all reports of caesarean section in Scotland involved the death of the mother. However, reports of successful cases of caesarean section outside Britain, where the procedure was already used more regularly for religious reasons, were becoming more frequent. With no central method of recording medical cases, the accounts of mortality rates associated with caesarean section varied widely. These figures were mostly based on collating the results of published cases. Hence, the sources used by those collating the statistics, and whether practitioners published descriptions of their work, affected the statistical result. The maternal mortality rate associated with caesarean section on the Continent ranged from as low as 12 per cent to over 50 per cent in accounts during the 1880s.⁵⁷⁰ Although the accuracy of these figures must be questioned, even the least favourable were a considerable improvement upon the results of the operation earlier in the century.

Several factors led to the improved results with caesarean section observed outside Britain. The application of anaesthesia and practices used to prevent infection, whether Listerian or not, were important, as was the decision to operate earlier in labour before the woman was exhausted or other procedures had been employed. In addition, there were two innovations in the method of caesarean section that made the operation safer. Eduardo Porro, Professor of Obstetrics at the University of Pavia in Padua, described the first of these in 1876.⁵⁷¹ He advocated removing the uterus, fallopian tubes, and ovaries after having extracted the child. This procedure reduced the risk of maternal mortality in two ways. It was claimed that excessive bleeding from the uterine incision was eradicated, and moving the sutured cervix into the lower abdominal wound to separate it from the peritoneal cavity reduced the possibility of

⁵⁶⁹ Granshaw, 'The rise of the modern hospital', pp.210-212.

⁵⁷⁰ Trolle, *The History of Caesarean Section*, pp.55-56; O'Dowd and Phillip, *The History of Obstetrics and Gynaecology*, p.163; and Ryan, 'The chapel and the operating room', p.481.

⁵⁷¹ Donald H. Todman, 'Eduardo Porro (1842-1902) and the development of Caesarean section: A reappraisal', *The Internet Journal of Gynecology and Obstetrics*, 7 (2007), p.2.

infection.⁵⁷² In Edinburgh, in 1883, Alexander Russell Simpson performed Britain's first Porro's operation, as it was known. Unfortunately the mother died.⁵⁷³ A year later, Clement Godson, a London practitioner, carried out the first successful Porro's operation in Britain.⁵⁷⁴

While Porro's operation improved the mortality rates associated with caesarean section, it was by no means perfect, and practitioners continued to seek to improve the operation. The next major change was the acknowledgement that closing the uterine wound would minimise bleeding and prevent amniotic fluid from entering the peritoneal cavity. Also as the ovaries were retained premature menopause was less likely, contrasting with Porro's operation. In 1881 Ferdinand Kehrer and Max Sänger, both German practitioners, independently advocated suturing the uterus in all cases of caesarean section.⁵⁷⁵ This was not the first time that closing the uterus had been advocated. Suturing the uterine wound had previously been suggested to stop severe haemorrhaging when it had already begun. It has been suggested that before Sänger the uterus was not routinely sutured, because it was believed that stitches could cause tearing of the uterus when it contracted.⁵⁷⁶ Glasgow practitioners had sutured the uterine incision during caesarean sections before this, but as the women had still died others did not note their method.

Towards the end of the 1880s, reports of series of successful operations by practitioners abroad were published. The *BMJ* reported that Krassowsky, a practitioner in St. Petersburg, had performed caesarean section seven times, between 1885 and the beginning of 1888, with just one death.⁵⁷⁷ An American obstetrician, Robert P. Harris, collated the improving results of both Porro's method and caesarean section reported in medical journals. He stated that in 1888 the caesarean section was reported on fifty-seven occasions in Europe and

⁵⁷² Rhodes, *A Short History of Clinical Midwifery*, p.69; and O'Dowd and Phillip, *The History of Obstetrics and Gynaecology*, p.162.

⁵⁷³ O'Dowd and Phillip, *The History of Obstetrics and Gynaecology*, p.163.

⁵⁷⁴ Young, *Caesarean Section*, p.97.

⁵⁷⁵ Trolle, *The History of Caesarean Section*, pp.53-55.

⁵⁷⁶ Eastman, 'The role of frontier America', p.129.

⁵⁷⁷ [Anon.], 'Caesarean section in St. Petersburg', *British Medical Journal*, 2 (1888), p.1407.

only seven of these resulted in the death of the mother.⁵⁷⁸ Clearly the relative success of this operation was becoming established. London practitioners Clement Godson, Alfred Lewis Galabin, and Thomas Spencer Wells all recorded success with Porro's operation.⁵⁷⁹ As these successes were reported practitioners, such as Nairne, acknowledged the possibility of saving both mother and child in severe cases of disproportion, when this had previously been considered unachievable in Britain.⁵⁸⁰

4.7 Caesarean section in Glasgow

Before 1880 only six reports exist of caesarean sections having been performed in Glasgow. No details have been found relating to Laurie, who used the procedure in 1854, but the outcome of the other five cases was not encouraging: three children survived and all of the mothers died. The gravity of such experience was no doubt the reason why this procedure was considered to be a last resort. Ironically, the successful results that had been achieved with caesarean section abroad were most likely accomplished because the operation was not a last resort, and it was performed before other procedures were used and before exhaustion had taken hold of the prospective mother. Surgeons performed all of these operations in Glasgow. During the early nineteenth century some men who would later be considered as general practitioners described themselves as 'surgeons' because this was a more prestigious title.⁵⁸¹ It therefore cannot be assumed that a 'surgeon' had any significant experience of surgery at this time. However, in the case of these caesarean sections the operators all held surgical positions within institutions in Glasgow, such as the Glasgow Royal Infirmary.

Glasgow practitioners employed methods that had resulted in greater success in general surgery, but sadly this was to no avail until the late 1880s. For example, when Archibald Neilson performed the caesarean section in 1869, (see Chapter 3), he followed Listerian principles of antisepsis. To stop a haemorrhage he used

⁵⁷⁸ Robert P. Harris, 'Results of the Porro-Caesarean operation in all countries, from its introduction to the close of 1888', *British Medical Journal*, 1 (1890), p.68.

⁵⁷⁹ Sir T. Spencer Wells, 'Notes of a case of Porro's operation', *British Medical Journal*, 1 (1887), p.1267.

⁵⁸⁰ Churchill, *Caesarean Birth*, p.21,

⁵⁸¹ Loudon, *Medical Care*, p.2.

four carbolised catgut sutures to close the uterine incision. The haemorrhage grew worse and the uterus did not contract. The uterine incision was reopened and twelve sutures were used. Carbolic-oil dressings and a bandage were then applied to the abdominal wound.⁵⁸²

Both Neilson and the assisting John Mathie had graduated from medical school in Glasgow during the 1860s. They had perhaps attended Lister's classes; their use of carbolic acid is certainly testimony to their knowledge of Lister's work to prevent post-operative infection. Crowther and Dupree have argued that the cohort of students who graduated from Lister's classes demonstrated a more radical approach to surgery among younger general practitioners in the 1870s and 1880s. Belief in an antiseptic approach made these practitioners reluctant to hand over surgery to non-antiseptic surgeons.⁵⁸³ Although Neilson was employed as a surgeon, his position at the Glasgow Eye Infirmary would have given him limited experience of any form of major surgery. His attempts with antiseptic methods suggest his confidence to perform the procedure was founded upon beliefs shaped by the teaching of Lister. However, the move from the work of Lister, who primarily operated on fractures and amputations, to abdominal surgery, was a significant leap.⁵⁸⁴ Lister's students remarked that their teacher had dreaded having to open the abdomen.⁵⁸⁵ Although Neilson had enough faith in Lister's antiseptic measures to use them, he had little confidence that he would achieve a successful outcome. He wrote afterwards that:

Considering the extremely small number of cases which, in this country, have recovered after undergoing this operation, neither I myself, nor those who so kindly assisted me, were at all sanguine of success.⁵⁸⁶

The use of antiseptic measures in this case, so soon after Lister's publication, can be explained by the background of the practitioners involved. However, the

⁵⁸² Neilson, 'On a case of caesarean section', pp.335-336.

⁵⁸³ Crowther and Dupree, *Medical Lives in the Age*, p.183.

⁵⁸⁴ Ellis, *The Cambridge Illustrated History of Surgery*, p.86.

⁵⁸⁵ Murdoch Cameron, 'Abdominal sections in the Western Infirmary, from 1894 till 1897, with remarks', in *Glasgow Hospital Reports*, ed. by George S. Middleton and Henry Rutherford, vol. 1 (Glasgow: James Maclehose and Sons, 1898), p.104.

⁵⁸⁶ Neilson, 'On a case of caesarean section', p.336.

diffusion of antiseptics, and then asepsis, into general obstetric practice was a slow process. General practitioners were still arguing that such measures were unnecessary in the early twentieth century.⁵⁸⁷ Loudon has asserted that the majority of British lying-in hospitals did not adopt Listerian antiseptic practices until the early-mid 1880s.⁵⁸⁸ In Glasgow, where Lister had devised and taught his practice, the introduction of antiseptic measures occurred much earlier. Within a year of Lister publishing his first paper on antiseptics, the staff at the Glasgow Maternity Hospital used carbolic acid although not necessarily in the ways that Lister intended. In 1868 after a case of disproportion where delivery was affected using forceps, the woman's uterus was found to be enlarged and tender.⁵⁸⁹ A carbolic acid douche was administered, although in this case as a curative rather than preventative measure. By 1869 the hospital was being fumigated with carbolic acid.⁵⁹⁰ The application of antiseptic techniques helped to reduce maternal mortality within lying-in hospitals to similar levels as home deliveries.⁵⁹¹ This improvement presumably provided the impetus for the Glasgow Maternity Hospital's desire for difficult cases to be sent to the hospital during the 1880s.

Nine years later, George MacLeod performed the next caesarean section reported in Glasgow at the Western Infirmary. MacLeod held several surgical posts during his career both abroad and in Glasgow, including at the Lock Hospital, Western Infirmary, and the Glasgow Training Home for Nurses. He was appointed as the Professor of Surgery at Anderson's University in 1859. In 1860 he applied for the position of Professor of Surgery at the University of Glasgow, but missed out on this occasion to Joseph Lister. He was finally to be appointed to this post in 1869 upon Lister's resignation. MacLeod held this position for approximately twenty-three years until his death in 1892. His reputation as a

⁵⁸⁷ Loudon, *Death in Childbirth*, p.220.

⁵⁸⁸ Loudon, *The Tragedy of Childbed Fever*, p.135.

⁵⁸⁹ 'Glasgow Lying-in Hospital: Case notes', p.34.

⁵⁹⁰ Dow, *The Rottenrow*, p.51.

⁵⁹¹ Crowther and Dupree, *Medical Lives in the Age*, p.237; and Loudon, *Death in Childbirth*, pp.203-205.

surgeon led to him being made Surgeon-in-Ordinary to the Queen, and he was knighted in 1887.⁵⁹²

MacLeod revealed during a discussion on caesarean section in 1881, that he had performed the operation on two occasions. The mother had already died before he arrived the first time. The second, performed in 1878, was the first recorded case of caesarean section in association with the Western Infirmary, which had opened in 1874.⁵⁹³ The original hospital notes exist for this case and they confirm that the decision to perform a caesarean section was very much a last resort.⁵⁹⁴ The woman had a pelvic deformity that was attributed to a fall down the stairs when she was three years old. Two months before she was due to give birth, a local medical practitioner was summoned. She had perhaps been aware that her physical deformity might cause problems. This practitioner requested MacLeod to attend, and MacLeod visited her on a few occasions before he was summoned when the woman was in labour. A futile forceps delivery was attempted, and a Dr Miller was consulted who failed to deliver with both the short and long forceps.⁵⁹⁵ Miller then proceeded to perform a craniotomy, but even after reducing the size of the fetal head the practitioners were still unable to complete delivery. The decision to perform a caesarean section was only taken after consultation with James George Wilson, one of Glasgow's most prominent obstetric practitioners.⁵⁹⁶ MacLeod performed the operation and the woman died several hours later.

The description of this case illustrates some points regarding obstetric surgery in Glasgow during this period. That an experienced obstetric practitioner made the decision to operate, but a surgeon within a general hospital performed the procedure demonstrates that obstetric surgery remained within the remit of

⁵⁹² For biographical information about Sir George MacLeod see, Michael Bevan, 'MacLeod, Sir George Husband Baird (1828-1892)', *Oxford Dictionary of National Biography*, Oxford University Press, [www.oxforddnb.com/view/article/17671, accessed 19 July 2008]; and [Anon.], 'Obituary - George Husband Baird MacLeod', *British Medical Journal*, 2 (1892), pp.637-638.

⁵⁹³ Buchanan, 'Discussion on contracted pelvis', pp.144-146.

⁵⁹⁴ NHSGGCA, Records of Western Infirmary Hospital, GB 812 HH 66/12/6, 'Journal for ward 12 - George MacLeod', 1878-1879, p.11.

⁵⁹⁵ There were several medical practitioners working in Glasgow with the surname Miller at this time. It is perhaps likely that this practitioner was either Hugh or Alexander Miller, who both had obstetric experience having held posts at the Glasgow Maternity Hospital.

⁵⁹⁶ The report of the discussion at the Glasgow Medico-Chirurgical Society states that Wilson performed the craniotomy, however, the original case notes reveal that Wilson was consulted after this had been performed.

general surgeons. Caesarean section was evidently considered a surgical rather than an obstetrical procedure at this point. This was a situation found elsewhere in Britain. At St. Bartholomew's Hospital in London, for example, a regulation was passed in 1855 that prevented obstetricians from performing surgical operations.⁵⁹⁷ That such a rule existed demonstrates the higher status of surgeons relative to obstetric practitioners. In terms of the procedure itself MacLeod had, it seems, not been aware or convinced by the arguments for Porro's operation. The description of the technique MacLeod used is not comprehensive, but he did note that he neither removed nor closed the uterus. It was washed with a strong carbolic acid solution before the abdomen was closed. The colleagues of, and successors to, Lister did not all agree with the suggestions he made regarding antisepsis. George MacLeod's use of carbolic acid differed from that of Neilson, who had more closely followed Lister's advice. George Buchanan who succeeded Lister at the Glasgow Royal Infirmary similarly used carbolic acid to clean wounds, but openly questioned the attention given to the germ theory.⁵⁹⁸ The operation was not performed again at the Western Infirmary until 1897.

Matters were different at the Glasgow Maternity Hospital. George Buchanan reportedly performed the next caesarean section in Glasgow a year after MacLeod. This was the first occasion of its use at the Glasgow Maternity Hospital. Like MacLeod, Buchanan was established as one of Glasgow's principal general surgeons. In 1860 he was appointed as visiting surgeon at the Glasgow Royal Infirmary. In 1874 Buchanan was appointed as the first Professor of Clinical Surgery at the University of Glasgow, a post he retained until 1900 when he resigned from all of his duties. He also held various consulting positions during his career at hospitals in Glasgow, including at the Western Infirmary and the Glasgow Training Home for Nurses. In 1866 Buchanan was appointed as the consulting surgeon for the Glasgow Maternity Hospital, a post he held for thirty-four years until he retired.⁵⁹⁹ It was in this institution that he performed Glasgow's next two caesarean sections in 1879 and 1881.

⁵⁹⁷ Moscucci, *The Science of Woman*, p.168.

⁵⁹⁸ Crowther and Dupree, *Medical Lives in the Age*, pp.110-111.

⁵⁹⁹ For biographical information about George Buchanan see, D'A Power, 'Buchanan, George (1827-1906)', *Oxford Dictionary of National Biography*, Oxford University Press, [www.oxforddnb.com/view/article/32146, accessed 19 July 2008]; [Anon.], 'Obituary - George

Buchanan sutured the uterine incision on both occasions, although there was no reason to on account of excessive haemorrhaging. This was before either Kehrer or Sanger had proposed closing the uterine wound. Although unusual, this was not unheard of. Suturing the uterus in order to close the wound, rather than solely as a reason to stop bleeding was also advocated in the United States during the 1870s.⁶⁰⁰ Charles Rodenstein for example argued in 1871 that suturing the uterine wound would prevent fatalities.⁶⁰¹ Although Buchanan had questioned Lister's opinions, he used carbolised sutures in both of these cases; no mention was made of surgical dressing. Following both of Buchanan's operations the child survived but the mother died of peritonitis. Even though he advocated closing the uterus, the final outcome of these operations would not have strengthened the case for such action in the future.

As in MacLeod's case, obstetric physicians made the decision to use caesarean section. Buchanan revealed that he had little input into the decision whether or not to perform the operation. He could only object on the grounds of the woman's ill health, and otherwise had to undertake the operation.⁶⁰² Buchanan's surgical expertise was required, but his skills as a diagnostician were ignored. Buchanan brought the matter of caesarean section to the attention of the members of the Glasgow Medico-Chirurgical Society because, having performed these two operations, he had found considerable differences of opinion as to the circumstances in which the procedure should be used. He was no doubt concerned that he had performed a procedure that had yet to save a mother in Glasgow. In the second case, Buchanan stated that there was a difference of opinion between the hospital physicians as to whether to perform embryotomy or caesarean section. After Leishman, as consulting physician, determined that the conjugate diameter measured $1\frac{5}{8}$ inches (4.1 cm), a majority decided that caesarean section was as safe to the mother as craniotomy.⁶⁰³ This decision could only have been based upon the reports of caesarean section from abroad.

Buchanan, M.A., M.D, LL.D.' *Glasgow Medical Journal*, (1906), pp.354-355; and [Anon.], 'Obituary - George Buchanan, M.A., M.D., F.F.P.S.G.' *British Medical Journal*, 1 (1906), p.1078.

⁶⁰⁰ Eastman, 'The role of frontier America', p.923.

⁶⁰¹ Ryan, 'The chapel and the operating room', p.472.

