Thesis

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PHYSIOLOGICAL LOCHIAL DISCHARGES.

There is hardly any other subject, about which the young practitioner of medicine, is so much puzzled, and about which he knows so little as this. This seems all the more strange since it comes under the observation of all general practitioners daily. The reasons, no doubt, are: Firstly--on account of the variations in the discharge in different women; and Secondly--that text books on Obstetrics and physiology either only give a meagre description of the Lochia, (and then often with very conflicting statements), or none at all. Yet how important is it for the accoucheur to know that his case is progressing favourably: true, the temperature is the most important guide; but very much more may be learned from the macroscopic and misroscopic characters of the discharge, for, from them we not only discover the presence of sceptic processes; but we can form a good estimate of the changes which constitute involution of the Uterus, of which, of course, the temperature gives no guide. Observations on the Lochia have been made from very early dates in the practice;

of Obstetrics: but, perhaps, the most detailed account of them is given by Smellie, which I cannot do better than quote, thus:--"We have already observed, that the delivery of the child and placenta is followed by an efflux of more or less blood, discharged from the uterus, which by the immediate evacuation of the large vessels, is allowed to contract itself the more freely, without danger of an inflammation, which would probably happen in the contraction, if the great vessels were not emptied at the same time: but as the fluids in the smaller vessels cannot be so soon evacuated or returned into the Vena Cava, it is necessary that after the great discharge has abated, a slow and gradual evacuation should continue, until the womb shall be contracted to near the same size which it had before pregnancy; and to this it attains about the eighteenth or twentieth day after delivery, though the period is different in different women. When the large vessels are emptied immediately after delivery, the discharge frequently ceases for several hours, until the fluids in the smaller vessels are propelled into the larger, and then begin to flow again of a paler colour. The red colour of the Lochia commonly continues till the fifth day, though it is always turning more and more

serous from the beginning, but about the fifth day, it flows off in a clear or sometimes (though seldom) of a greenish tint; for the mouths of the vessels growing gradually narrower by the contraction of the uterus, at last allow only the serous part to pass, as for the greenish hue. it is supposed to proceed from the dissolution of the cellular or cribriform membrane, or mucous that surrounded the surface of the placenta or chorion: part of which, being left in the uterus becomes livid, decays, and dissolving mixes with and tinctures the discharge as it passes along. Though the Lochia, as we have already observed, commonly continue to the eighteenth or twentieth day, they are every day diminishing in quantity and soonest cease in those women who suckle their children or have an extraordinary discharge at first; but the colour , quantity, and duration, differ in different women, in some patients the red colour disappears on the first or second day, and in others, though rarely, it continues more or less to the end of the month; the evacuation in some is very small, in others excessive; in one woman it ceases very soon; in another, flows during the whole month; yet all these patients shall do well. Some allege, that this discharge from the uterus is the same

with that from a wound of a large surface. But it is more reasonable to suppose, that the change of colour and diminution of quantity, proceed from the slow contraction of the vessels: because, previous to pus there must have been lacerations or imposthumes: and in women who have suddenly died after delivery, no wound or excoriation hath appeared upon the inner surface of the womb, which is sometimes found altogether smooth, and at other times is rough and unequal on that part to which the placenta adhered. The space that is occupied before delivery, from being six inches in diameter or eighteen inches in circumference, will, soon after birth, be contracted to one-third or one-fourth of these dimensions."

Of course such a description as this is classical and above criticism on my part, still there are many points in it, from which modern writers differ. Thus McLintock observed; that the uterus did not return to its normal size, until five or six weeks after delivery, while Smellie gives the time as from eighteen to twenty days; also the same author attributed the cessation of the discharge, for a few hours shortly after delivery, to the tonic contractions which take place in the womb. Again, we have other authors, such as Winkle, dividing the dis-

charge into three stages: Lochia cruenta, where it is of a red colour, Lochia serosa when it is in the sero-sanguineous condition, and Lochia alba, when the discharge has lost its red colour, and is of a creamy appearance and consistence. Later writers having the use of the misro-scope have devoted more attention to the histological characters of the discharge: and blood corpuscles, decidual, mucus, epithelial, and pus, cells; also fat globules, muscular fibres, young connective tissue, and crystals of cholesterin have from time to time been noted; and lastly the bacteriological characters of the discharge have claimed considerable attention. To properly understand the nature of the Lochial discharges it is necessary to note some of the changes, through which the uterus passes, both immediately before, and for the few weeks afterwards delivery, known as the puerperal period. Immediately before birth, the muscular fibres of the uterus are interspaced with globules of fat; this evidently being a preparatory condition to the general fatty degeneration which takes place afterwards. E. Borner observed, that the weight of the empty uterus directly after birth was from 750 grams to 1000 grams, its length sixteen to eighteen centimetres. [illegible] the average length, as

