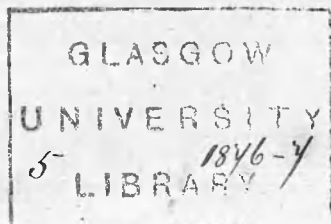


1876-77 Crighton

*Alex Crighton*

*Fraction of Revenue*



*Des Vain*

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# Fracture of the Shaft of the Femur

It is not because I have had special opportunities of studying fractures of the shaft of the femur, that I make it the subject of this thesis; but merely because one of the most important cases I have had to treat during the short period since I commenced practice was a case of this injury. My highest aim in the following essay is to make a few observations, suggested by the history of that case and by the other sources of information on the subject to which I have had access. The report of the case is from memory, as I did not make any notes during the treatment, the choice of it as a subject for this thesis being an afterthought; consequently I cannot be sufficiently definite in details.

The patient in the case referred to was a Mr. B. aged 55, who had been in bad health for many

months previous to the accident. The fracture which was oblique, downwards and forwards, <sup>simple,</sup> and situated near the junction of the middle and lower thirds of the right femur, was caused by direct violence from the falling upon the patient of an iron gate weighing about four hundredweight. The diagnosis was easy, Displacement, Mobility of the fragments and crepitus being all well marked. Looking upon the limb before it was set, one could observe several forms of displacement but the projection forwards of the lower end of the upper fragment, due as one would infer and as Erichsen has proved by dissection to the contraction of the Psoas and Iliacus, is the one I most distinctly remember, owing to the return of it some days afterwards, in consequence of the patient causing the short anterior splint to be removed in my absence. With the object of moving the fragments as little as possible I made no further examination of the body of the patient than the findings are expressed with regard to the state of

injury seemed to render necessary. But the rapidity with which a Tet-sore formed on the right buttock led me to suppose that a severe bruise might have been caused there by the same accident which fractured the thigh, and that a complete examination at the time might have detected such an injury and led to the adoption of special precautions against its consequences. The most serious complication I had to contend against for the first few days arose from the state of the lungs, and I learned that she had been under treatment for an affection of these organs for some time previous to the accident. One evening I counted 40 respirations in the minute, sub-ocipital riles were to be heard on both sides at the back, and other unfavourable symptoms were present. Thinking that that was a condition which called for decisive measures I painted the back on one side with liquor epispasticus, which treatment was followed

by such a marked improvement the next morning that I was encouraged to apply the same remedy to the other side, after which the rate of respirations was reduced by one half.

An important matter with regard to fracture of the femur is the bed on which the patient is to lie. Fracture beds, or frames which can be placed on ordinary beds with contrivances for enabling the patient to obey the calls of nature without any disturbance of the limbs or soiling of the bedclothes conduce not only to his comfort but also to a better result of the treatment of the fracture. If Amillon thinks them of so great value that he says "Where some form of fracture-bed cannot be procured, or extemporaneously constructed, and the patient is compelled to lie upon a common cot-bedstead, or a common post-bedstead, or upon the floor, I cannot think the surgeon ought to be held in any degree responsible for the result."<sup>27</sup>  
(p. 445)

If I had had such an aid in the case forming the subject of these remarks, I believe the patient would have been spared the annoyance and pain of a large and protracted bed sore. As it was she was placed on an ordinary bed, on a mattress covered with a blanket and sheet.

The apparatus I used was a long splint made out of materials found in the patient's house. I fastened a piece of iron at right angles to the lower end of it to which the extension bands might be tied, in order that extension might be made in the axis of the limb, somewhat after the manner I had been accustomed to see in the Glasgow Infirmary. The extension bands were made of adhesive plaster, and were applied to either side of the leg, as high as the tuberosity of the tibia: the ends were turned downwards over the bandage and secured by several turns of the roller downwards. The perineal band was made of a long piece of cotton cloth.

covered with gutta serena tissue, where  
it passed against the skin. & surround-  
ed the thigh with short coaptation  
splints

While there are many varieties of  
splints for a fractured femur, one division  
of them may be made into these two:  
1. The Straight and 2. the Flexed. Of the  
former there are many modifications,  
and of the latter the principal varieties  
are: 1. That on which the thigh and leg  
rest on the Double-Inclined Plane, and  
2. That which is laid along the front of  
the limb, & by means of which it is  
suspended. The use of flexed splints took  
their rise from the theory of Pott who  
held that all that was required in the  
treatment of fracture, in order to keep the  
fragments in their proper place, was to  
lay the limb in a relaxed position, so  
that the action of the muscles should  
cease. He carried out his theory into  
practice, dispensed with splints, and  
merely placed the broken limb on its  
outside, with thigh and leg flexed.  
Others who adopted his theory did not



trust to it alone but introduced the double-inclined plane as a security. This mode of treatment which was almost exclusively used in this country for many years, is now seldom employed; professional opinion having returned to a preference for the straight splint.