⁶⁰² Buchanan, 'Discussion on contracted pelvis', p.141.

⁶⁰³ Buchanan, 'Discussion on contracted pelvis', pp.141-142.

The mixed opinion towards caesarean section can be observed in the discussion to Buchanan's paper. Samuel Sloan, who had been involved in the decision to ask Buchanan to perform both caesarean sections, revealed that he had favoured the use of embryotomy in the 1881 case. He reasoned that the lack of successful experiences of caesarean section performed in Glasgow had not favoured a successful outcome. However, he reportedly advocated the use of Porro's operation because the maternal mortality rate associated with the operation in Britain was about 60 per cent, whereas a figure of above 80 per cent was claimed for caesarean section.⁶⁰⁴ Whereas Porro's operation is now considered to be a variant of caesarean section, during the nineteenth century some practitioners considered these two operations to be distinct from each other. By 1887 Sloan was no longer predisposed against the use of caesarean section. His change of opinion was due to 'recent improvements in the operation' that meant it was no more dangerous to the woman than craniotomy.⁶⁰⁵ There had still not been a successful case of this operation reported in Glasgow, or even in Scotland. His change in opinion must have been based on the published mortality results being achieved elsewhere. At the end of this discussion in 1881, Buchanan concluded that 'the evidence upon the whole was in favour of the Caesarean section'.⁶⁰⁶ Derek Dow has since stated that the discussion as a whole was inconclusive and caesarean section was quietly abandoned at the Glasgow Maternity Hospital.⁶⁰⁷ Indeed, the next occasion that this procedure was performed at this institution was in 1888. The procedure was, nevertheless, used in Glasgow on at least three occasions outside the Glasgow Maternity Hospital between 1882 and 1888.

James Alexander Adams announced, during a discussion held at the Glasgow Obstetrical Society in 1887, that he had performed a caesarean section in 1884. He was an extra-dispensary surgeon at the Glasgow Royal Infirmary at the time. Adams graduated from the University of Glasgow in 1878 and was in his mid-twenties when he performed the caesarean section.⁶⁰⁸ He was not a surgeon with

⁶⁰⁴ Buchanan, 'Discussion on contracted pelvis', pp.143-144.

⁶⁰⁵ [Anon.], 'Glasgow Obstetrical and Gynaecological Society, session 1886-87 - Caesarean section', *Glasgow Medical Journal*, 28 (1887), p.238.

⁶⁰⁶ Buchanan, 'Discussion on contracted pelvis', p.148.

⁶⁰⁷ Dow, *The Rottenrow*, p.67.

⁶⁰⁸ For biographical information about James Adams, see J. P., 'Obituary - James A. Adams, M.D. F.R.F.P.S.G.' *Glasgow Medical Journal*, 115 (1931), pp.68-71.

years of experience as MacLeod and Buchanan had been, but like Neilson was a member of a new generation of practitioners with greater confidence in their surgical ability. Adams was called to the woman, described as 'a dwarf, 4 feet in height', by a medical practitioner already in attendance. Her abdomen was washed with a solution of carbolic acid before the incision into the abdomen was made, and chromic acid sutures closed the abdominal opening with gauze dressings applied afterwards.⁶⁰⁹ In 1881 Lister had suggested that chromic acid should be added to sutures as a way of slowing down their absorption into the body, and thus allowing more time for healing.⁶¹⁰ The woman died after the operation and the child survived.

In 1885 William Muir, assistant surgeon at the Glasgow Maternity Hospital and Glasgow Royal Infirmary and a practising general practitioner, performed Glasgow's first Porro's operation. The demarcation between general practitioner and specialist consultant was not so clear-cut at this time.⁶¹¹ David Neilson Knox, surgeon at the Western Infirmary, and William Loudon Reid, outdoor accoucheur at the Glasgow Maternity Hospital and Western Infirmary, assisted Muir with this operation. Even though these practitioners had links with all of the hospitals where previous caesarean sections had been performed, on this occasion a different institution was used. The operation was performed at the Glasgow Training Home for Nurses. The purpose of this institution, based in the city centre, was to educate nurses, but it also acted as a private hospital providing a location for paying patients and their own medical practitioners.⁶¹² If the woman had been able to pay for this type of care, it is likely that she resisted being admitted into a voluntary hospital. The end of the nineteenth century saw paying patients entering hospitals in private nursing homes like this, and rarely into the hospitals which were for those who could not afford such alternatives.⁶¹³

⁶⁰⁹ [Anon.], 'Glasgow Obstetrical and Gynaecological Society, session 1886-87 - Caesarean section', p.233-234.

⁶¹⁰ Joseph Lister, 'An address on the catgut ligature', *British Medical Journal*, 1 (1881), pp.219-221.

⁶¹¹ Anne Crowther and Marguerite Dupree, 'The invisible general practitioner: The careers of Scottish medical students in the late nineteenth century', *Bulletin of the History of Medicine*, 70 (1996), pp.387-413. The division in provincial England was much the same, see Digby, *Making a Medical Living*, p.35.

⁶¹² The Glasgow Training Home for Nurses was founded in 1874 by Miss McAlpin, see Gaffney, 'The development of hospital provision in Glasgow', p.26; *Hand-Book of the Glasgow Charities*, p.55; and Mendicity, *Hand-Book of Glasgow Charitable and Beneficent Institutions*, pp.96-97.

⁶¹³ Margaret Lamb, 'The medical profession', in *Health Care as Social History: The Glasgow Case*, ed. by Olive Checkland and Margaret Lamb, (Aberdeen: Aberdeen University Press, 1982), p.19.

The child survived, but unfortunately the mother died nine days after the operation.⁶¹⁴

This was the woman's fourth pregnancy; the previous two having ended with craniotomy. The decision not to perform a further craniotomy was taken because her pelvic deformity had worsened; her conjugate diameter was thought to be not much greater than one inch (2.5 cm). Porro's operation, which had not been performed before in Glasgow, was perhaps chosen because of the improved results observed elsewhere with this procedure. However, a paper presented at a meeting of the Glasgow Southern Medical Society earlier that year reveals what most likely led to this decision. Alexander Patterson, a surgeon at the Western Infirmary, described removing the uterus and ovaries of a woman with a uterine fibroid tumour. During the operation a four-month-old fetus was discovered in her uterus.⁶¹⁵ The woman survived what closely resembled a Porro's operation. Reid assisted with this operation, and Knox was present when Patterson described the case a few months later.⁶¹⁶ This operation would have been at the forefront of these practitioners' memories when deciding how to deliver the woman with a deformed pelvis.

Reports of caesarean sections being performed in Glasgow became more frequent during the 1880s, but the majority of practitioners still resisted performing it. Nairne, who had argued the case for this procedure on behalf of the fetus, described the procedure as an operation 'tabooed and not even hinted at'.⁶¹⁷ His explanation for advocating caesarean section rested with the improved results of the procedure when used abroad and his own traumatising experience of craniotomy. He described craniotomy as a 'long, terrible, disgusting, unscientific operation'.⁶¹⁸ However, Nairne was unable to use caesarean section instead of craniotomy because the process of consultation, so important to decision-making in these difficult circumstances, meant that other practitioners overrode his lone voice.

⁶¹⁴ [Anon.], 'Glasgow', *British Medical Journal*, 1 (1885), p.713.

⁶¹⁵ Alexander Patterson, 'Case of utero-ovarian amputation for uterine fibroid, combined with pregnancy', *Glasgow Medical Journal*, 23 (1885), pp.241-246.

⁶¹⁶ [Anon.], 'Glasgow Southern Medical Society Session 1884-1885', *Glasgow Medical Journal*, 23 (1885), p.312.

⁶¹⁷ Nairne, 'The Caesarean section', p.906.

⁶¹⁸ Nairne, 'The Caesarean section', p.906.

Nairne described some of his cases to explain why he was so determined to replace craniotomy with caesarean section. He attended a woman on the south side of Glasgow, and using his fingers he determined that the diagonal conjugate was less than three inches (7.6 cm). He suggested using caesarean section to the two practitioners he had requested attend, but they both declined in favour of forceps. All three practitioners attempted delivery with the forceps and, as a result of the force required, the child's head was crushed. The mother also died a few days later. A similar situation occurred again a few years later in which Nairne claimed to have 'urged Caesarean section', only for his argument to again be rejected in favour of the forceps by the other practitioners.⁶¹⁹ The outcome to the child was the same as in the previous case, but the woman survived although she was unable to walk for months afterwards. As a result of this case, Nairne claimed that he made the decision never to be involved in 'the destruction of any child *in utero* under any circumstances whatever'.⁶²⁰

He then described his most recent encounter of this condition in which his recommendation of caesarean section was finally acted upon. The woman, forty years of age, was described as having a deformed pelvis with a space of between two and three inches (5.1 cm and 7.6 cm). She had had nine pregnancies that had all ended in either craniotomy, induction of premature labour or abortion. During the seventh month of this pregnancy she had consulted Nairne, and he claimed she wanted to have a living child. He advised her and her husband that he would not perform craniotomy, but in his opinion 'he did not think the risks would be much greater by the Caesarean section than by craniotomy now, although I stated that others held a different opinion'.⁶²¹ After having spoken to other practitioners the couple agreed, ten days later, to go ahead with the caesarean section. At full-term when labour started naturally the operation was performed by Nairne, who was assisted by Robert Park, Robert Pollok and George Halket. Excluding Pollok, all of these practitioners worked at the Glasgow Samaritan Hospital for Women and had been instrumental in its founding in 1886.⁶²² Four days after the operation was performed the woman

⁶¹⁹ Nairne, 'The Caesarean section', p.907.

⁶²⁰ Nairne, 'The Caesarean section', p.907.

⁶²¹ Nairne, 'The Caesarean section', p.908.

⁶²² The Glasgow Samaritan Hospital for Women records were examined and this case did not take place at this institution.

died of peritonitis. The practitioners present at the discussion of this paper did not share Nairne's faith in the caesarean section. His opinion was extreme. However, his comments and practice demonstrate that some practitioners now considered caesarean section to be a viable option. On the next occasion that this procedure was performed in Glasgow, this faith was rewarded.

4.8 Murdoch Cameron and Glasgow's first successful caesarean section

In April 1888, a woman and her child survived a caesarean section in Glasgow for the first time. Murdoch Cameron performed this operation at the Glasgow Maternity Hospital. Born in Glasgow in 1847, Cameron graduated from the University of Glasgow in medicine (MB CM) in 1870, and in 1872 obtained an MD from the same institution.⁶²³ Following graduation he spent a short stint as a surgeon on an Anchor Line passenger ship, the *India*. He is reported to have practised in the Townhead district of Glasgow, where the Glasgow Maternity Hospital was based, but his long-term association with the maternity institutions of Glasgow began elsewhere. During the 1870s, Cameron worked as an acting physician to the Glasgow University Lying-In Hospital. In 1880 he was appointed as an outdoor physician accoucheur to the Western Infirmary, overseeing the area north of the hospital. Cameron remained in this post until 1888, when the Western Infirmary decided to discontinue their outdoor lying-in service altogether. He was offered instead a position as dispensary physician for diseases of women at the Western, which he accepted. Cameron's experience in obstetrics was not confined to attending cases, as he was also involved in the teaching of this subject. In 1884 he became assistant to William Leishman, the Professor of Midwifery at the University of Glasgow, whom he succeeded in 1894, remaining in this chair until 1926. In 1887 he was appointed as obstetric physician at the Glasgow Maternity Hospital, a position he was evidently well qualified for. Less than a year later he had performed the operation that heralded a significant change in obstetric practice in Glasgow.

⁶²³ For biographical information about Murdoch Cameron, see A. N. McL., 'Obituary - Murdoch Cameron', *British Medical Journal*, 1 (1930), p.930; [Anon.], 'Obituary - Murdoch Cameron', *The Lancet*, 1 (1930), pp.1037-1038; and J. H., 'Obituary - Murdoch Cameron', *Glasgow Medical Journal*, 113 (1930), pp.298-303.

In 1902, Cameron reminisced about this first operation and admitted that he had already been prepared to perform a caesarean section should the need have arisen. He stated that he 'had on more than one occasion resolved that, when the necessity arose for interference in a case of marked deformity of the pelvis, I would perform Caesarean section'.⁶²⁴ Indeed, he contributed to the discussion about caesarean section that had been instigated by Buchanan in 1881. Evidently he had read several of the reports of this procedure that had been published before this. As well as citing the advice of medical practitioners from abroad, such as DePaul and Baudelocque from France, Cameron also reported the improving success rates of caesarean section that had been documented outside Britain.⁶²⁵ He mentioned statistics that had been reported by practitioners from Germany, such as Gustav Michaelis and Karl Schroeder, and the American practitioner Robert Harris. He spoke of maternal mortality rates that ranged from 49 per cent up to 79 per cent. He did not indicate what his opinion was about caesarean section at this time, but it would have been difficult to justify using the procedure when the evidence was so unfavourable.

Cameron's contributions to this topic later in the 1880s suggest that he had not been a particularly ardent advocate of caesarean section, even when other practitioners had begun to be convinced that it might be used instead of craniotomy. For example, in 1886 Cameron attended the BMA's annual meeting, where the topic for the section of obstetrics was 'The alternatives of craniotomy'. The papers during this meeting, and the discussion that followed, reveal that the views of British medical practitioners on the subject differed considerably. Alfred Meadows, physician accoucheur to St. Mary's Hospital in London and President of the obstetric section, and Richard John Kinhead, Professor of Obstetric Medicine at Queens College Galway, both presented papers in which they made a case for caesarean section to replace craniotomy. Whereas Robert Barnes, physician to the Royal Maternity Charity in London, argued that craniotomy was safer and thus caesarean section should not be resorted to other than in the severest of cases.⁶²⁶ During the discussion Cameron

⁶²⁴ Murdoch Cameron, 'Remarks on fifty cases of Caesarean section', *British Medical Journal*, 2 (1902), p.1126.

⁶²⁵ Buchanan, 'Discussion on contracted pelvis', p.146.

⁶²⁶ Alfred Meadows, 'On certain obstetric and gynaecological operations', *British Medical Journal*, 2 (1886), pp.356-358; Robert Barnes, 'The alternatives to craniotomy', *British Medical Journal*, 2

was not reported as agreeing with either of these opinions, but he did state that, from his own experience, craniotomy was not as fatal to the mother as had been suggested, so long as care was taken in removing the sharp bones. These were not the words of a practitioner who was keen on using caesarean section instead of craniotomy.

Indeed, at the Glasgow Obstetrical and Gynaecological Society in 1887, Cameron disagreed with the opinion of Nairne who had so fervently argued for caesarean section to be considered as an alternative to craniotomy. Cameron was quoted as saying that:

[I]t was quite possible to deliver *per vias naturales* with a conjugate diameter of even less than 2 inches, and therefore, that an attempt should have been made to deliver Mrs. W. [Nairne's patient] by means of version and forceps, and failing them, craniotomy. The life of an infant unborn was not to be put in the same scale with that of the mother.⁶²⁷

Cameron also described two cases where he had performed craniotomy and the women had survived. Less than twelve months after Cameron had questioned Nairne's use of the caesarean section he was to perform the procedure himself for the first time.

Cameron noted that he had not witnessed a caesarean section before 1888, although his obituaries and subsequent literature imply otherwise.⁶²⁸ It has been documented that he began working at the Western Infirmary in 1878. This was the same year that George Macleod performed a caesarean section at this hospital. If Cameron had been a physician accoucheur to this hospital he would perhaps have been involved in this case, even just as an observer. However, the hospital's records only note Cameron's application and appointment to this position at the Western Infirmary in 1880.⁶²⁹ He was certainly aware of the

(1886), pp.622-625; and R. J. Kinhead, 'Craniotomy and Caesarian section', *British Medical Journal*, 2 (1886), pp.625-628.

⁶²⁷ [Anon.], 'Glasgow Obstetrical and Gynaecological Society, session 1886-87 - Caesarean section', p.232.

⁶²⁸ Cameron, 'Remarks on fifty cases of Caesarean section', p.1126.

⁶²⁹ 'Western Infirmary minute book', p.124.

history of this procedure in Glasgow though, because he was present at the medical society meetings where this subject was discussed.

On the 10th April 1888 Cameron performed a caesarean section on a woman with a severely contracted pelvis at the Glasgow Maternity Hospital and the woman and child survived. As testament to the significance of this feat it was reported in the May edition of the *BMJ*.⁶³⁰ In August 1888, the annual meeting of the BMA was held in Glasgow. During this conference several Glasgow practitioners, including Cameron, presented papers. This provided a convenient opportunity for Cameron to advertise his achievement. He gave a detailed account of the procedure, which was subsequently published in the *BMJ*.⁶³¹ Cameron's description helps to explain why caesarean section was used and how it was done.

The woman, pregnant with her first child at the age of twenty seven, was admitted to the Glasgow Maternity Hospital on the 10th April 1888.⁶³² Cameron described her appearance as 'a little woman, somewhat delicate, and with the appearance of a patient deformed by rickets in a very marked degree'.⁶³³ The woman was already in labour, as were the majority of women admitted to the hospital. The woman's height, and her external and internal pelvic measurements were determined. Cameron described using his fingers to determine the pelvic capacity; her estimated diagonal conjugate was 1 ½ inches (3.8 cm). Upon finding the deformity to be so severe, he explained that a consultation was called and Samuel Sloan, William Loudon Reid, Ebenezer Henry Oliphant and Malcolm Black, all experienced staff of the hospital, attended. They all carried out a vaginal examination and arrived at the same conclusion. It is not surprising that Cameron sought several opinions when the accuracy of these measurements was questionable, and the consequences of this diagnosis are considered.

⁶³⁰ [Anon.], 'Scotland - Glasgow Maternity Hospital', *British Medical Journal*, 1 (1888), p.972.