measured by the sound fifteen centimetres , and the thickness of the wall at the fundus from two to four centimetres. A week after delivery the uterus weighs about half as much , two weeks after, about 350 grams, five weeks after . about 200 grams. and at the end of the secondmonth, about 50 to 75 grams. This decrease as noted by the soun d has usually commenced twelve hours after delivery. Again Winkle noted that the length decreases more rapidly than the width , the maximum daily decrease in length bein; 2.6 centimetres, and in width 2centimetres:. The most marked decrease in size takes place between the nineth and twelfth day; but only when the woman is confined to bed, and surely this is a most powerful argument why women should lie in bed for at least twelve days.(Börner). The size of the uterus seems to bear a very close relation to the amount of Lochial discharge and particularly to the amount of red colour in the discharge, and certainly the process of involution goes on more rapidly in cases in which the red colour disappears from the discharge early.

This most rapid transformation in the size of the Uterus, and the development of new structures (which it is not the intention of this

paper to detail)necessarily entails a considerable loss of tissue, which is carried away from the Uterus,by the blood and vagina; the vaginal discharge , which consists of the exudations from the uterus,together with the secretion of the cervical canal , and raw places on the neck and lips of the Uterus ,constitutes the Locnia. This at first consists of pure blood , and gradually alters its character , till it ceases , which time is very variable , averaging between two and three weeks ,though usually there is a thin milky discharge for five or six weeks. The factors which shorten the time of the discharge, are:

(A) An excessive discharge within the first few hours, and particularly post-partum haemorrhage. Thusin a bad case of post-partum hoemorrage, which came under my care as such; there was no coloured vaginal discharge sixteen hours after delivery, and two days afterwards there was no dectable discharge at all. Again, any profuse discharge from other parts of the body, such as excessive sweating, profuse diarrhoea, &c.; lessens the Lochial discharge.

(B) Lactation:--The discharge ceases much sooner in those women who nurse their babies than in those who do not; and it is an almost in-

variablerule , that the more milk a woman secretes the less Lochial discharge is present. The quantity of the discharge has been estimated at 0.745 kilograms in nursing mothers, and 1.31 kilograms in non-nursing mothers.

(C) Rest:--The discharge ceases in inverse proportion to the time the woman lies in bed after delivery. Thus in women who get up on the third or fourth day, I have repeatedly known the discharge remain red in colour for seven or eight weeks; while those who lie in bed for a fortnight have often no discharge on getting up, and it is certainly rare to find it even tinged with blood.

(D) Drugs:--The drugs which have the greatest action in causing the discharge to cease are Ergot, and Quinine, and it is good practice I believe, to give a tonic of quinine or Quinine and Iron in all cases at the end of the first week.

(E) The number of the Confinement;--Thus primiperae have rather a large quantity of discharge, probably , on account of the more frequent and numerous lascerations of the Cervix and Vagina. In the second and

third confinements the discharge is usually the least, after that, the greater the number of children a woman has had the longer will the discharge last. In connection with this may be mentioned the age and strength of the mother, women under twenty-two years and those above forty have more discharge, than those between these ages, other conditions being equal.

The Lochial discharges are increased by:--

(1) The Reverse of the foregoing.

(2) Restlessness in Bed increases the discharge; and although it is probably good practice to allow the patient to sit up in bed for half-an-hour or so on the second or third day to assist the expulsion of clots, she should, with this exception, be kept not only lying down but as quiet as possible.

(3) Forceps, turning, &c.:--After any of the general obstetric operations the discharge does not cease so soon as after cases where the child has been delivered by the normal contractions of the Uterus, &c., alone; thus it is by no means uncommon after a hard forceps case for the discharge to remain red in colour for six weeks.

(4) Micturition and Defaecation increase the discharge.

(5) Liquid Food:--Milk food , gruel, and such like, cause a marked increase in the discharge; while liquid meat food does not increase it to the same extent, probably on account of the tendency of such food to cause diarrhoea.