Not to mention the numerous modifications of straight splints which have been invented, there are three methods of treating a broken thigh in the straight position in common use at the present time. 1. With a straight splint, Liston's or some other, reaching from near the axilla to a few inches below the foot; to the lower end of which the extension bands are fastened, and to the upper end the perineal or counter-extension bands. There are many eminent surgeons who still prefer this to the newer methods. For example, Holmes, in his recent work on Surgery says: "There are many other methods of treatment, of which I cannot profess much personal experience; for though I have occasionally tried some of them

I have not found any reason for thinking that they are superior to the above in the ordinary fractures of adults while they unquestionably involve some risk, and are not so easy of application. (p. 207)

2. The second straight method is that in which extension is made by means of a weight and pulley, and counter-extension by means of the weight of the patient's body, which is brought into use by lifting up the lower end of the bed, and then the perineal band is displaced with this is a popular method in America where I understand it has been more developed than elsewhere. Erichsen speaks of it as "a plan employed by James of Eseton and perfected by Bush of New York" (p. 340). Hamilton considers it a decided improvement upon the method last mentioned, speaking of it in the following terms "One of the great steps of progress in the treatment of fractures of the thigh consists in having secured counter-extension by the weight of the body alone." "The second step of progress was the

introduction of the method of extension  
by adhesive plaster strips and pulleys.  
I believe it is getting into more  
common use in this country. I do  
remember rightly, Dr. Spence in his address  
at the last meeting of the British  
Medical Association said it was the method  
to be usually employed. I think the  
draw of the principal bandage must  
be allowed to be one advantage it  
possesses; for that is not only more  
comfortable but may cause excoriation-  
tions.

3. The third straight method is that  
in which the limb is put up from  
the first in starch or plaster, and  
bandages. This system, introduced by  
Santini of Brussels in 1834, fell  
into disrepute on account of the  
numerous accidents which occurred when  
it was used; but it has again risen in  
favour with the profession, is extensively used  
in Germany & America, and in this  
country has at least one distinguished  
advocate in Erichsen. He says "the starched  
or plaster bandage may be employed

in most cases." "With such an apparatus as  
this I have treated many fractured thigh  
bones in adults and in children, without  
confinement to bed for more than three  
or four days and without the slightest  
apparent shortening or deformity being left"  
(p. 341) In my patient's case, this method  
would have enabled her to leave her  
bed early and so prevented the for-  
mation of a bed-sore, or at least ren-  
dered the dressing of it much more  
easy. From the time of the accident  
she would only lie with her head and  
shoulders slightly elevated with pillows  
on account of her difficulty of breathing,  
a posture which was ill suited for  
the long splint, but which would have  
been unobjectionable had a starch  
bandage been used. However, judging from  
the little information on the subject  
I have as yet acquired, I would not  
adopt the immovable apparatus for  
the treatment of fracture of the femur  
in general. There is a greater risk of gan-  
grene and of ankylosis at the knee,  
and the shortening seems to be greater

after that method than after the other.

Some surgeons while they prefer one method for ordinary fractures make use in any one of the other methods when some peculiarity of the fracture seems to call for it. For example, Crispian says: "The treatment of fractures of the shaft of the thigh-bone may be conducted in six different ways, each of which presents advantages in particular cases; hence an exclusive plan of treatment should not be followed." (p. 559). Hamilton on the contrary uses the same method for all kinds of fracture whether simple or compound speaking of gun-shot fractures of the femur he says: "In most cases I have preferred my own apparatus, already described when speaking of fractures of the thigh in general." (p. 512). It seems to me that for fractures of the thigh with wounds on the posterior surface, the suspension method would be very convenient.

Many surgeons also prefer a special apparatus for fracture of the thigh in children. But in the case I had to treat was one of simple fracture in

an adult, there are points which I may omit in this paper.

I have referred once or twice to a bedson which formed in the right gluteal region of my patient. It was discovered about a week after the accident, occasioned much disturbance of the broken limb, and continued to require dressing long after the fracture was virtually healed - the accident having happened on Oct. 2<sup>d</sup> 1875, and the bedson not having been completely cured till the middle of January 1876. It was probably caused by the dressing not being sufficient - is painful at first, while the part may have been predisposed for its formation by a bruise obtained when the thigh was broken. A slough of skin at least three inches square separated, from which our abscess gradually extended up the back for about ten inches, discharging pus profusely, and many long sloughs of subcutaneous tissue.

The patient had to be turned round on her side morning and evening to permit of the sore being dressed, and this circumstance together with the fear of the peroneal band causing additional excoriation, led me to remove the long splint ends in the treatment. For some time afterwards I kept up extension by a weight, and later applied a starch bandage. A water cushion in the form of a ring was used for a short time to keep off pressure, but it was felt to be uncomfortable; and my experience in this case would lead me in similar circumstances to prefer a plain to a ring-shaped appliance of this kind; so that, while pressure would not be entirely kept off the sore, it would be very gentle at every point.

For the abated wound of the applications in common use were applied at different times, such as carbonic acid and Gouley's fluid

injections and dressings, Lincings  
tube, and carbolyzed tow, the last  
of which I found very convenient  
and serviceable.

It is admitted by  
most surgeons of the present day  
that fracture of the thigh in  
adult almost always results in  
shortening. My case is not an  
exception to the rule, but the  
shortening apparent from her gait  
is very slight now and may en-  
tirely disappear as the limb in-  
creases in strength, while her gen-  
eral health is very much better  
than it was for a long period  
previous to the accident.

While there are several lessons  
the history of the case has taught  
me, the principal reflection I  
make on looking back over the  
whole treatment is that a much  
earlier application of the starch  
bandage would have been an  
improvement.