⁶³¹ [Anon.], 'British Medical Association - Obstetrics', *The Lancet*, 2 (1888), p.320.

⁶³² Murdoch Cameron, 'The Caesarean section: With notes of a successful case', *British Medical Journal*, 1 (1889), p.180.

⁶³³ Cameron, 'The Caesarean section: With notes of a successful case', p.180.

The severity of this woman's pelvic deformity meant that there was little choice but to attempt caesarean section. According to Cameron all of the practitioners agreed that this was the necessary course of action. The unanimity of this decision might also have been influenced by achievements with caesarean section that occurred elsewhere in Britain during the months before this event. Francis Champneys, obstetric physician at St. Georges Hospital in London, performed a successful caesarean section in March 1888.⁶³⁴ Closer to Glasgow, and only a few weeks before the case at the Glasgow Maternity Hospital, David Berry Hart, assistant physician at the Edinburgh Royal Maternity Hospital, performed Porro's method on the 25th March 1888, at a private nursing home in the capital city, and both the woman and the child survived. Hart said that 'it is remarkable that this case is, so far as I am aware, the first successful caesarean operation of any kind in Scotland.'⁶³⁵ What is equally extraordinary is that in the space of just over two weeks, a caesarean section had been performed with success for the first time in both Edinburgh and then Glasgow. No evidence has been found to suggest that the Edinburgh operation influenced the Glasgow practitioners, but it would appear too great a coincidence for the practitioners at the Glasgow Maternity Hospital to have advocated using the caesarean section following seven years of the procedure not having been performed at the hospital, and just two weeks after Hart's successful case.

Having been given consent by the woman and her father, Cameron performed the operation on the same day that she was admitted. With staff and some students present, the procedure took less than an hour to perform. Although the start was delayed when a fire broke out in the operating room after a bottle of ether caught alight and 'the room was ablaze, the flames reaching the ceiling'.⁶³⁶ Cameron stated that he believed that this fire had helped to sterilise the room. Chloroform was administered, ether being used during the operation to maintain anaesthesia, and the woman's abdomen was washed and pubes shaved. Once the child was removed, the woman's uterus was sutured using seven silk antiseptic stitches. Ergotine was injected into the woman's thigh to cause contraction of the uterus. The abdominal cavity was then sponged and

⁶³⁴ Young, *Caesarean Section*, p.143.

⁶³⁵ D. Berry Hart, 'Case of successful Caesarean section (Porro's modification)', *British Medical Journal*, 1 (1889), p.1884.

⁶³⁶ Cameron, 'Remarks on fifty cases of Caesarean section', p.1126.

closed using nine silk antiseptic stitches. The abdominal wound was covered with adhesive plaster, boracic cotton and sublimated gamgee dressings. Over a month after the operation the mother and her child, reportedly christened as 'Caesar Cameron', were dismissed from the hospital.⁶³⁷

By suturing the uterus Cameron appeared to be following Sanger's advice. However, he had not intended to suture the uterus, and had only kept the stitches available as a precaution. Eastman has suggested that the publication by Sanger of his work in 1882 was the 'turning point in the evolution of Caesarean section [which] was clear cut and decisive', and that within a few years suturing the uterus was considered indispensable.⁶³⁸ Evidently the diffusion of this method was not so straightforward. Cameron noted that James Edmunds, a London practitioner, had achieved success with caesarean section without closing the uterus. Following his own experience in this case, when sutures were only applied to stop a haemorrhage, Cameron went on to suture the uterine incision in all of his future cases.

Although not everyone accepted the antiseptic innovations of Lister, Cameron was clearly inclined to follow Lister's advice. Cameron had acted as one of Lister's surgical dressers at the Glasgow Royal Infirmary between 1867 and 1869. This gave him ample opportunity to observe Lister's work at first hand, and like many of Lister's students he continued to practice what his learned teacher had taught him. Lister wrote to Cameron congratulating him on his success, and Cameron is reported to have replied stating that 'I pursued the methods which I had learned in your wards'.⁶³⁹ It was not chance that led to the survival of the mother in this case. The technique employed by Cameron, including these antiseptic measures, was fundamental to the success of the operation. In addition the woman had been in labour for less than twenty-four hours and no other attempts at delivery were mentioned. The poor results of previous caesarean sections in Britain can be partly explained by practitioners allowing women to become exhausted after attempts to deliver with forceps, turning, or craniotomy before caesarean section was resorted to. Identifying early on that this woman's pelvic deformity would only be circumvented using caesarean

⁶³⁷ [Anon.], 'Scotland - Glasgow Maternity Hospital', p.972.

⁶³⁸ Eastman, 'The role of frontier America', p.129.

⁶³⁹ [Anon.], 'The Lister centenary celebrations in Glasgow', *British Medical Journal*, 1 (1927), p.686.

section prevented this from happening. The request in the hospital's annual report for women to be sent in as soon as complications were determined, and before intervention was used, was perhaps a response to the success had in this case.

Cameron's success did not lead him to advocate the use of caesarean section in the same situations as were seen abroad. He revealed that women with conjugate diameters of three inches (7.6 cm) and above were operated on in Germany, where some of the best sets of results were observed.⁶⁴⁰ Cameron wrote:

[W]ould we be justified in exposing the mother to the dreadful risks of such an operation with a conjugate diameter of three to three and an eighth inches? You will agree with me when I emphatically say No.⁶⁴¹

Indeed, Cameron did not rush to perform caesarean section again. It was to be over a year before he undertook the operation for the second time. Nine cases of labour hindered by deformed pelves were reported in the register of the hospital between these two operations. Craniotomy was performed in two of these cases. Although one woman had survived the caesarean operation, it was still a procedure associated with high mortality risks and was not to be performed without due consideration. Leishman said after this first success "“Very lucky Cameron! Don't do it again and you will have 100 per cent recoveries”".⁶⁴²

The second time Cameron operated, the circumstances were different from the first. The operation was performed on an eighteen-year-old woman in her first pregnancy. She was admitted to the Glasgow Maternity Hospital on the 12 March 1889, two months before full-term. Her pelvis was severely contracted; the diagonal conjugate diameter was less than two inches (5.1 cm) and the true conjugate just one inch (2.5 cm). Upon this discovery a consultation was called, attended by Sloan, Reid, Oliphant and John Ritchie. This time Cameron claimed that opinion was divided between performing craniotomy at this point, when the

⁶⁴⁰ Cameron, 'The Caesarean section: With notes of a successful case', p.181.

⁶⁴¹ Cameron, 'The Caesarean section: With notes of a successful case', p.182.

⁶⁴² Cameron, 'Remarks on fifty cases of Caesarean section', p.1126.

fetus was not at full size, or waiting and carrying out a caesarean section at full-term. Evidently the single case of success had not convinced them of the likelihood of future success associated with the procedure. The lack of consensus resulted in a second consultation being called for the next day, and Professor Leishman was also requested to attend. Cameron stated that Leishman 'strongly advocated Caesarean section, and this was finally agreed to'.⁶⁴³ As the senior practitioner amongst this group, Leishman's opinion held most authority within the decision-making process.

It was two months before the caesarean section was performed after it had been decided upon. This gave the practitioners time to prepare the woman and themselves, improving the chances of a second success. The woman remained in the hospital for almost two months until labour began on the 7th May and the procedure was carried out. During this time the woman was put on a 'liberal diet', presumably in an attempt to ensure she was as physically ready for the operation as possible.⁶⁴⁴ The description of the operation was similar to the first, apart from twelve rather than seven uterine stitches were used and, significantly for the woman, Cameron tied off her Fallopian tubes preventing her from becoming pregnant again. Both the mother and child survived and they were dismissed from the hospital almost four months later on the 27th August. Altogether the woman spent over six months in the hospital. Cameron's view of this procedure had changed after this second operation, and he concluded his description of this case thus:

In conclusion, I may state it as my firm conviction that the time is speedily approaching when this operation will take the place of craniotomy where the child is alive, and that it only remains for each one who has occasion to perform it to faithfully follow up the work with the same spirit as Sir Spencer Wells and others, in order to sweep from our practice an operation which is antagonistic to our own feelings, and which demands the life of the child whilst it imperils that of the mother. As in this case, let us, when possible, decide beforehand if Caesarean section is to be performed, avoid

⁶⁴³ Murdoch Cameron, 'Remarks on Caesarean section, with notes of a second successful case', *British Medical Journal*, 1 (1890), p.583.

⁶⁴⁴ Murdoch Cameron, 'Correspondence - Caesarean section', *British Medical Journal*, 2 (1902), p.583.

unnecessary manipulations or attempts at delivery by other means, and secure the strictest antisepsis before, during, and after the operation, which should be performed at an early stage.⁶⁴⁵

Cameron placed his work firmly in the experimental approach of the new obstetric abdominal surgery that had emerged during the 1880s in Britain. Practitioners in other parts of Britain had also performed caesareans and Porro's operations in which the women they operated on had survived. The successes recorded by practitioner's abroad, such as Porro and Sanger, had established a new confidence in British practitioners. This was seemingly not a direct consequence of the undertaking of these cases within a lying-in hospital. Previously women had been admitted to the lying-in hospitals in Glasgow and very few cases had involved practitioners deciding to use interventions. It was improving results recorded elsewhere that led to Cameron's approach. Methods used remained varied, some turned out the uterus, others preferred catgut instead of silk sutures, and some questioned the removal of the uterus or ligation of the Fallopian tubes.⁶⁴⁶ The improving results observed in Britain were made possible not just by innovations in the method of the operation itself, but also by better knowledge of how to prevent infection in general.

The success that Cameron had with these initial caesarean sections was not the only significant aspect of these cases. Cameron was the first obstetric physician in Glasgow to report having actually performed the operation. Although obstetric practitioners had been present at the majority of these operations in Glasgow, and had made the decision to use caesarean section, surgeons performed the procedure. Some were established surgeons with considerable reputations, such as Lyon, Buchanan, and MacLeod. From the late 1860s practitioners who held minor surgical posts, but were evidently confident enough with their surgical ability attempted this perilous operation. Cameron had held minor positions as a surgeon early in his career, for example when he worked on a ship after graduating, but he was a physician when he operated in 1888. Buchanan was still the consultant surgeon to the Glasgow Maternity Hospital throughout this period, and yet he was not called upon in these cases.

⁶⁴⁵ Cameron, 'Remarks on Caesarean section', p.585.

⁶⁴⁶ Cameron, 'Remarks on Caesarean section', p.584.

Obstetric physicians were not necessarily inexperienced in surgery. Many of them would have performed gynaecological surgery and some would have been very capable in this regard.⁶⁴⁷ In any case, few would have made a living on obstetrics alone; they could also have gained surgical experience in private practice. The remit of positions in obstetrics often included responsibility for gynaecological matters also. For example, obstetric teaching positions in Glasgow included reference to the diseases of women as part of their concern. Gynaecological surgery was established during the nineteenth century and the number of operations rose during the second half of the century. Ovariectomy was established as an acceptable procedure by 1870.⁶⁴⁸ Loudon has suggested that after 1870 there was a swing towards a more surgical approach in obstetrics because of the emergence of gynaecology.⁶⁴⁹ Indeed some obstetric practitioners in Glasgow suggested that the success of ovariectomy demonstrated the possible improvements that might be achieved with caesarean section in the future. Though they were quick to point out that they did not believe that the two types of operation were comparable, as the risks associated with opening the uterus were far greater.⁶⁵⁰

Cameron's experience of gynaecological surgery has not been documented. However he had learnt some of his surgical prowess under the tutelage of Lister. The ability of obstetric physicians to perform the procedure was not the only possible reason why a general surgeon was not asked to undertake these operations. As an emerging specialty it was important for obstetricians to consolidate their authority in their sphere of work. Arney had argued that in Britain obstetrics already had a 'strong boundary around it', and thus childbirth was divided into abnormal and normal categories.⁶⁵¹ Abnormal births were to be dealt with by obstetric practitioners, and general practitioners and midwives could deal with normal births. The situation was not as simple as this. As has been demonstrated throughout this thesis, general practitioners also attempted to deliver in cases of disproportion. The obstetric specialists based within the hospital had to make a claim to these practitioners for these cases to be sent to

⁶⁴⁷ Moscucci, *The Science of Woman*, pp.165-166.

⁶⁴⁸ Moscucci, *The Science of Woman*, p.134.

⁶⁴⁹ Loudon, *Death in Childbirth*, p.184.

⁶⁵⁰ Nairne, 'The Caesarean section', p.988.

⁶⁵¹ Arney, *Power and the Profession*, p.51.

them. If a labour continued to be problematic an experienced obstetric practitioner would be called for, but this would often not happen until several attempts at delivery had already been made. Obstetric practitioners did not even have complete authority when severe cases of disproportion were encountered. Surgeons with little experience of childbirth dealt with those rare cases that required surgery. Obstetric practitioners' attempts to consolidate their sphere of practice had to take the authority of the surgeon into account. Cameron clearly tried to demarcate the work of obstetricians and general surgeons when he said in 1886:

[T]he question was obstetrics versus surgery, and [he] would not trust the opinion of any surgeon he knew as to whether a case was one requiring any instrumental aid whatever. Surgeons boasted that they had never attended a midwifery case unless, perhaps, their own birth. Under such circumstances, they were not the persons to decide when the case was one for forceps, craniotomy, or Porro's operation.⁶⁵²

Moscucci has identified a similar dispute between obstetricians and surgeons over who should perform ovariectomy during this period. By carrying out the caesarean section Cameron prevented surgeons from not only having a say in the decisions made during an obstetric case, but he stopped them from being involved at all.

Cameron continued to perform the caesarean sections at the Glasgow Maternity Hospital. He performed his third caesarean section just over a month after the mother and child of his second caesarean section left the hospital. Both mother and child survived, and Cameron arranged for the woman to be wed at the hospital. He clearly kept contact with these women as the first two women who had survived the procedure acted as bridesmaids to the third.⁶⁵³ Cameron's contemporaries in Glasgow celebrated his achievements. Nairne, who had previously argued so vehemently for the caesarean section to replace craniotomy, retired as President of the Glasgow Obstetrical and Gynaecological Society in October 1889. In his leaving address Nairne lauded Cameron for his work:

⁶⁵² Kinkead, 'Craniotomy and Caesarian section', p.627.

⁶⁵³ Hillan, 'Caesarean section: Historical background', p.153.

To Dr. Murdoch Cameron had fallen the glory of proving the value of this operation, and of establishing it on a firm basis; and let them hold him in honour who could snatch a life from the jaws of death.⁶⁵⁴

4.9 Conclusion

Performing a successful caesarean section was an important moment not just for Cameron, but also for obstetrics in general in Glasgow. Obstetric practitioners had been responsible for deciding on the best course of action in cases of disproportion, and in the majority of cases had attempted delivery themselves. However, for the most difficult cases when all other options had either failed, or were not considered viable, obstetric practitioners had to submit to the authority of a general surgeon. Cameron's achievement meant that this was no longer the case. It will be shown in the following chapter that the next ten years saw this operation performed by several practitioners in Glasgow, all of whom were obstetric practitioners. Cameron's success also strengthened the staff at the Glasgow Maternity Hospital's resolve that difficult cases should be sent into the hospital. This had already begun to happen, but this high profile case would have convinced some practitioners who did not have any direct association with the hospital. The increase in very severe cases of disproportion that entered the hospital in 1889 most likely demonstrated the increased perception that when difficulties arose during childbirth an institutional birth was more likely to have a successful outcome than a home birth.

Glasgow practitioners were influenced by the opinions of their colleagues from within Glasgow and Britain, but they also looked to the work of medical practitioners abroad. The procedures used by practitioners from France, Germany, and Italy were of particular interest. This was true for caesarean section where practitioners abroad had a greater amount of experience, and they achieved better results. Improved mortality rates associated with the operation, the increased confidence in practitioners' ability to achieve a successful outcome because of their faith in antiseptic measures, and the increased emphasis given to saving the fetus, all combined to make caesarean section feasible for some practitioners, and desirable for others. The chapter

⁶⁵⁴ [Anon.], 'Glasgow Obstetrical and Gynaecological Society - President's retiring address', *Glasgow Medical Journal*, 32 (1889), p.459.

that follows examines the last decade of the nineteenth century and considers the further consolidation of these changes.

Chapter 5 – 1890-1900

This chapter considers evidence concerning the incidence, diagnosis, and treatment of disproportion in Glasgow between 1890 and 1900. This period is particularly notable for the prominence of caesarean section as a focus of practitioner attention. This correlated with an increasing usage of both this procedure and others by practitioners associated with the Glasgow Maternity Hospital. The growing role played by Glasgow practitioners at this institution in cases of labour perceived as difficult is also highlighted here.

5.1 Prevalence of disproportion

The increasing use of intervention to deliver women at the Glasgow Maternity Hospital, observed during the 1880s, continued during the 1890s (see Table 2.3). One explanatory factor for this rise was the greater number of women admitted to the hospital with deformed pelves. It was suggested earlier in this thesis that less than 1 per cent of cases at this hospital involved disproportion in the middle of the nineteenth century. Fifty years later this proportion had changed significantly. Robert Jardine, obstetric physician at the Glasgow Maternity Hospital, stated that forty of the indoor cases (8.7 per cent of the total indoor confinements) in 1897 involved marked pelvic contraction. In addition, women with less severely contracted pelves were admitted but it had not been considered necessary to intervene.⁶⁵⁵

During this decade several practitioners commented on the considerable number of women admitted to the Glasgow Maternity Hospital who had contracted pelves. Often these observations suggested that this was a very different situation to that witnessed elsewhere. For example, John Souttar McKendrick, who had spent three months as a house surgeon at the hospital, stated in a letter to the *BMJ* that, 'I do not suppose there is any town in the country where rickets, and consequently contracted pelvis cases, are more prevalent than in

⁶⁵⁵ Robert Jardine, 'A year's work at the Glasgow Maternity Hospital', *Glasgow Medical Journal*, 50 (1898), p.93.