(6) Drugs which depress the whole system or cause muscular relaxation, such as chloroform, ipecacuanha.antimony, &c.

The colour for the first two days is bright red, on the third day, however, it is noticed to be paler, and each day it gradually gets paler and paler up to the tenth, when it is of a yellow or greenish tint. Sometimes on the third day , it becomes darker instead of paler, in fact, nearer brown than red; and that, without any rise of temperature, on the part of the patient, though there is no doubt that this change is due to sceptic processes; for on examination of such a discharge microscopically it is seen to be teeming with a great variety of micro-organisms, and great quantities of white corpuscles which usually exhibit a most extraordinary power of Phagocytosis. A few anti-septic injections will

soon remedy this condition, and cause the discharge to follow the ordinary course; yet in cases in which I have not interfered the discharge has apparently gone on as usual, becoming paler and paler, and ending up at about the ordinary time.

The odour of the Lochia is quite characteristic after the second day, and is of a peculiar, strong, sweetish, yet disagreeable character, quite distinct from that of any other haemorrhagic vaginal discharge. It has been likened to the smell of fish oil or fish glue. Now, though menstrual blood smells somewhat of fish, yet the smell is more of a decomposing red herring; cancerous discharge smells more like bone manure, and the other blood discharges, such as from tumours of the uterus, simulate the smell and characters of ordinary blood.

Consistence:- At first the discharge is practically pure blood, but on the second or third day, it becomes thinner and possesses small blood clots in it; and up to the eighth day the discharge still remains thin and watery, after which, it usually becomes thicker and more of a creamy consistence. Though possessing blood corpuscles the discharge is destitute of fibrine after the first flow of pure blood.

Microscopical Character:-- By the use of the microscope the histological changes of the discharge can easily be observed, and it has been one of my strongest endeavours in this paper to specify a time at which these do occur, in the hope that such information may be of use medico-legally, particularly in cases of concealment of Birth. Of course, it is evident that such information would apply only to cases in which the woman had been delivered of her child by natural factors alone: but this is all that is required, for where the different dates and times of change have been altered by instrumental interferance, &c., the facts and dates thereof can be obtained from other sources. Also my remarks only refer to women delivered at or nearly at full time, it being obvious that when a woman gives birth to a premature foetus the signs will nst be so marked. At first, and for the first twenty-four hours, the appearance of the Lochia under the microscope is simply that of pure blood, the red corpuscles running into rouleaux, the white remaining distinct, with cells of the decidua vera sometimes present. and very commonly those of the vernix caseosa also, which latter are irregularly shaped and

non-nucleated. The first change which is noted, is, that the red corpuscles have not the same tendency to cluster together in rows, and this is commonly observed between twenty-four and thirty-six hours after birth. The second day may be characterised by the marked increase of white corpuscles as first observed by M. Robin; while the red corpuscles remain almost always singly. The decidual cells are more common than on the first day, while those of the vernix caseosa are not so numerous.

On the third day, there is a noticeable decrease in the quantity of the discharge, and this has probably some relation to the congestion of the breasts, which is greatest on this day. The red and white corpuscles are present as before, the epithelial cells, however, can be noticed undergoing fatty degeneration in nearly all cases; in fact, this is almost a constant change on the third day. Often numerous and varied micro-organisms are present, chiefly cocci, as mono-cocci, diplo-cocci, staphylo-cocci, and strepto-cocci; but there are also occasionally bacilli present. These may all be seen in the discharge of women who present no complication in the shape of fever or pain, yet in such

cases the uterus does not return to its natural size so quickly. Pus cells and muscular fibres may also be present. The changes from this day onwards are not so defined or characteristic, although there is a marked difference microscopically between the appearance of the discharge on the seventh day and that on the third: this change being a gradual diminution, and even disappearance of the red and white corpuscles, and as gradual an increase of the fat. Thus in the appearance presented on the seventh day there will be very few or no red corpuscles, and the number of the white will be reduced: fat globules are numerous, muscular fibres, epithelial cells showing marked fatty degeneration, young connective tissue and crystals of cholesterin are present. The various forms of micro-organisms above-mentioned are usually numerous. On the tenth day it will be a very rare occurrence to see red blood corpuscles, and the discharge which is of a yellow or greenish hue consists of leucocytes, epithelial cells, muscular fibres, young connective tissue cells, fat, and crystals of cholesterin; the rule being all through these later changes, that as the blood corpuscles diminish, fatty degeneratisn increases.