Glasgow.⁶⁵⁶ Jardine commented on this apparent atypicality in a letter to the *BMJ* to promote postgraduate opportunities at the hospital. He wrote that:

In most maternity hospitals contracted pelves are rare, with us they are so common we are never without cases under treatment. Last year about 10 per cent. of the indoor cases were of this nature.⁶⁵⁷

Comparisons were not limited to within Britain. Archibald Adam Warden wrote, of the Glasgow Maternity Hospital in 1895 where he was employed as a house surgeon, that 'there is perhaps no field in Europe more rich in contracted pelvis and their accompanying complications'.⁶⁵⁸

There are few examples of other maternity hospitals providing figures of the number of women with contracted pelves they dealt with. This makes it difficult to determine how accurate these comparisons were. The records of the Edinburgh Royal Maternity Hospital, where few instances of craniotomy were reported, suggest that they dealt with fewer cases.⁶⁵⁹ Indeed, Alexander Russell Simpson, Professor of Midwifery at the University of Edinburgh, reportedly stated that more caesarean sections had been performed in Glasgow, than in Edinburgh, because there was a 'greater frequency of the graver degrees of pelvic deformity; for happily dwellers in Edinburgh were not so subject especially to rickets'.⁶⁶⁰ Earlier in his career, between 1865 and 1870, Simpson had worked as a private practitioner in Glasgow. He was therefore well placed to compare these two cities. Loudon has estimated the incidence of contracted pelves amongst the women admitted to Queen Charlotte's Hospital in London between 1890 and 1899. He suggests that 1.3 per cent of the cases admitted

⁶⁵⁶ J. Souttar McKendrick, 'Statistics of midwifery cases occurring within a period of three months in the Glasgow Maternity Hospital', *British Medical Journal*, 2 (1898), p.840.

⁶⁵⁷ Robert Jardine, 'Correspondence - The teaching of midwifery', *British Medical Journal*, 2 (1898), p.749.

⁶⁵⁸ A. A. Warden, *Some Results of Induction of Premature Labour for Contracted Pelvis: A Study of Cases in the Glasgow Maternity Hospital*, (Glasgow: A Stenhouse, 1896), p.4.

⁶⁵⁹ Nuttall, 'Passive trust or active application: Changes in the management of difficult childbirth and the Edinburgh Royal Maternity Hospital, 1850-1890', pp.351-372.

⁶⁶⁰ Robert Jardine, 'Notes on four cases of Caesarean section', *The Transactions of the Edinburgh Obstetrical Society*, 23 (1898), p.136.

were of this type.⁶⁶¹ This was considerably less than that encountered at the Glasgow Maternity Hospital.

Jardine believed that the experience of the Glasgow Maternity Hospital reflected a change in the overall incidence of rickets, and hence in the prevalence of disproportion as a whole. He stated that:

From the study of the records, it seems to me that rickets could not have been a very common disease among the infants of 50 years ago, but that after that it must have become more common. At the present day we are dealing with the results of the disease of from 20 to 30 years ago.⁶⁶²

Jardine proffered an explanation for this opinion. He suggested that the city had not been as overcrowded, and that the diet of the poor had included more oatmeal while infants were breast fed rather than given condensed skimmed milk.⁶⁶³ Jardine was born in New Brunswick in Canada in 1862. Having been educated in his country of birth he then went on to study medicine in Edinburgh. He graduated in 1886 and soon after this moved to Glasgow. Having not been present in Glasgow during the period that he had suggested that the increase in rickets had occurred, Jardine could not have used his own personal observations to make this conclusion. He based his argument solely on his examination of the Glasgow Maternity Hospital records for that period.

The observations of commentators, such as Chalmers and Thomson, which were examined in Chapter 2, support Jardine's assumption that rickets became more prevalent after the 1860s. While there is good reason to believe that more children were afflicted by this condition, the correlation between the cases admitted to the Glasgow Maternity Hospital and cases of disproportion in Glasgow as a whole is uncertain. Before the 1870s the number of cases of disproportion occurring at the lying-in hospitals in Glasgow underestimated the overall frequency of this problem in the city. It has been shown in the chapters preceding this that cases of disproportion were not sent to a lying-in hospital as

⁶⁶¹ Loudon, *Death in Childbirth*, p.140.

⁶⁶² Jardine, 'Statistics of thirty years' work', p.53.

⁶⁶³ Jardine, 'Statistics of thirty years' work', p.53.

a matter of course, even the severe forms were dealt with outside of hospital. Women were admitted to lying-in hospitals in Glasgow primarily for social rather than medical reasons.

The records of the Glasgow Maternity Hospital significantly exaggerate the prevalence of disproportion. The institution became the preferred location for many cases of difficult childbirth after the 1870s, and this change was fostered after 1890. Even women from outside of Glasgow sought help from the hospital at this time, furthering the difference between the number of cases encountered in the institution and those met with outside. For example, Cameron performed two of his first six caesarean sections upon women from outside of Glasgow, one travelled by train from West Dumbartonshire. The experience of practitioners not associated with the hospital was different to those working within its wards.

Alexander Miller had worked as a house surgeon at the Glasgow Maternity Hospital early in his career, and had been employed by this institution for a year as an outdoor physician in the east of Glasgow. Since then he had not held any hospital appointments and had worked as a general practitioner in the east end of the city. He claimed to have attended approximately one thousand labours during this time.⁶⁶⁴ Miller concluded a discussion on induction of premature labour at the Glasgow Obstetrical and Gynaecological Society in 1899, by stating that 'inductions in private and in hospital practice were two very different things, as in the former one seldom met with very bad deformities of the pelvis'.⁶⁶⁵ Practitioners, such as Miller, were able to highlight the difference between the number of cases encountered in the Glasgow Maternity Hospital and that met with outside, as they had experience of both.

Similar observations were made when comparing the hospital's indoor cases with its own outdoor service. The West End Branch of this hospital opened in 1888 providing an outdoor service to Glasgow's west end. In 1895, Jardine, as the physician accoucheur for this branch, commented on the small proportion of

⁶⁶⁴ Alex. Miller, 'Presidential address - Twenty years' obstetric practice', *Glasgow Medical Journal*, 51 (1899), p.217.

⁶⁶⁵ [Anon.], 'Glasgow Obstetrical and Gynaecological Society - Three years' inductions of premature labour for contracted pelvis in the Glasgow Maternity Hospital by Dr. Malcolm Black', *Glasgow Medical Journal*, 53 (1900), p.143.

women with severely contracted pelves that were encountered between 1890 and 1894 when 1995 labours were attended. He said:

The small percentage of contracted pelves is worthy of note. There were only three patients who could not be delivered at full time without sacrificing the child, and yet all our patients were of a class among which deformities are common. It may be imagined that I was in the habit of sending difficult cases into hospital but that is not so.⁶⁶⁶

Although Jardine claimed that he did not often send patients into the hospital, he did so on occasion. During 1893, for example, two of the women he attended as part of the west-end outdoor service were sent into the hospital for caesarean section on account of having markedly contracted pelves.⁶⁶⁷

In 1897 following a further two years, and 951 cases attended by this branch, the outdoor accoucheur John Martin Munro Kerr made a point in his report of referring to Jardine's earlier statement.⁶⁶⁸ He wrote:

I think Dr. Jardine remarked [...] that the number of contracted pelves one meets with in the district is not very numerous. I can fully corroborate this statement, for in looking over my notes I find only about a dozen cases where the pelvis is described as being deformed.⁶⁶⁹

Loudon argues that by examining figures such as these we can estimate the incidence of contracted pelves. He acknowledges that the change in nature of the lying-in hospitals might exaggerate the incidence of this condition. However, there is another circumstance that makes such an estimate even less reliable. Women, if they survived, often went on to have further pregnancies that would

⁶⁶⁶ Robert Jardine, 'Report of last year's work at the West End Branch of the Glasgow Maternity Hospital', *Glasgow Medical Journal*, 43 (1895), p.272.

⁶⁶⁷ Robert Jardine, 'Report of last year's work at the West-End Branch of the Maternity Hospital', *Glasgow Medical Journal*, 41 (1894), p.182.

⁶⁶⁸ John Martin Munro Kerr graduated in medicine from the University of Glasgow in 1890. He became Murdoch Cameron's assistant at the University of Glasgow in 1894 and subsequently held the positions of Muirhead and Regius Professor of Midwifery at the University of Glasgow after 1911 and 1927 respectively. For more biographical information about Munro Kerr see Dunn, 'Professor Munro Kerr (1868-1960)', pp.167-169.

⁶⁶⁹ J. M. Munro Kerr, 'A resume of two years' work at the West-End Branch of the Maternity Hospital', *Glasgow Medical Journal*, 47 (1897), p.452.

similarly end in disproportion. Many of the women admitted to the Glasgow Maternity Hospital had experienced disproportion before, and sometimes within the hospital. Cameron referred to one example he knew of where a woman gave birth eleven times between 1862 and 1875. On account of her pelvic deformity embryotomy was performed eight times, and she was induced prematurely on three occasions.⁶⁷⁰ Women in Glasgow had on average between seven and eight children.⁶⁷¹ Therefore several cases of disproportion would not necessarily correspond with the incidence of contracted pelves.

Murphy-Lawless has suggested an alternative reason for the increase in cases involving women with contracted pelves. She argues that in America once caesarean section was considered to be safe early in the twentieth century, there was a sudden increase in the number of women diagnosed as having a contracted pelvis. The condition was misdiagnosed and over diagnosed because of medical practitioners' confidence with the procedure.⁶⁷² No evidence has been found to support this argument in Glasgow before 1900. Although more caesareans were performed the pelvic measurements from these cases in Glasgow suggest that the operation was used in women with severely contracted pelves throughout. Practitioners at the Glasgow Maternity Hospital were able to gain an experience of this condition that was not acquired by practitioners elsewhere in Glasgow. It is not a coincidence that the practitioners who commented on the difference between the number of pregnant women with contracted pelves encountered in Glasgow and elsewhere all worked at the Glasgow Maternity Hospital. The experience they gained at this institution was no doubt important in the decisions practitioners made regarding the techniques they advocated and used.

5.2 Deciding between procedures

Practitioners outside of the Glasgow Maternity Hospital attempted delivery when they believed they would succeed with forceps, induction of premature labour, and turning. General practitioners still occasionally performed craniotomy.

⁶⁷⁰ Murdoch Cameron, 'On the relief of labour with impaction by abdominal section, as a substitute for the performance of craniotomy', *British Medical Journal*, 1 (1891), p.510.

⁶⁷¹ Rose E. Frisch, 'Population, food intake, and fertility', *Science*, 199 (1978), p.25.

⁶⁷² Murphy-Lawless, *Reading Birth and Death*, p.192.

Forceps were increasingly employed in general. Miller claimed that when he had started practice, during the 1870s, he had used forceps in between 8 and 10 per cent of his cases and that by 1899 he used forceps in 25 per cent of his cases.⁶⁷³ This was far more than the proportion used at the hospital. In 1898 John Stuart Nairne introduced a discussion on the general use of forceps in obstetric practice.⁶⁷⁴ It became apparent that there were considerable differences of opinion regarding the use of the forceps in both frequency and timing. Some practitioners, like Nairne, claimed to use them in almost all labours they attended, whilst others questioned the need to use them often, if at all.⁶⁷⁵ Increasingly axis-traction forceps were advocated, although Jardine noted that they had not been used as much as he would like in Glasgow.⁶⁷⁶ Although practitioners, he asserted, continued to advocate straight forceps, in the discussion that followed, all of the practitioners supported the use of axis-traction forceps.⁶⁷⁷

If intervention failed outside of the hospital, or the attendant decided that they would not be able to deal with the potential or existing severity of disproportion they often consulted with a practitioner from the hospital. Predominantly the reports of disproportion in Glasgow found in medical journals were written by practitioners employed by the hospital. Earlier in the nineteenth century practitioners who had established their considerable obstetric experience distinct from Glasgow's lying-in hospitals described these cases. This change was symptomatic of the movement of difficult cases into the maternity hospital.

Throughout this decade, and into the twentieth century, practitioners at the Glasgow Maternity Hospital employed forceps, induction of premature labour, turning, craniotomy, and caesarean section to deliver women who had contracted pelves. This period also saw the resurrection of symphysiotomy.

⁶⁷³ Miller, 'Presidential address - Twenty years' obstetric practice', pp.216-227.

⁶⁷⁴ [Anon.], 'Glasgow Southern Medical Society - The use of forceps in midwifery practice', *British Medical Journal*, 1 (1898), pp.626-627.

⁶⁷⁵ [Anon.], 'Glasgow Southern Medical Society - Adjourned discussion on the use of forceps in obstetrical practice', *British Medical Journal*, 1 (1898), p.820; [Anon.], 'Glasgow Southern Medical Society - The forceps in obstetric practice', *British Medical Journal*, 1 (1898), p.888.

⁶⁷⁶ Jardine, 'Report of last year's work at the West End Branch of the Glasgow Maternity Hospital', p.273.

⁶⁷⁷ [Anon.], 'Glasgow Obstetrical and Gynaecological Society - A year's work at the West End Branch of the Glasgow Maternity Hospital by Robert Jardine', *Glasgow Medical Journal*, 43 (1895), pp.309-311.

Dividing the cartilage of the symphysis pubis with the intention of separating the pubic bones and increasing the capacity of the pelvic canal, had been suggested as a possible method of treatment by practitioners before the nineteenth century. It was rejected in Britain because little success was achieved with it. Approximately one third of mothers and two thirds of children died after the operation, not to mention the risks of bleeding, laceration of the urogenital tract, incontinence, infection, and excessive pelvic movement.⁶⁷⁸ Despite this symphysiotomy continued to be performed in Italy.

Symphysiotomy was introduced to obstetric practice in Britain after the results achieved with the procedure abroad had improved, following the introduction of antiseptic techniques. It was used on thirteen occasions in 1892 at the Clinique Baudelocque in Paris; all of the women survived and three children died.⁶⁷⁹ Ironically Jean Louis Baudelocque, after whom this institution was named, had opposed the use of symphysiotomy during the eighteenth century. In the early 1890s this procedure was also performed in Germany and Italy where low mortality rates were achieved, leading to calls for symphysiotomy to replace both craniotomy and caesarean section in the future.⁶⁸⁰ It comes as no surprise that Cameron and Sanger, given their success with caesarean section, disagreed and argued that caesarean section was the better option.⁶⁸¹

Despite Cameron's astounding success with caesarean section he was unable to sustain the results that made the procedure a viable alternative to craniotomy. Practitioners continued to look for a method of treatment that would mean that both mother and child would survive severe disproportion. Of course craniotomy could not resolve this problem and inducing premature labour remained risky. In 1898 Malcolm Black, obstetric physician at the Glasgow Maternity Hospital, wrote a paper detailing the use of induction of premature labour over the previous three years in the hospital. Of fifty cases, two of the mothers had died

⁶⁷⁸ Mark Skippen, *et al.*, 'The chain saw - A Scottish invention', *Scottish Medical Journal*, 49 (2004), pp.57-60.

⁶⁷⁹ A. Pinard, 'Clinical lecture on symphysiotomy at the Clinique Baudelocque during 1892', *The Lancet*, 1 (1893), pp.347-352.

⁶⁸⁰ W. J. Sinclair, 'Midwifery and diseases of women - Revival of symphyseotomy', *The Medical Chronicle*, 1 (1894), pp.461-468.

⁶⁸¹ Murdoch Cameron, 'Correspondence - Symphysiotomy and Caesarean section', *British Medical Journal*, 1 (1893), p.982; [Anon.], 'Medico-Chirurgical Society - Paper on "symphyseotomy"', *Glasgow Medical Journal*, 42 (1894), p.233.

and only twenty of the children left the hospital alive. The ambition of practitioners was to save the mother and child in every case and thus far the methods available to them had not achieved this. The improving results with symphysiotomy observed abroad led some practitioners to suggest that the procedure should be considered as an alternative in Glasgow.

Black recommended that instead of waiting to full-term to perform caesarean section, labour could be induced early and then delivery completed using symphysiotomy.⁶⁸² While Jardine was reported to have stated that he had been considering giving up induction in favour of caesarean section or symphysiotomy.⁶⁸³ The difference of opinion of these two practitioners can be explained by their individual experience. Although both of these practitioners worked at the Glasgow Maternity Hospital Jardine had undertaken several caesarean sections before this, whereas Black had yet to perform the operation. When this discussion had taken place in 1899 symphysiotomy had yet to be used in Glasgow. Just a few weeks after Black and Jardine had professed their intention to use symphysiotomy it was performed at the Glasgow Maternity Hospital for the first time.⁶⁸⁴ Bryan Hibbard has stated that British practitioners showed little interest in the revival of this method.⁶⁸⁵ Yet practitioners in Glasgow continued to use symphysiotomy into the next century.⁶⁸⁶

In addition to introducing symphysiotomy as a procedure to the Glasgow Maternity Hospital, Jardine also established a practice that was used specifically in cases of disproportion. In 1895 he attended a woman whose previous five

⁶⁸² Malcolm Black, 'Three years' inductions of premature labour for contracted pelvis in the Glasgow Maternity Hospital', *Glasgow Medical Journal*, 53 (1899), p.97.

⁶⁸³ [Anon.], 'Glasgow Eastern Medical Society - Three years' inductions of premature labour for contracted pelvis in the Glasgow Maternity Hospital by Dr. Black', *Glasgow Medical Journal*, 50 (1898), p.445.

⁶⁸⁴ *The sixty-fifth annual report of the Glasgow Maternity Hospital and Dispensary, North Portland Street*, p.3.

⁶⁸⁵ Hibbard, *The Obstetrician's Armamentarium*, p.264.

⁶⁸⁶ Several cases of symphysiotomy were described by Glasgow Maternity Hospital practitioners during the first decade of the twentieth century. See John M. Munro Kerr, 'Notes on a case of symphysiotomy', *Glasgow Medical Journal*, 56 (1901), pp.125-129; William Gibb Dun and A. W. Russell, 'Symphysiotomy: Report of a case of contracted pelvis and pregnancy, terminated at full time by symphysiotomy', *Glasgow Medical Journal*, 58 (1902), pp.180-186; Robert Jardine, 'Clinical notes of a series of twenty-two cases of obstructed labours, including eight cases of induction of labour, four cases of symphysiotomy, and ten cases of Caesarean section', *Journal of Obstetrics and Gynaecology of the British Empire*, 5 (1904), pp.418-433; and Robert Jardine, 'Symphysiotomy performed three times on the same patient', *Journal of Obstetrics and Gynaecology of the British Empire*, 13 (1908), pp.184-186.

pregnancies had all ended with the death of her children, except for one when induction of premature labour had been used. Her pelvis being contracted Jardine attempted delivery using axis-traction forceps and failed. He then suggested using the Walcher position in which the woman was 'placed on her back with her buttocks at the edge of the bed, and the legs were allowed to hang down, the feet not touching the floor'.⁶⁸⁷ Gustav Adolf Walcher suggested this technique in 1889.⁶⁸⁸ He argued that this position increased the size of the pelvis at the conjugate. On this occasion the child was stillborn while the mother survived. The Walcher position was mentioned several times in the case descriptions associated with the hospital after this and into the twentieth century.

5.3 Diagnosis and making decisions about treatment

Measurements of the maternal pelvis were a prominent feature of the majority of reports and case notes. Including pelvic measurements obtained by pelvimetry, particularly the true conjugate, had become more common during the 1880s, and by the end of the century they were consistently added to descriptions of cases of disproportion. During this decade a discovery was made that led to new techniques of determining the capacity of the pelvic canal. In 1895 Wilhelm Roentgen announced his finding of x-rays, and soon after attempts at measuring the pelvis using this new technology were reported in Germany and France.⁶⁸⁹ This innovation did not change obstetrics in Glasgow at this time. Difficulties with image quality and the required length of exposure time had to be overcome first. It was not until the next century, when the method was further refined, that x-ray pelvimetry was utilised in obstetric practice. Practitioners in Glasgow tried to improve the accuracy of pelvimetry before x-rays were introduced. Jardine revealed that he had tried Skutche's pelvimeter (see Fig.5.1), but had found it of no use and instead resorted to using his own hand.⁶⁹⁰ Making precise internal measurements of the pelvis remained difficult.

⁶⁸⁷ Jardine, 'A note on delivery in the Walcher position in a contracted pelvis', *Glasgow Medical Journal*, 47 (1897), p.310.

⁶⁸⁸ Kerr, Johnstone and Phillips, eds, *Historical Review of British Obstetrics*, p.43.

⁶⁸⁹ Anja Hiddinga, 'X-ray technology in obstetrics: Measuring pelves at the Yale School of Medicine', in *Medical Innovations in Historical Perspective*, ed. by John V. Pickstone, (Basingstoke: MacMillan, 1992), pp.128-130.

⁶⁹⁰ [Anon.], 'Glasgow Obstetrical and Gynaecological Society - Three years' inductions', p.141.

Ebenezer Oliphant, obstetric physician, stated that it was still the case that the true conjugate measured during post-mortem often differed from the measurement recorded while the woman was alive.⁶⁹¹

Fig. 5.1: Diagram of how Skutsch's pelvimeter devised by the German medical practitioner Felix Skutsch was to be used.⁶⁹²

Fig 5.1 has been removed due to Copyright restrictions

Highlighting the quantitative basis of diagnosis implied that obstetrics was grounded in scientific practice, but there was another reason why pelvimetry became such an important feature of the decision-making process. The records during the 1890s reveal that pelvimetry, despite its perceived failings, had become central to decisions about treatment. Waiting to see if the fetal head would mould to the maternal pelvis was no longer advocated when the pelvic canal was severely contracted. It had been acknowledged that the possibility of a successful outcome improved, when as few attempts at delivery as possible were tried and the woman had not become exhausted. Cameron had made this very point following his success with caesarean section. Hence, obstetric practitioners associated with the Glasgow Maternity Hospital were able to rationalise their appeal for women to be sent to the hospital earlier. Thus it became necessary to be able to judge the likely extent of disproportion before it occurred.

Despite the requests of the hospital staff, some general practitioners continued to try and deliver in cases of disproportion. General practitioners inexperienced in cases of severe disproportion were often convinced that they could deliver with forceps, even if this was not feasible. It is also possible that general practitioners were worried that they would lose some of the advantages brought

⁶⁹¹ [Anon.], 'Glasgow Obstetrical and Gynaecological Society - Three years' inductions', p.139.

⁶⁹² J. M. Munro Kerr, 'Pelvic disproportion: Historical – classification – diagnosis', *British Medical Journal*, 1 (1939), p.859.

by attending such cases if they sent their patient to the hospital. Anne Digby has demonstrated that general practitioners sometimes considered themselves to be in competition with emerging hospital specialists. It was documented that some general practitioners kept patients too long even though they knew they needed specialist help.⁶⁹³ Demonstrating the skill and ability to complete delivery would perhaps lead the woman and her family to employ the practitioner for medical advice in the future. The relationship between the general practitioner and the woman could be jeopardised by passing her on to other practitioners. Of course this concern was futile if they persisted and the woman died. Jardine described a case where practitioners outside the hospital had attempted to deliver with forceps and failed. Labour continued for two and a half days before they attempted turning and the uterus ruptured. She was then sent to the hospital and as a result of the rupture it was decided to amputate the uterus. The woman died after the operation.⁶⁹⁴ In asking for practitioners to send patients to the hospital before they attempted delivery themselves, it was hoped that situations such as this would be prevented.

The Glasgow Maternity Hospital's patient register and surviving case notes provide evidence that women no longer had to wait until they had begun labour to seek assistance at the institution. Towards the end of the nineteenth century some women were admitted to the hospital weeks before the full-term of their pregnancy. This was rare, and mostly restricted to cases where it was decided that the induction of premature labour or caesarean section would need to be performed.⁶⁹⁵ The woman upon whom Cameron had undertaken his second caesarean section had stayed in the hospital for almost two months before the operation. For it to be decided that a woman required treatment because of her contracted pelvis, before disproportion actually occurred required justification. Especially as the procedures used in such cases, caesarean section and induction of premature labour, were associated with considerable risks. The diminutive size and obvious physical deformity of a woman who had suffered from rickets indicated that disproportion was a possibility, but did not signify the severity of this condition should it arise. Despite there being several factors that affected the degree of disproportion, such as the size of the child, practitioners had to be

⁶⁹³ Digby, *Making a Medical Living*, p.34.

⁶⁹⁴ Jardine, 'Statistics of thirty years' work', p.41.

⁶⁹⁵ Warden, *Some Results of Induction*, p.6.

able to provide evidence for their decision to act early. The experience of former labours and pelvimetry were fundamental factors in the ability of a practitioner to diagnose the possible severity of disproportion, and then go on to decide on a method of treatment.

The Glasgow Maternity Hospital kept a record of women who were examined at the hospital prior to labour but where the decision was made not to admit them at the time.⁶⁹⁶ Although antenatal systems were not established until early in the twentieth century, these records show that women sought advice during their pregnancy from the hospital for various reasons, of which having a deformed pelvis was one. Women with contracted pelves were asked to return to the hospital either on a specific date or within a certain time frame, in order that induction of premature labour or, in one case, caesarean section could be performed. By comparing these notes with the records in the hospital register it is evident that almost all of these women who sought help prior to labour commencing had experienced difficult labours in previous pregnancies. Many of these women had been advised at their last confinement, whether this took place at home or in hospital, to seek medical attention during their next pregnancy at seven months, in order that induction of premature labour could be performed if deemed necessary. Cameron had performed craniotomy in the last confinement of one of these women in 1894. The journal recorded in 1895 that she was '[a]dmitted today as arranged with Prof. Murdoch Cameron for the purpose of having caesarean section performed'.⁶⁹⁷ According to the hospital register she had the operation performed two weeks later.

These records also reveal that some women who were pregnant with their first child sought the advice of obstetric practitioners during pregnancy. Of the women noted in the journal as attending before full-term due to having a contracted pelvis, there was one who upon being admitted to the hospital was recorded as a primipara. It was determined that her conjugate diameter was 2 ½ inches (6.4 cm).⁶⁹⁸ She came back to the hospital and Oliphant performed

⁶⁹⁶ NHSGGCA, Records of Glasgow Royal Maternity Hospital, GB 812 HB45 6/2, 'Notes on cases examined in but not confined in the hospital beginning August 1st 1892', 1892-1895.

⁶⁹⁷ 'Notes on cases examined in but not confined in the hospital beginning August 1st 1892', p.29.

⁶⁹⁸ 'Notes on cases examined in but not confined in the hospital beginning August 1st 1892', p.15.

caesarean section on her.⁶⁹⁹ An examination of the hospital register also revealed that this was not a unique occurrence. Other women pregnant for the first time were admitted to the hospital before labour had commenced to have induction of premature labour or caesarean section performed some weeks later.

Archibald Warden, medical officer at Glasgow Maternity Hospital, reported the cases where induction of premature labour was performed because of contracted pelvis at the Glasgow Maternity Hospital between 1889 and 1896. He revealed that of these thirty-nine cases, nine of the women were pregnant for the first time.⁷⁰⁰ Pelvic measurements were recorded in almost all of the notes associated with these women attending the hospital before they had reached full-term. In the case of primipara, determining the capacity of the pelvis was the only way a practitioner's actions could be justified if delivery was to be attempted before testing for disproportion at full-term.

5.4 Women's influence

Women continued to influence, directly and indirectly, the decisions about obstetric practices used on them. That some women sought advice early enough during their pregnancy for the induction of premature labour to be considered an option demonstrated how women could affect the actions taken. In these cases it would not have been possible to perform induction of premature labour and caesarean section would not have been considered but for the woman's attendance at the hospital. Where women had already experienced difficult births they were in all likelihood following the advice of the practitioners who had attended them previously. Some had even made up their mind before. Cameron stated that the eighth woman he operated on had been in the hospital when he had operated for the second time. After witnessing the survival of both mother and child she had 'declared that if ever she was pregnant again she would prefer a living child by section rather than undergo embryotomy'.⁷⁰¹

It is less obvious why women pregnant with their first child sought medical advice at the hospital during their pregnancy. Perhaps the obvious physical

⁶⁹⁹ 'Glasgow Maternity Hospital: Register of Patients Obstetrical Department (indoor) from 15 Jan 1881 to 31 Dec 1898'.

⁷⁰⁰ Warden, *Some Results of Induction*, p.32.

⁷⁰¹ Cameron, 'On the relief of labour with impaction', p.514.

deformities left behind by rickets led them to seek assistance when they were pregnant, as they, their friends, family, or a family practitioner, were aware of the possible consequences. Indeed, in a case described by Warden a woman, having her first child, was recorded as being the sister of a woman upon whom Cameron had performed a caesarean section before. Her sister's experience probably meant that she was aware that medical intervention would be required as a result of her 'extreme degree of rachitic deformity'.⁷⁰²

The timing of the decision of women to seek medical help during pregnancy limited the treatment options available. Women did not always end up following the advice given to them in previous labours. For example, James Martin Munro Kerr, obstetric physician at the Glasgow Maternity Hospital, revealed that he had attended a woman in her third pregnancy, which 'she had allowed to go to full time, although warned never to do so'.⁷⁰³ He was in any case able to deliver using forceps. The outcome was not always so positive when a woman attended the hospital too late in pregnancy for induction to be worthwhile. Slowan wrote of a case where a woman had been told to visit the maternity hospital at 7½ months, but she did not attend until labour had already begun. As a result version was performed, but as the head became jammed craniotomy was resorted to. These examples were not necessarily a conscious decision by the prospective mother to avoid medical attention. Malcolm Black and Robert Jardine both stated that these women did not always know how long they had been pregnant.⁷⁰⁴ It is possible that the menstrual cycle of these women was irregular as a result of poor nutrition. It would therefore have been difficult for them to determine what stage of gestation they had reached. The women upon whom induction was used did not always know when their pregnancy had begun. It is also possible that Black and Jardine believed their authority and knowledge to be superior to that of the women they attended.

The positive shift in women's perception towards the Glasgow Maternity Hospital, which had been identified by the institution's staff, did not happen quickly. Although some women were ready to approach the hospital for

⁷⁰² Warden, *Some Results of Induction*, p.7.

⁷⁰³ Kerr, 'A resume of two years' work', p.452.

⁷⁰⁴ Black, 'Three years' inductions', p.95; [Anon.], 'Three years' inductions of premature labour', p.445.

assistance, others continued to resist being admitted to hospital. In cases of childbirth involving a contracted pelvis a woman's refusal to go to the hospital could affect the treatment she received. Jardine, when working at the West-End Branch's outdoor service, gave an example of this. He visited a woman, pregnant for the first time, three weeks before her labour commenced. She was examined and her conjugate diameter was determined to be almost $2\frac{1}{2}$ inches (6.4 cm). Jardine remarked that he tried to persuade her to go into hospital and have a caesarean section. The woman refused this request and said that 'she preferred dying at home'.⁷⁰⁵ He would not operate outside of hospital and instead performed craniotomy at the woman's home. The woman survived this experience.

Some women refused to enter lying-in hospitals perhaps because they feared epidemics of puerperal fever, the stigma of poverty attached to such institutions, or they wished not to be separated from their family, home or work life. However, there were occasions when a woman's opinion meant that they were admitted to a hospital. The religious beliefs of women continued to be an important factor in some cases when the decision was made to intervene. Hiliary St. Clair Gray, assistant obstetric physician at the Glasgow Maternity Hospital wrote for one case that:

The patient and her friends being Roman Catholics, I explained to them that I was unable to deliver the child alive, except by the operation of Caesarean section, as to the dangers of which I informed them, and they at once requested me to perform it. According [sic] I had her removed to a private hospital and operated at once.⁷⁰⁶

Gray performed caesarean section at the maternity hospital later that year. The use of a private hospital in this case indicates that this woman's social status was perhaps different from those who were admitted to the maternity hospital. In all likelihood her admittance to the private hospital would have been dependent upon her ability to pay for the service. Sadly the mother died five days later, whilst the child survived. This case clearly demonstrates that while the Glasgow Maternity Hospital admitted many, and perhaps the majority, of

⁷⁰⁵ Jardine, 'Notes of 1,028 confinement cases', p.40.

⁷⁰⁶ H. St. Clair Gray, 'A case of Caesarean section', *British Medical Journal*, 1 (1893), p.843.

severely contracted cases other institutions also took them. Even then it was a practitioner from the Glasgow Maternity Hospital who performed the operation.

5.5 Murdoch Cameron and caesarean section

One practitioner who benefited from the opportunity provided by working at the Glasgow Maternity Hospital was Murdoch Cameron. Having successfully performed three successive caesarean sections in 1888 and 1889, he was confident that he could save both mother and child when he operated in the future. He reasoned that obstetric practitioners no longer needed to consider whether the life of the woman was of more value than that of her unborn child. He stated:

We must never forget that we have a sacred trust, and I hold we have no right to sacrifice a child, however unequal its life may be in some cases to that of the mother. In advocating the preference for section as against craniotomy in the living child, I do so only after very mature consideration, and with a feeling that to do otherwise would be to sacrifice a life which I was bound to preserve. I think the time has come when the lives of the mother and child may alike be saved, and prefer to think that an infant come to maturity is destined for something greater than to have its glimmering life extinguished by an accoucheur skilled in the use of a dreadful perforator. Let our motto be, 'We live to save and not to destroy'.⁷⁰⁷

The reference to pelvic measurements within case descriptions is valuable as a method of establishing how Cameron's view of caesarean section had changed. Before he operated the first time Cameron was reported as saying that he believed delivery could be completed using version or forceps with a conjugate diameter of less than two inches (5.1 cm). In 1891 he recommended that caesarean section should be used in these instances. He stated that 'with a diameter of from one to two inches, where engagement of the head is impossible, no one would hesitate to advise abdominal section'.⁷⁰⁸ By 1901, however, the range of indication for this operation had widened further. He now

⁷⁰⁷ Cameron, 'On the relief of labour with impaction', p.510.

⁷⁰⁸ Cameron, 'On the relief of labour with impaction', p.511.

suggested that '[w]ith a diameter under two and a half inches, where engagement of the head is impossible, no one should hesitate to advise Caesarean section'.⁷⁰⁹ This demonstrated not only the importance of pelvic measurement to practice but also the increasing indications for this procedure.

Between 1888 and 1892 Cameron steadily increased the number of caesarean sections he carried out (see Fig. 5.2). These were all performed upon women with severely contracted pelvis. Hillan maintains that Cameron performed ten caesarean sections between 1888 and 1890 with success.⁷¹⁰ Dow claims that Cameron's fourteenth success was reported in the *BMJ* in October 1890.⁷¹¹ While Cameron's achievements with this procedure should be commended, both Hillan and Dow's claims are misleading. Cameron performed a caesarean section on only eight occasions before 1891 with all of the women recovering and leaving the hospital, but one child did not survive. According to Cameron this child had been dead for some hours before he operated.⁷¹² Forty-two hours after Cameron operated for the ninth time the woman died in the hospital. Cameron explained that the first maternal death, which occurred in January 1891, was not related to the procedure itself.⁷¹³ He stated that the woman had fallen a height of ten feet, unbeknownst to the medical staff, before being admitted to the hospital. His disassociation of the woman's death from the procedure perhaps explains why Cameron continued to operate to the same extent the following year. However, between the end of 1892 and the first half of 1893, three women died consecutively after he had operated on them. This significant increase in the maternal mortality rate correlates with the gradual decline of his use of the procedure.