Regarding the value of the Lochia medico-legally, the characteristics are only of value when taken together; and may be divided into:-(1) Doubtful signs of Pregnancy , and (2), Certain signs of Pregnancy . The Doubtful signs consist of the blood corpuscles, fat, pus , muscular fibres , connective tissue cells, epithelial cells from the parturient tract, and cholesterin; for these may appear in many other conditions ; such as, Menstruation, Leucorrhoea, Gonorrhoea, and discharges due to tumours of the Uterus, Vagina, or Vulva, such as Carcinoma &c. The Certain signs , those which prove conclusively the presence of the foetus , are Villi of the Cho rion, Decidual cells , and those of the Vernix Caseosa; these taken with such other signs of maternity as the Colostrum Corpuscles in the milk , place any case beyond doubt. Now as to the time at which delivery took place . First , if the discharge consist of almost pure blood , with the red and white corpuscles bearing the same relation to one another as they would in the blood from other sources of a pregnant woman at full term, i,e, the white corpuscles having a slightly larger proportion than normal, to red , as pointed out by Kosin and Eckert ; the red corpuscles running into rouleaux ; we may take it

for granted that delivery is not more than twenty-four hours past. Secondly, if the discharge contain a much greater proportion of white corpuscles to red than normal, and no fatty degeneration of the epithelial cells, we may conclude that delivery took place less than three days agoand more than two. Should the discharge contain very few red corpuscles, and fatty degeneration be well marked, with young connective tissue cells present, delivery probably took place between seven and ten days ago. After the tenth day there will usually be no red corpuscles present, while the fat globules will be more numerous. At the end of a fortnight the muscular fibres show a marked change due to fatty degeneration, (Leishman).

An analysis of fifty consecutive normal cases, (that is, cases in which the women were delivered without the aid of any obstetric operation, and in which there had been no other uncommon incident connected with labour) shows the following results:--

(1). The discharge remained tinged red in all, at the Fifth day; in 1 (i.e.) 2%, all traces of red colour disappeared on the Sixth day; in 4 (i.e.) 8%, " " " " " " " " Seventh day; in 3 (i.e.) 6%, " " " " " " " " Eighth day; in 17 (i.e.) 34%, " " " " " " " " Ninth day; in 19 (i.e.) 38%, " " " " " " " " Tenth day; in 2 (i.e.) 4%, " " " " " " " " Eleventh day; in 1 (i.e.) 2%, " " " " " " " " Twelfth day; in 2 (i.e.) 4%, " " " " " " " " Thirteenth day; in 1 (i.e.) 2%£ " " " " " " " " Fifteenth day;

(2). The increase of white corpuscles on the second day was noted in all but six.

(3). Fatty degeneratism of the epithelial cells on the third day, was present in all but three.

(4). Micro-organisms were present in twenty-two, and of these nine were cases in which even no vaginal examination had been made.

(5). In seventeen the discharge became dark red or brown instead of paler, and this change usually took place on the fourth day.

(6). Though almost all writers describe the presence of cholesterin in the Lochia, giving the student the idea that it is one of the most common constituents of the discharge, only six of these fifty cases showed it, though it was searched for with very great care.

Of csurse, the number of cases here is too small to draw decisive conclusions from, and must simply be taken as the facts of the cases in which I was able to make a thorough examination each day for a fortnight, or until the discharge ceased. As regards any information and improvement in treatment to be drawn from the foregoing remarks, we have:--

(1). The fact that all women should lie in bed, for at least twelve days after delivery; seeing that under these circumstances, the uterus decreases in size most between the ninth and twelfth day, and further women who leave their beds on the seventh day or so have often a red discharge for three weeks or even more.

(2). With regard to Diet. It is now generally recognized that the old-fashioned idea of giving the patient only gruel, milk, and such like light food, is erroneous: meat food should most certainly be given, for the researches of Kleinwachter, Klemmer, and Winkle, prove that upon a

full meat diet there is less than half the usual loss of weight.

(3). Tonics. In regard to this question, I think that all but very plethoric women should have a tonic, for during labour women go thrsugh a trying time both mentally and physically. The blood changes its composition during pregnancy, and again after labour; and I have found a tonic of Citrate of Iron and Quinine most useful: it stimulates the uterus, assists the appetite, and invigorates the whole system.