⁷⁰⁹ Murdoch Cameron, 'Caesarean section, and its modifications, with an additional list of five cases', in *Glasgow Hospital Reports*, ed. by George S Middleton, Henry Rutherford and Walter K Hunter, vol. 3 (Glasgow: James Maclehose and Sons, 1901), p.15.

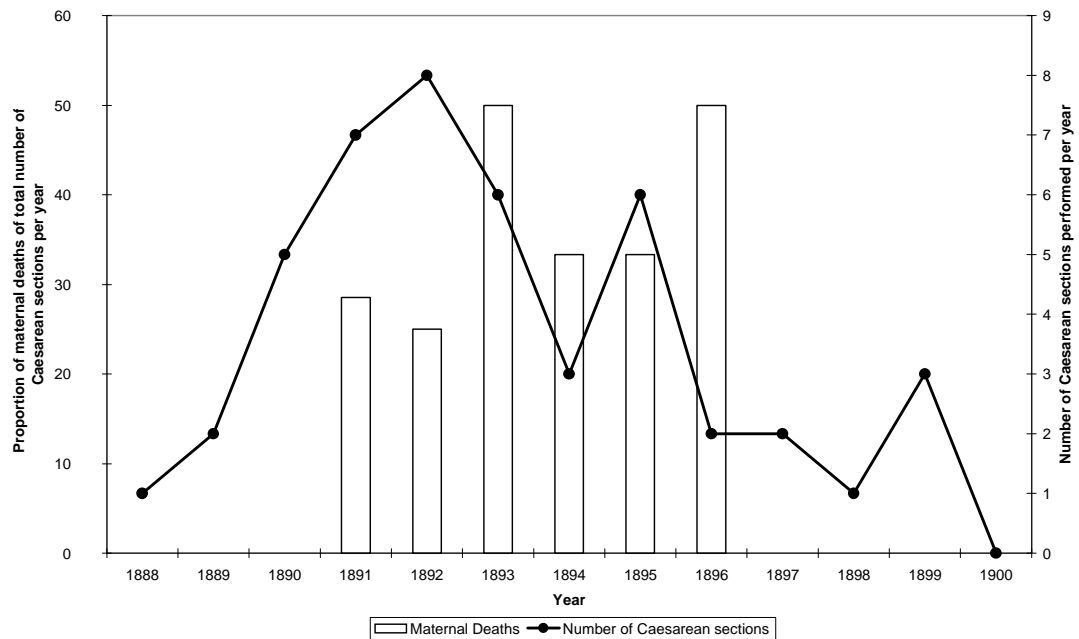
⁷¹⁰ Hillan, 'Caesarean section: Historical background', p.153.

⁷¹¹ Dow, *The Rottenrow*, p.69. Cameron's fourteenth operation was actually performed in 1891 and reported in the *BMJ* in October of 1891, see [Anon.], 'Scotland', *British Medical Journal*, 2 (1891), p.811.

⁷¹² Cameron, 'On the relief of labour with impaction', p.512.

⁷¹³ Cameron, 'On the relief of labour with impaction', p.514.

Fig. 5.2: Murdoch Cameron's caesarean sections and the proportion of maternal deaths associated with his procedure.⁷¹⁴



Cameron does not appear to have written a paper detailing the cases in which the women died. The hospital records report basic information about each case, but do not provide a reason for each death. However, in 1902 Cameron explained that before 1897 a number of the deaths associated with this operation had been due to 'outbreaks of sepsis in the maternity hospital'.⁷¹⁵ It is possible to trace some of the women Cameron operated on in the Statutory Register of Deaths for Glasgow City using the information contained in the hospital records. Two of the three entries confirm that sepsis was a problem. According to the register Margaret Lloyd died having 'collapsed after delivery' on 9th October 1892; Margaret Smith died of 'peritonitis' on 18th June 1893; and Elizabeth MacKenzie died from 'acute septic peritonitis' on 21st November 1893.⁷¹⁶

⁷¹⁴ These cases and each outcome were recorded in Amand Routh, 'Cases of abdominal Caesarean section by obstetric physicians and surgeons in Great Britain and Ireland, who were living on June 1st, 1910', *Journal of Obstetrics and Gynaecology of the British Empire*, 19 (1911), pp.59-233.

⁷¹⁵ Cameron, 'Correspondence - Caesarean section', p.1373.

⁷¹⁶ GRO, 644/05 0359, 'Statutory Deaths Register - Margaret Smith', 1893; GRO, 644/05 0604, 'Statutory Deaths Register - Margaret Lloyd', 1892; GRO, 644/05 0711, 'Statutory Deaths Register - Elizabeth McKenzie', 1893.

After 1897 Cameron performed his caesarean sections outside of the Glasgow Maternity Hospital. These took place at the Western Infirmary where Cameron had bed space, used primarily for gynaecological purposes. During the last three years of the century all of the women upon whom Cameron operated survived. This success perhaps renewed his faith in the procedure and led him to use it more often in 1899. The Western Infirmary did not have an outdoor obstetric service at this point, and therefore the number of women referred to Cameron, in contrast with when he worked at the Glasgow Maternity Hospital, was limited. Hence the small number of operations he performed. In 1900 Cameron did not perform the procedure at all despite recent successes. His wife is reported to have died at the end of 1899 perhaps explaining his lack of commitment to this work in the following months.

The decrease in caesarean sections performed by Cameron during the last decade of the nineteenth century can also be explained by other factors. The procedure was still dangerous and was only used in cases of severe pelvic contraction, and when the circumstances meant that a successful outcome was possible. Craniotomy continued to be used by practitioners at the hospital, presumably in cases where the woman was exhausted when she was admitted. These limitations meant that there were only ever a small number of possible cases. With such a small sample any changes in the number of women operated on is of course much exaggerated.

The career path that Cameron took might also have resulted in him having less time to devote to such work. In 1894 he became Professor of Midwifery at the University of Glasgow, and in 1895 he resigned his position at the hospital and became a consulting physician instead. In his position at the University he worked in the Western Infirmary where he performed abdominal surgery. The vast majority of these cases were gynaecological, involving the removal of tumours and of ovarian cysts.⁷¹⁷ The extra workload of his Professorship, in addition to his change in position at the Glasgow Maternity Hospital would have impacted on his ability to continue performing all of the caesarean sections. However, the decline in cases occurred two years before the University appointed him.

⁷¹⁷ Cameron, 'Abdominal sections in the Western Infirmary', pp.114-115.

Fig. 5.3: Number of caesarean sections reported as being performed in Glasgow by Murdoch Cameron and other practitioners between 1888 and 1900.⁷¹⁸



Following Cameron's success with the operation other practitioners at the Glasgow Maternity Hospital also used the procedure (see Fig. 5.3). He was described as assisting in several of these cases. It is likely that this reduced the opportunity for Cameron to perform the operation himself. However, after 1893 the number of operations performed by all practitioners decreased to an extent. The most significant factor in the declining use of this procedure was the diminishing success that was had with the operation during these years.

Cameron's early success may well be explained by his method of choosing appropriate cases, and the technique he used to operate. He emphasised that the risks of the procedure were mostly due to delay and from failed attempts at delivery already having been attempted. Operating before the woman was exhausted, he believed, would reduce risk of haemorrhage, delayed shock, and peritonitis. By following his own advice Cameron improved the chance of both mother and child surviving. The majority of women were admitted to the hospital either a few days before or on the day of the operation. At first it appears that these women were admitted unplanned when already in labour. However, there is evidence to suggest that many of the women admitted for

⁷¹⁸ The majority of these cases were recorded in Routh, 'Cases of abdominal Caesarean section', pp.59-233. The graph also includes additional cases that were reported in the records of the Glasgow Maternity Hospital.

caesarean section had been examined during their pregnancy and were then asked to attend the hospital when they were due to have the operation performed. For example, in November 1890 it was reported in the *BMJ* that having performed his fifth successful caesarean section Cameron was already 'engaged to perform the operation in three other cases'.⁷¹⁹ These next three operations were performed on the 10th, 13th, and 16th December 1890. One of the women had been admitted to the hospital three weeks beforehand but the other two were admitted less than twenty-four hours prior to delivery. Cameron and Reid requested that preternatural cases be sent in as early as possible to reduce mortality.⁷²⁰ Cameron was effectively undertaking elective, rather than emergency, caesarean sections. This was a considerable difference from previous occasions when this operation had been used in Glasgow when labour had been delayed by disproportion and other measures had often been attempted beforehand.

Cameron's success with caesarean section was behind the drive for this type of case being sent to the Glasgow Maternity Hospital. Without the catalyst of such success there was not a reason for women with this difficulty to be sent to the nearest maternity hospital. The good results achieved by Cameron were also due to the method he used to operate, which he refined with experience. In his first reports he had been keen to highlight the antiseptic measures required. In the papers he published during the 1890s he mentioned the use of antiseptic sutures and washing and disinfecting the woman before operating. He went into less detail about these methods presumably not because he had stopped using them, but rather because he considered that, having already explained them, such requirements of this operation were now self-evident. Instead he described in more detail the technique he used to suture the uterus and prevent haemorrhage.

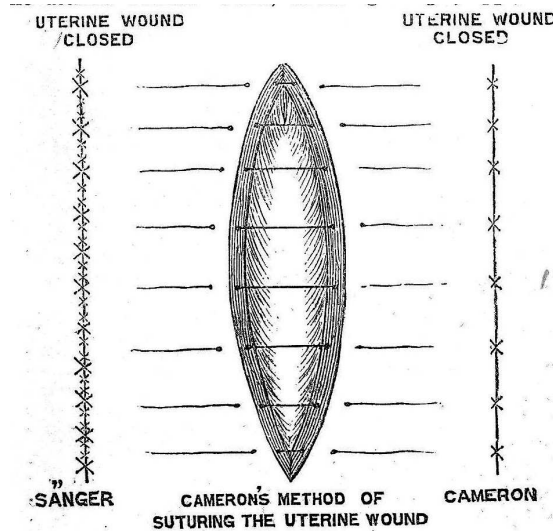
He went to great lengths to make a distinction between his procedure and that of Max Sänger. Sänger advocated using between twenty and thirty deep and superficial stitches to close the uterine wound, whereas Cameron used between

⁷¹⁹ [Anon.], 'Scotland', *British Medical Journal*, 2 (1890), p.1142.

⁷²⁰ *The fifty-seventh annual report of the Glasgow Maternity Hospital and Dispensary, North Portland Street*, p.9.

seven and twelve deep stitches. Cameron provided a diagram to establish this point in a paper he wrote about caesarean section in 1891 (See Fig. 5.4).

Fig. 5.4: Diagram produced by Murdoch Cameron to demonstrate the difference between his and Max Sanger's technique of closing the uterine wound during a caesarean section.⁷²¹



Cameron also documented his advice for preventing haemorrhage during the operation. He suggested pressing down on a pessary placed on the uterus and then making the incision within the space between the sides of the pessary. After removing the placenta an assistant would then grasp the uterine wound bringing the cut surfaces together for them to be sutured.⁷²²

Before closing the abdominal wound Cameron tied the woman's Fallopian tubes. He did this not to improve the chances of survival from the operation, but for the purpose of sterilisation. He sterilised all of the women he operated on apart from the very first. He did not mention whether he informed the women that he intended to prevent them from becoming pregnant in the future. Aware of the risks of labour caused by their deformed pelves, some women might have welcomed Cameron's decision, however, it cannot be assumed that this was the case. The possible ethical, moral, and religious implications of the need for consent for tubal ligation have yet to be examined.⁷²³ Comments on the use of

⁷²¹ Cameron, 'On the relief of labour with impaction', p.512.

⁷²² Cameron, 'On the relief of labour with impaction', pp.1383-1384.

⁷²³ See Moscucci, *The Science of Woman*, pp.134-164 for a discussion of the implications surrounding the removal of ovaries as a surgical procedure in the nineteenth century.

this procedure focused entirely on medical reasoning and did not mention these other issues. Ligaturing the Fallopian tubes was not infallible. A woman upon whom Cameron operated in 1892 was admitted to the Glasgow Maternity Hospital in 1894 pregnant with her third child. Cameron blamed this on the ligature not having been tightened. He had since used a double ligature and cutting the Fallopian tube in-between. In this case it was decided to perform caesarean section on her for the second time. Sadly the child died, and the woman did not survive her second experience of this procedure.

Although Cameron practised antiseptic methods this was not enough to prevent infection in all cases. Loudon asserts that antiseptic methods in lying-in hospitals reduced sepsis considerably within these institutions by the end of the nineteenth century. It was in home births where general practitioners did not follow antiseptic, or later aseptic, guidelines that the problem persisted.⁷²⁴ The occurrence of sepsis within Cameron's cases, which coincided with outbreaks across Britain, suggests that the techniques used within the hospital were insufficient.⁷²⁵ Ensuring that hands, clothes, and instruments were clean, and that the attendant had not been in contact with puerperal fever or erysipelas could prevent sepsis. However, it is possible for a person to be an asymptomatic carrier and without taking the aseptic precaution of using barriers, such as a facemask, to ensure that contamination between attendant and patient did not occur, these methods were inadequate.⁷²⁶ By 1898 practitioners at the hospital wrote of their intention to conform to a practice of aseptic obstetrics. This involved the introduction of a process of steam sterilisation for materials in the hospital, and boiling of instruments.⁷²⁷ However, these measures were too late for the women operated on before this.

In histories of caesarean section the remarkable series of outcomes achieved when Cameron began performing the operation have largely been ignored. The successes outside of Britain have been described as the pivotal turning point in the history of this procedure. Indeed, the reason why Cameron first operated was most likely influenced by the results being achieved by operators abroad.

⁷²⁴ Loudon, *Death in Childbirth*, pp.203-205.

⁷²⁵ Loudon, *Death in Childbirth*, p.237.

⁷²⁶ Loudon, *Death in Childbirth*, p.82.

⁷²⁷ Robert Jardine, 'Aseptic midwifery', *British Medical Journal*, 2 (1898), pp.782-785.

However, Cameron's achievements were noted by other British practitioners. Loudon's assertion that Cameron was the first person in the Western World to demonstrate that the operation could be performed safely is hyperbole, but he might well have been the first to establish this in the minds of many British obstetricians.⁷²⁸ Clement Godson, consulting physician at the London Lying-in Hospital, for example, referred to Cameron's first ten operations in addition to highlighting seven successive successes achieved by Sanger, and eleven successful Porro's operations performed by August Breisky in Vienna.⁷²⁹

Cameron's accomplishments have been reported in local histories of Glasgow obstetrics. Yet his results have been exaggerated and the high maternal mortality rate associated with Cameron's operations between 1891 and 1896 has escaped their attention. The inference being that Cameron's success continued as caesarean section became safer. It is not a surprise that publications attempting to proclaim the importance of the work of a Glasgow practitioner have ignored these results. However, Cameron also failed to publicise his change in fortune. In 1889 Cameron had claimed that statistics of medical cases were untrustworthy because 'few men rush into print with a list of unsuccessful cases'.⁷³⁰ He appears to have followed the very practice that he criticised. Advertising failure would not improve a medical practitioners career prospects.

5.6 Clinical success and Murdoch Cameron's career progression

In the early 1890s Cameron took several significant steps in his career as an obstetrician. He began the decade as an obstetric physician at the Glasgow Maternity Hospital and as assistant to William Leishman, the Regius Professor of Midwifery at the University of Glasgow. He had been elected as President of the Glasgow Obstetrical and Gynaecological Society in 1889. In 1892 he became a Fellow of the London Obstetrical Society and was made an Honorary President of the International Congress of Obstetrics and Gynaecology held in Brussels. The later position was particularly noteworthy when considering the other practitioners who were appointed alongside him. Robert Barnes, Thomas Keith,

⁷²⁸ Loudon, 'A History of Britain's Hospitals and the Background to the Medical, Nursing and Allied Professions', p.261.

⁷²⁹ Clement Godson, 'Porro's operation', *British Medical Journal*, 2 (1891), p.795.

⁷³⁰ Cameron, 'The Caesarean section: With notes of a successful case', p.181.

and Lawson Tait, all eminent British practitioners of obstetrics and gynaecology, were given the same honour at this congress.⁷³¹ In 1894 the University of Glasgow appointed him, as Leishman's replacement, to the position of Regius Professor of Midwifery. The contribution that his achievement with caesarean section had to his career rise should not be underestimated. Early on his work with this procedure received regular attention in the British medical press. The Scottish correspondents for both the *BMJ* and the *Lancet* regularly mentioned these operations in their reports from 1890 until 1892.⁷³² In December 1890 the *Lancet* reported that Cameron had performed three operations within eight days and all of the women and children survived. This was described as 'a condition of affairs which probably could not be paralleled in any hospital in the world'.⁷³³

It was not just through the medium of medical journals that Cameron's work was brought to the attention of the medical world. Cameron made frequent appearances at medical societies during this period, both in Britain and abroad. He presented papers on his work, and voiced his opinion on this subject in response to other practitioner's papers at the Obstetrical Society of London for example.⁷³⁴ He also contributed to the BMA's annual meeting on several occasions. As a forum attended by many of the most influential practitioners of the time, this was a perfect opportunity to spread the news of his achievement. He also presented at the International Medical Congress in Berlin in 1890. Sanger, who was present, is reported to have responded to Cameron's presentation by speaking 'in favour of his own method' during the discussion that followed.⁷³⁵ Later that year Cameron described Sanger's method as 'needlessly complicated' to his audience at the BMA annual meeting.⁷³⁶ He even went on to question the referral to the procedure by some practitioners as

⁷³¹ [Anon.], *British Medical Journal*, 2 (1892), p.319.

⁷³² See [Anon.], 'Scotland', p.698; [Anon.], *The Lancet*, 2 (1890), p.634; [Anon.], 'Scotland', p.1142; [Anon.], p.990; [Anon.], 'Scotland - Caesarean section in Glasgow', *The Lancet*, 2 (1890), p.1359; [Anon.], 'Scotland', p.490; [Anon.], 'Scotland - Glasgow Maternity Hospital', *The Lancet*, 2 (1891), p.516; [Anon.], 'Scotland', p.811, [Anon.], 'Scotland', p.1112; [Anon.], 'Scotland', *The Lancet*, 2 (1891), p.1198; [Anon.], 'Scotland - Caesarean section', *British Medical Journal*, 1 (1892), p.729; and [Anon.], 'Scotland', *British Medical Journal*, 1 (1892), p.1215.

⁷³³ [Anon.], 'Scotland - Caesarean section in Glasgow', p.1359.

⁷³⁴ [Anon.], 'Obstetrical Society of London - Caesarean section', *The Lancet*, 1 (1892), pp.584-585.

⁷³⁵ [Anon.], 'The International Medical Congress in Berlin - Obstetrics and Gynaecology', *The Lancet*, 2 (1890), p.361.

⁷³⁶ [Anon.], 'British Medical Association - Obstetric medicine and gynaecology', *The Lancet*, 2 (1890), p.305.

Sänger's caesarean section. During this period Cameron published several articles discussing his experience. He produced two tables, the first providing information about his first ten operations and the second depicting the last five operations.⁷³⁷ Conveniently omitted was the period in between when the maternal mortality associated with the procedure increased significantly.

These methods of dissemination were effective in bringing Cameron's achievement to the notice of many medical practitioners. In some instances he was mentioned in the same breath as the Continental practitioners, such as Sänger and Leopold, who had achieved much improved results with this procedure. For example, Alexander Disney Leith Napier, a physician accoucheur at the St. Pancras and Northern Dispensary in London, stated in 1891 that 'I trust that as experience ripens we may all follow in the footsteps of Leopold of Dresden and Cameron of Glasgow, whose brilliant records are so highly creditable to nineteenth century obstetrics'.⁷³⁸ At the end of the same year the editors of the *Lancet*, in their annual summary for 1891, congratulated Cameron on his success with caesarean section.⁷³⁹

The progress Cameron made through the ranks of obstetrics can be attributed, to an extent, to his association with the success of this procedure. He was appointed as Professor of Midwifery ahead of candidates who included Berry Hart from Edinburgh, who performed the first successful caesarean section in Scotland, and William Loudon Reid, Professor of Midwifery at Anderson's College Medical School and Cameron's colleague at the Glasgow Maternity Hospital. Letters published in the national press at the time claimed that Cameron was not the best candidate.⁷⁴⁰ In response, after Cameron was appointed, an anonymous author perhaps best summed up the importance of these operations to Cameron's career. They wrote that Cameron's 'rehabilitation of Caesarean

⁷³⁷ Cameron, 'Caesarean section and its modifications', p.26.

⁷³⁸ A. D. Leith Napier, 'A successful case of Caesarean section', *Transactions of the Obstetrical Society of London*, 34 (1893), p.117.

⁷³⁹ [Anon.], 'Annus Medicus 1891 - Obstetrics and gynaecology', *The Lancet*, 2 (1891), p.1448.

⁷⁴⁰ See [Anon.], 'The chair of midwifery in the University of Glasgow', *The Lancet*, 1 (1894), p.45; [Anon.], 'Annotations - The appointment to the chair of midwifery in Glasgow', *The Lancet*, 1 (1894), p.104; A Scotchman, 'Scotch university appointments', *The Times*, 8th January, Letters to the Editor, p.10; and Anti-Gladstonian, 'To the editor of the times', *The Times*, 9th January, Letters to the Editor, p.6.

section, by his remarkable operative successes, added high professional grounds to his local claims for the appointment which has been bestowed on him'.⁷⁴¹

After 1891 Cameron's work was the subject of positive remarks in several medical journals. For example, the following practitioners all commented on his success, or made a point of stating that they had incorporated part of his technique in their own; Clement Godson (London Lying-in Hospital), Alfred Lewis Galabin (Guys Hospital), Thomas More Madden (Dublin Lying-in Hospital), George Ernest Herman (London Hospital), William Duncan (Middlesex Hospital), Peter Horrocks (Royal Maternity Charity), and Charles James Cullingworth (London St. Thomas' Hospital).⁷⁴² Cameron's influence was not only observed in Britain. William Stenhouse, who graduated in medicine in 1875 from Glasgow, performed what was reportedly New Zealand's first successful caesarean section in 1890.⁷⁴³ Stenhouse mentioned Cameron's first case in an article he wrote describing his achievement.⁷⁴⁴ He had perhaps read Cameron's article published in the *BMJ* just before. Practitioners worldwide mentioned Cameron's name when caesarean section was discussed. As late as 1898 reports in the *BMJ* referred to Cameron's first ten operations.⁷⁴⁵ As Cameron did not publish information about the less successful results achieved after this, there was no indication in these articles that his success had not continued.

The recognition Cameron has received for his work with caesarean section has centred on his successful outcomes. The effort he made to distinguish between Säger's and his technique was largely forgotten, even though many British practitioners followed Cameron's advice. John Alexander Campbell Kynoch, the Professor of Midwifery at St. Andrew's University, perhaps best illustrated this in

⁷⁴¹ [Anon.], 'Chair of midwifery in Glasgow University', *British Medical Journal*, 1 (1894), p.98.

⁷⁴² See Godson, 'Porro's operation', p.795; [Anon.], 'Hunterian Society - Modern methods of performing Caesarean section', *British Medical Journal*, 1 (1891), pp.757-758; [Anon.], 'Royal Academy of Medicine in Ireland - Two cases of Caesarean section', *The Lancet*, 1 (1892), p.199; Herman, 'London Hospital: Cases of Caesarean section; remarks', *The Lancet*, 2 (1893), p.1565; William Duncan, 'Middlesex Hospital; cancer of rectum; inguinal colotomy; pregnancy; Caesarean section; recovery', *The Lancet*, 1 (1895), pp.405-406; and [Anon.], 'Adjourned discussion on Caesarean section', *Transactions of the Obstetrical Society of London*, 34 (1893), p.147.

⁷⁴³ Derek Dow, 'Barbaric birth practice replaced by caesarean', *New Zealand Doctor*, 15th April, p.41.

⁷⁴⁴ Wm. M. Stenhouse, 'Successful case of Cesarean section', *New Zealand Medical Journal*, 3 (1890), p.228.

⁷⁴⁵ R. A. Clarke, 'Teddington Cottage Hospital: A case of Caesarean section', *The Lancet*, 1 (1898), pp.1053-1054.

1900. He wrote that the 'credit of perfecting the operation of caesarean section is due to Sanger of Leipzig, when in 1882 he introduced the improved technique [...] In this country the successful results obtained by Murdoch Cameron and others show the advantages of those improvements'.⁷⁴⁶ Donald Todman has recently claimed that Cameron 'championed Sanger's technique'.⁷⁴⁷ Of course Cameron recognised the benefit of suturing the uterus, so fervently advocated by Sanger, but he introduced this practice to his own technique because of his own experience. Indeed, he devised his own method of suturing and actively worked to get other practitioners to use his innovation rather than Sanger's method.

5.7 Other Glasgow practitioners and caesarean section

While Cameron's reputation grew outside Glasgow, his influence particularly affected the work of practitioners within the city he was based. Cameron performed the majority of caesarean sections reported as having taken place in Glasgow between 1890 and 1900, however, several others also carried out this operation (see Fig. 5.3.). The influence of Cameron's practice upon his colleagues was an important factor in their own application of this procedure. Following Cameron's three successes in 1888 and 1889, William Loudon Reid performed caesarean section twice at the Glasgow Maternity Hospital in 1890. Reid had assisted at the caesarean section performed by Patterson in 1884. He had also been present at the consultation held at the Glasgow Maternity Hospital when Cameron first operated in 1888.⁷⁴⁸

In February 1890 Reid performed a caesarean section for the first time. The Glasgow Maternity Hospital patient register lists brief details about this case, but a more detailed description exists within the MD thesis of James Stevenson. Having been a house surgeon at the Glasgow Maternity Hospital in 1890 between February and May, Stevenson based his thesis on his experiences at the hospital.

⁷⁴⁶ J. A. C. Kynoch, 'The uterine incision in Caesarean section', *Scottish Medical and Surgical Journal*, 6 (1900), p.277.

⁷⁴⁷ Todman, 'Eduardo Porro (1842-1902)', p.3.

⁷⁴⁸ For biographical information about William Loudon Reid, see [Anon.], 'Obituary - William Loudon Reid', *British Medical Journal*, 1 (1932), pp.40-41 and [Anon.], 'Obituary - William Loudon Reid', *Glasgow Medical Journal*, 117 (1932), pp.91-93.

He included a description of Reid's operation, which he had taken from the hospital journal.

Maggie Black primipara. On admission os was dilated to size of a crown piece, membranes unruptured. Conjugate diameter less than 2". Patient was a very rickety little woman but appeared well nourished. She considered that she was full time. Dr Reid was sent for and others of the staff were called for a consultation. There attended Prof Leishman and Drs Cameron, Sloan, Black, and Oliphant. The opinion was almost unanimous in favour of Caesarian section. Dr Reid alone inclining to craniotomy. Chloroform was administered by Dr Brown and Dr Reid performed the operation assisted by Dr Cameron. Dr Oliphant attending to the instruments.⁷⁴⁹

Reid's disinclination towards caesarean section perhaps demonstrates that not everyone had been persuaded by Cameron's success; although he was certainly in the minority. The decision to allow Reid to perform the operation, rather than Cameron, is not explained. As Cameron assisted, Reid might have considered this a good opportunity to learn how to perform the operation. Like Cameron, Reid had also been a student of Lister, and acted as a surgical dresser. In fact, he gained two gold medals in Lister's surgery classes.⁷⁵⁰ Procuring a position as a dresser to an eminent specialist was perceived as important for obtaining later career prospects as a result of patronage.⁷⁵¹ His teacher recognised his skill and effort and in 1869 when Reid applied to be a parochial surgeon, Lister provided him with a letter endorsing Reid's application. He wrote:

He was one of the most distinguished students of his period in the University of Glasgow, possessing that true love of his profession, which, when combined with abilities such as his, is a sure guarantee for success in it.⁷⁵²

⁷⁴⁹ Stevenson, 'Notes and observations', pp.60-61.

⁷⁵⁰ [Anon.], 'Obituary - William Loudon Reid', p.40.

⁷⁵¹ Digby, *Making a Medical Living*, p.58.

⁷⁵² Joseph Lister to William Loudon Reid, 'Letter to William Loudon Reid', 27th July 1869.

Unfortunately Maggie Black died after the operation. Although Reid had been an acclaimed student of Lister, this was no guarantee of operative success. Her death was recorded in the hospital register as being due to oedema of the lung. Her record in the statutory death register attributes her death to shock.⁷⁵³ This was not the last caesarean performed by Reid. In fact he carried out the next one at the Glasgow Maternity Hospital, just three months later. Although a description of this has not been found, the hospital records happily reveal that almost five months later both the mother and her daughter left the hospital well. Whilst Cameron went on to perform this procedure on several occasions during this period Reid carried out only one further caesarean section during the nineteenth century in 1898.

Although Reid did not go on to perform this operation again until the end of this decade, other practitioners employed by the Glasgow Maternity Hospital did. Throughout this entire period the surgeon George Buchanan remained as the hospital's consulting surgeon, but he was not called upon to operate after 1881. Obstetric practitioners in Glasgow had now claimed the procedure as their own. In 1893 practitioners other than Cameron performed five of the eleven operations reported. Oliphant performed three of these, and Hilary Gray, an assistant obstetric physician at the hospital, undertook the other two. Gray had been employed for a year as an outdoor accoucheur by the hospital in the west of the city before being employed in the hospital itself in 1890. Following his first operation he published details about it in the *BMJ*. Gray revealed that he had attended all of Murdoch Cameron's previous operations and had also assisted him in several.⁷⁵⁴ By 1898 Robert Jardine was happy to state that 'Caesarean section has now become so common that it may be said to be displacing craniotomy to a certain extent'.⁷⁵⁵ No doubt the use of caesarean section in Glasgow had been influenced strongly by Cameron's work.

5.8 Experience and success

In order that Cameron was able to produce such a series of results with caesarean section, it was necessary for him to be in a position where he was

⁷⁵³ GRO, 644/05 0096, 'Statutory Deaths Register - Margaret Black', 1890.

⁷⁵⁴ Gray, 'A case of Caesarean section', p.843.

⁷⁵⁵ Jardine, 'Notes on four cases of Caesarean section', p.125.

able to encounter sufficient numbers of pregnant women with severely contracted pelves. If Cameron had not had the opportunity to perform the procedure on several occasions his initial success would not have stood out amongst the other successes reported by practitioners elsewhere in Britain. Furthermore, the experience he gained provided him with an opportunity to refine his practices. James Hendry, the Muirhead Professor of Midwifery at the University of Glasgow between 1927 and 1943, referred, in his obituary of Cameron, to the importance that extensive experience played in Cameron's practice. He wrote that 'the experience which he [Cameron] was able to obtain from the large numbers of abnormal cases passing through his hands soon enabled him to excel in the practice of midwifery'.⁷⁵⁶

Practitioners located elsewhere in Britain argued that the lack of cases of women with severely contracted pelves encountered outside Glasgow meant that they could not achieve similar levels of success with caesarean section as observed in Glasgow. For example, Arthur Lewers at the Obstetrical Society of London in 1892 countered the argument made by some practitioners, such as Murdoch Cameron (see p.211), that caesarean should now be seen as an elective operation, by stating that maternal mortality rates in London ranged between 20 and 50 per cent. He said that:

This being so, it would obviously be wrong to advise patients to undergo the operation on the ground that some operators in Germany and Cameron in Glasgow had a mortality of 9 or 10 per cent. It was said that, in order to get such results, the operation must be done more frequently. Granting this, for the sake of argument, contracted pelves were not sufficiently common in London to give all the London obstetricians many cases each.⁷⁵⁷

The prevalence of rickets in Glasgow was a contributing factor to the extent that practitioners gained this experience. However, it was not that all Glasgow obstetricians encountered many cases, as Lewers implied. It was the concentration of cases of childbirth involving women with severely contracted

⁷⁵⁶ H., 'Obituary - Murdoch Cameron', p.299.

⁷⁵⁷ [Anon.], 'Obstetrical Society of London - Six cases of craniotomy, with remarks on the relative position of craniotomy and caesarean section', *British Medical Journal*, 1 (1892), p.1082.

pelves in one institution that meant that some Glasgow practitioners were able to develop this experience, one of whom was Cameron. The combination of the prevalence of rickets in Glasgow and the Glasgow Maternity Hospital providing the opportunity to build an experience of difficult labour, enabled practitioners to improve their understanding of what was required in these situations, the methods they practised, and the control they held over these elements. Tröhler and Prüll have suggested that until the use of caesarean section antiseptically in the 1880s, there was no apparent advantage for women going into hospital particularly those who were well off and married.⁷⁵⁸ The chronology of the use of this procedure in Glasgow and the perceived change in perception of women towards the hospital supports this statement. Although even then it was not guaranteed that the women and children operated on would survive.

5.9 Conclusion

This period was particularly notable for the use of caesarean section with pregnant women afflicted by contracted pelvises. This procedure was only used upon a small proportion of women who attended the Glasgow Maternity Hospital. However, it was during this last decade of the nineteenth century that the operation became considered as a procedure of election rather than of last resort in Glasgow. This change in fortune can be ascribed mostly to the work of Murdoch Cameron, who not only influenced his fellow practitioners in Glasgow but also had an impact on the use of caesarean section outside this city and Scotland.

The increasing amount of intervention observed at the Glasgow Maternity Hospital was explained both by obstetric practitioners' desire to become involved in childbirth earlier and by intervention increasingly occurring inside the hospital rather than outside. Indeed, the success Cameron achieved with caesarean section, which was central to his career, was likely realised not only because of the prevalence of rickets in Glasgow, but also due to the expansion of the hospital's outdoor service, which ensured that a greater number of difficult cases ended up at the hospital's indoor service. In addition, the sources from this period reveal that not only did obstetric practitioners attend to women

⁷⁵⁸ Ulrich Tröhler and Cay-Rüdiger Prüll, 'The rise of the modern hospital', in *Western Medicine: An Illustrated History*, ed. by Irvine Loudon, (Oxford: Oxford University Press, 1997), p.166.

with contracted pelves earlier in labour than previously, they also examined women during pregnancy. This was primarily as a result of these women's previous experiences of difficult labour, but women who were pregnant for the first time were also occasionally examined during pregnancy. It is difficult to determine whether this was a shift that occurred before this decade because the existing sources do not refer to it before the late 1880s. However, the increasing numbers of cases witnessed at the hospital and the existence of the hospital records for this period confirm that these circumstances existed before the twentieth century.

What was certainly apparent was the increasing control that obstetric practitioners associated with the Glasgow Maternity Hospital had over difficult childbirth in Glasgow at this time. Whereas before the 1890s surgeons primarily associated with other hospitals in Glasgow would have been called upon to perform surgical operations in obstetrics, this was no longer the case. A generation of obstetric practitioners now existed who had experience with antiseptic measures, later aseptic, who were prepared to undertake this surgery. Moreover before the 1870s, and as late as the 1890s for surgical cases, the lying-in hospitals in Glasgow were not considered by the majority of medical practitioners in the city as the location where they should send difficult cases of childbirth they encountered. The Glasgow Maternity Hospital changed this perception. Practitioners based at the hospital were given the opportunity to build their experience of difficult cases.

Practitioners in Glasgow continued to have different opinions about the practices that should be employed in different circumstances. Even those based at the Glasgow Maternity Hospital did not always agree with the decisions made by their colleagues. The evidence suggests that individual experiences of practitioners often took precedence over the general experiences documented by others. This period also saw an increase in the number of procedures available to practitioners as symphysiotomy and Walcher's position were introduced to Glasgow practice. In order to decide between treatments practitioners also relied upon their beliefs with regards to the value of the child relative to the mother and more particularly measurements of the pelvis. It was not just practitioners' opinions that were important factors in the decision to perform one procedure or another. The women who were at the centre of each

encounter also affected the choices made by the practitioners, whether this was because of their own religious beliefs or because they simply did or did not want to attend the hospital. When a woman could not be persuaded by her doctor to follow his recommendations, other procedures had to be used.

Chapter 6 - Conclusion

This thesis examines the diagnosis and treatment of cephalopelvic disproportion in Glasgow between 1840 and 1900. It is a widely held assumption that this condition was prevalent amongst women in Glasgow during the nineteenth century, when rickets was rife. It has been demonstrated in this study that many medical practitioners encountered disproportion and their approaches towards this problem changed during this period in Glasgow. Using this condition as a case study has provided an opportunity to explore the changing approaches to diagnosis and treatment, and the wider practice of obstetrics. It has been demonstrated that the decisions practitioners made in obstetric practice were the endpoint of a complex decision-making process that was influenced by several factors. Whilst this thesis focuses on Glasgow, the findings could be applicable to other large cities with major social problems and large medical schools. This thesis furthers our understanding of the history of childbirth in Glasgow, and addresses a gap in our knowledge of British obstetric practice.

The history of childbirth in Glasgow has received little attention thus far, and this study adds to a scant literature that has already considered obstetrics in Glasgow during the second half of the nineteenth century. The few previous studies of obstetric practice in this city have typically employed a 'traditional positivist' approach, and focused particularly on the successes achieved with caesarean section at the Glasgow Maternity Hospital. However, recent studies of obstetric practice in other places, particularly the United States, have demonstrated the value of taking a wider historical approach. Following on from this work that has attempted to place obstetric practice within its social, medical, and scientific context, this study focuses on the factors that influenced the decisions made by Glasgow-based practitioners to advocate and use the procedures they did. The examination in this thesis reflects the mechanical approach to childbirth that was taken by obstetric practitioners during and after the nineteenth century.⁷⁵⁹ Current ideas regarding the need for a holistic

⁷⁵⁹ The changing approaches in relation to medical work and the female pelvis are recognised in Janette C. Allotey, 'Discourses on the function of the pelvis in childbearing from ancient times until the present day' (PhD, University of Sheffield, 2007). Allotey's thesis was not available at the time of writing this thesis.

approach to pregnancy and birth were not apparent in the source material examined for this thesis.⁷⁶⁰

The majority of labours during this period required no intervention. Surviving records indicate that cases of disproportion made up a very small proportion of all births, despite the content of obstetric textbooks suggesting otherwise. The findings of this thesis suggest that Loudon's assertion that between 0.1 and 0.5 per cent of births involved severely contracted pelves was true, during the most part of the nineteenth century, for the practice of medical practitioners who had considerable interest, and experience, in this field of medicine. Many medical practitioners incorporated obstetrics as part of their practice, but some encountered disproportion more often than others. Practitioners with an interest in obstetrics, and particularly those with experience of difficult labours were often employed to treat this problem. Estimates of the prevalence of this condition in hospital practice before the 1880s were also below 1 per cent of the total number of cases. This figure is explained by the confirmation that lying-in hospitals in Glasgow, as has also been demonstrated elsewhere, admitted women primarily for social rather than medical reasons until the 1880s.

During the 1880s the prevalence of disproportion appeared to increase. This followed an apparent rise in the incidence of rickets in Glasgow that occurred during the 1860s. The contracted pelves of women who had suffered from rickets as children were described as the chief cause of disproportion. Rickets, a disease that occurs during childhood, was particularly common amongst the poorer sections of industrialised society in Britain. Several factors have been identified as causing rickets during the nineteenth century, but determining the nature of these relationships has been shown in this thesis to be problematic. Air pollution and overcrowding are thought to have prevented children from acquiring the necessary levels of vitamin D through exposure to sunlight, and their diet did not provide the vitamin D needed to prevent rickets from developing. It has not been established if any one of these factors had a greater role in the existence of this disease. It is argued that to do so would require knowledge about the intricacies of the lives of rickets sufferers when they were

⁷⁶⁰ For a discussion of the different approaches towards childbirth see Ann Oakley, 'A case of maternity: Paradigms of women as maternity cases', in *Childbirth: Changing Ideas and Practices in Britain and America 1600 to the Present*, ed. by Philip K. Wilson, Ann Dally, and Charles R. King, (New York: Garland, 1996), pp.209-233.

children. Determining the nature of the causes of this disease is made more difficult as many residents in Glasgow during this period had moved to the city from elsewhere.

Cases of disproportion encountered by practitioners in private practice may have risen slightly after 1880, but it was the increase in the number of these cases admitted to the Glasgow Maternity Hospital that stands out. Loudon has argued that Glasgow was exceptional in terms of the number of women who had contracted pelves at the end of the nineteenth century. He came to this conclusion based on the figures of women with deformed pelves admitted to the Glasgow Maternity Hospital, which was approximately 10 per cent of all cases during the 1890s. He acknowledged that using hospital figures to indicate the overall incidence of the condition might lead to exaggeration. Indeed, it is asserted in this thesis that using the number of cases admitted to the Glasgow Maternity Hospital for this purpose would significantly exaggerate any estimation of the incidence of contracted pelves outside of the institution.

Following the first successful caesarean section performed at the Glasgow Maternity Hospital, the institution's staff recommended that women attend the hospital earlier and requested that medical practitioners send their difficult cases into the hospital. This request was immediately followed by an upsurge in the number of cases involving disproportion. During this period the hospital's outdoor service had grown significantly because of the number of students looking for obstetric experience, and this provided the hospital with its own means of ensuring that more difficult cases were admitted to the hospital from outdoors. Additionally, it was asserted that the perception of women towards the hospital changed, and hence the type of woman admitted to the hospital altered as a result. Also, women came to the hospital from outside Glasgow to be operated on, and many women with contracted pelves returned for several labours. All of these factors, it is argued, led to a considerable increase in the number of women presenting to the hospital with this condition. To determine if Loudon is correct that the number of women with contracted pelves entering the Glasgow Maternity Hospital demonstrated a significant difference between the prevalence of this condition in Glasgow and elsewhere, it would be necessary to compare more than just the basic clinical statistics of these institutions. An examination of the circumstances of these other hospitals would also be

required, comparable to that carried out here. Thus an examination of lying-in hospitals in other industrialised cities, such as Manchester and London, is warranted, particularly as the incidence of rickets observed within the children's hospitals in these other cities was reported to be equivalent, if not greater, to that recorded in Glasgow. Similar to Glasgow there was a high prevalence of rickets in areas of other industrialised cities in Britain. It is likely that the prevalence of disproportion in Glasgow, and rickets for that matter, was not vastly greater but similar to that found in other cities.

The examination of cases admitted to the Glasgow Maternity Hospital has been compared to the results of Nuttall's analysis of cases at the Edinburgh Royal Maternity Hospital. There were similarities between the two institutions, but Nuttall's findings and the observations made in this thesis suggest a difference between the Glasgow and Edinburgh hospitals. She argues that it was not until the twentieth century, that the Edinburgh hospital began its policy of admitting women upon medical rather than social grounds. The increase in intervention witnessed before then was due to the changing ideology of practitioners, rather than a change in the types of cases admitted. If Nuttall is correct then this shift occurred earlier at the Glasgow Maternity Hospital. This difference could be explained by the greater prevalence of disproportion in Glasgow, and particularly the confidence of the hospital's staff in dealing with this condition following Cameron's achievements. Indeed, the first successful Porro's operation in Edinburgh was carried out at a private nursing home rather than at the maternity hospital. However, it is also possible that the method of Nuttall's analysis has prevented the accurate identification of the time that the shift occurred in Edinburgh. She compared the cases recorded at the hospital for 1850, 1870, 1890, and 1912. Such a study enables long-term changes to be observed, but by concentrating on these periods, twenty years apart, there is a concern that the features of the selected years might be exaggerated, and the precise dating of shifts in medical practice is harder to determine. As the shift occurred so close to 1890 at the Glasgow Maternity Hospital, this warrants a further examination of the records of the Edinburgh Royal Maternity Hospital for the 1880s and 1890s.

Diagnosing disproportion was not a simple task. If a woman had general physical deformities or had experienced disproportion during her previous labours, it was

possible that disproportion might arise. However, practitioners often argued that these indicators did not signify the likely extent of disproportion, nor did they infallibly predict that the condition would occur. Before the 1870s, practitioners allowed labour to proceed and gave as much chance for the fetal head to mould to the pelvis as possible. This practice supports the argument, made by Loudon and Nuttall, that practitioners had a general ideology of low intervention before the 1870s. Testing the natural forces meant that in some cases a spontaneous delivery would occur where intervention might have been used otherwise. During the 1880s, with the introduction of new techniques such as axis-traction forceps and the utilisation of surgical innovations with caesarean section, the confidence of practitioners in their ability to save the mother and child improved. Thus they had a reason to intervene earlier, rather than waiting until it was certain that a natural delivery could not occur.

Hiddinga and Blume argue that obstetric practitioners attempted to determine pelvic measurements as part of their diagnostic methodology, because this provided the impression that obstetric practice was grounded in scientific principle. This argument corresponds with the findings of this thesis. Such procedures were important for practitioners who were part of an emerging specialism and were attempting to ensure that their field of medicine was seen favourably by other practitioners. However, pelvimetry also became important to the diagnosis of this condition for another reason. The recognition that earlier intervention produced better results meant that it was no longer feasible, when a severe deformity was thought to exist, for practitioners to justify testing the pelvis to the same extent as before. Therefore, it was necessary to determine the likely severity of disproportion before it had even occurred. Practitioners were aware that disproportion was dependent upon several factors, including the size of the fetal head, the extent to which the fetal head was able to mould to the pelvis, distension of the pelvic ligaments, and the capacity of the pelvis. Despite the continued opinion that the methods available to measure the pelvis were inaccurate, determining the capacity of the pelvis using pelvimetry became central to practitioners' attempts to estimate the possible severity of disproportion. This was a result of the changes that had occurred in the treatment of this condition, and possibly emphasised by the desire to professionalise obstetrics. This finding highlights the need to examine the wider context related to a condition when studying the diagnostic practices associated

with it. It is self evident that changes to diagnosis can affect the treatment used, but this study indicates that this relationship is not one way. Changes to treatment can also lead to alterations in the diagnosis of a condition, thus diagnosis and treatment should be considered together in future work examining medical practice.

Between 1840 and 1900 medical practitioners used several forms of intervention to complete delivery when the fetal head was too large for the maternal pelvis. The following procedures, and their variants, were used at some point during this period: caesarean section, craniotomy, forceps, induction of premature labour, symphysiotomy, and turning. Rather than examining only enduring practices, as has been the usual approach in the history of obstetrics, this study has considered the use of all of these procedures in Glasgow. Using this multi-treatment approach has demonstrated that procedures that are no longer used in cases of disproportion in Britain, for example turning and craniotomy, had a significant position in the history of this condition throughout the nineteenth century. This conclusion was also made possible because a variety of source materials were used in this thesis. The obstetric practices used for cephalopelvic disproportion were documented within medical textbooks, medical journals, case notes, hospital records, and medical theses. This thesis has demonstrated the benefits of using all of these types of source material when they are available. The evidence gathered from a combination of these sources has enabled a more complete examination of obstetric practice to be undertaken. For example, whereas previous literature has implied that the decision for practitioners lay between craniotomy and caesarean section, this study has demonstrated that forceps, induction of premature labour, symphysiotomy, and turning were sometimes considered along with these procedures.

While estimates of the severity of disproportion were important for decisions made about treatment, it is evident that practitioners' choices were influenced by many other factors. Some of these affected pre-existing ideas of practice held by practitioners, while others were dependent upon the particular circumstances of each case. Practitioners' choices were influenced by their experience, reports of successful cases both abroad and at home, the severity of the pelvic deformity, innovations in medical technique, perceptions of the value of the mother compared to her unborn child, location, and the decisions of the

women and their friends and family. Obstetric histories tend to focus on the efficacy of a procedure when explaining why particular procedures were used. It was certainly the case that practitioners were influenced by their perception of how successful a procedure was in accomplishing the task that it was intended for. However, opinions in this regard cannot be assumed by only considering the results associated with what are considered the major turning points of a procedure. While there is evidence that practitioners were influenced by reports from outside Glasgow, particularly of procedures in France, Germany and Italy during this period, personal experience was also very important. Some practitioners did not trust the published results of others. Furthermore, for all of the reports that stood out of improved mortality rates, these were tempered by reports of women and children dying as a result of these procedures. After a practitioner used a procedure their failure or success often altered their future practice. However, even when a mother or child died, practitioners would sometimes continue to advocate the use of the procedure in the future. Evidently other factors were involved in their decision-making as well.

The perceived value of the mother when compared to her unborn child was an element of the decision-making process. Each procedure had risks associated with it for both mother and child. Whereas in Catholic countries caesarean section was used instead of craniotomy, British practitioners stated that their religious beliefs did not affect their choice of treatment. However, it has been found that religious beliefs did alter the practices used on several occasions throughout this period. Catholic women's beliefs resulted in practitioners employing procedures that they had not necessarily intended to use. The question of whether the mother was worth more than her unborn child was a common topic of discussion throughout this period. For Glasgow practitioners, this debate did not rest on religious values, but on social ones. Saving the mother remained the priority as she perhaps had a family to care for, whereas her unborn child had yet to establish any social worth. It has been suggested that practitioners did not hesitate to use craniotomy, even when the child was alive. The comments of Glasgow-based practitioners suggest that the vast majority were hesitant to use it, particularly because of the use of fetal auscultation. Indeed, it was found in the later years of the century that practitioners explicitly advocated attempting delivery if the child was alive, even if this meant injuring the mother.

Other medical innovations also resulted in practitioners changing the methods they used. Foetal auscultation was one example. In addition, the introduction of chloroform enabled practitioners to perform vaginal examinations more thoroughly, and also set the stage for later developments in surgery. The introduction of antisepsis and the close association of some Glasgow practitioners with this technique, after having worked for Lister, led them to be more confident in their ability to succeed with caesarean section. Loudon suggested that because anaesthesia and antisepsis were introduced in other fields of medicine, these techniques should not be considered as examples of progressing obstetric practice. However, specialisms were not as rigid as this suggestion implies, and practitioners may have honed their use of these procedures across several medical disciplines.

Practitioners had already formed opinions about the procedures they thought were the correct ones to use. However, the circumstances of each case meant that other factors were also involved in the decision-making process. In these difficult cases consultations were called, and a hierarchy existed where the most distinguished practitioners often had the final word. The location of delivery was also integral to the decisions made regarding treatment. In home deliveries, practitioners did not always have the instruments with them that they wanted to use, and the patient's home was not always suitable for the task. Practitioners were physically not able to use a procedure on occasion because of the size of the room, and they usually preferred caesarean section to be performed within the hospital setting. If a woman refused to be admitted to the hospital, craniotomy was resorted to instead.

There were several occasions throughout this period when women and their families demonstrated that they held some authority over the decision-making process. It was up to them if they accepted a practitioner's advice, and also whether they sought medical advice in the first place. Consent was required to admit a woman to hospital, and some women resisted caesarean section by not going into hospital. Others requested that this procedure be performed for religious reasons. It is notable that the instances where practitioners acknowledged that a woman and her family influenced what practices were used, were all within the home setting. There is evidence that suggests that practitioners had to alter their practice within women's homes. Once a woman

was in the hospital without her family to support her, it would perhaps have been easier for practitioners to assert authority. Whether this also applied to difficult labours where a woman had to rely upon the ability of their medical practitioner is not known.

This thesis has also re-examined the work of Murdoch Cameron in treating this condition. Although Cameron's achievements are absent from the majority of histories of caesarean section, his success was a factor in the increased use of this procedure in Britain during the 1890s and should be recognised as such. However, the superlatives afforded him within local histories are tempered with the knowledge that his series of successes was not absolute, and the maternal mortality associated with his practice rose significantly in the mid 1890s. Nevertheless, Cameron established, alongside other practitioners abroad, that it was possible to save women using this procedure when the circumstances were suitable. Although these decisions only affected a minority of deliveries in Glasgow, for those women involved the decisions made were anything but minor. No matter what procedures were decided on, practitioners could not guarantee the survival of either mother or child.

Appendix 1 – Glasgow lying-in hospitals

Glasgow University Lying-in Hospital

- 1792 - James Towers' Lying-in Hospital established
- 1834 - Administration undertaken by University of Glasgow
 - Renamed as Glasgow University Lying-in Hospital
- c.1853 - Indoor service closed and outdoor service retained
- 1878 - Amalgamated with Western Infirmary
- 1888 - Maternity service at Western Infirmary closed

Glasgow Lying-in Hospital and Dispensary

- 1834 - Established indoor and outdoor service
- 1866 - Renamed as Glasgow Maternity or Lying-in Hospital and Dispensary
- c.1880s - Renamed as Glasgow Maternity Hospital and Dispensary
- 2001 - Maternity provision relocated to Glasgow Royal Infirmary

General Lying-in Hospital

- 1844 - Established indoor and outdoor service
- c.1855 - Hospital closed

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