

COMMON FRACTURES AND THEIR TREATMENT.

II. FRACTURES OF THE LOWER LIMB.

By DR. STOCKLEY.

THE fractures of the leg are more complicated on account of the large joints and the involvement of these joints in the fracture, the importance of union of bone without shortening, and the risk of impairing the stability of the limb. Just as in the arm nimbleness and facile movement are the important factors so strength and stability are essential to the leg.

The fractures of the leg may be divided into those involving, (i) femur or thigh bone (ii) patella or knee-cap (iii) tibia and fibula or skin bones.

(i) The femur—One of the commonest fractures in elderly people is that which occurs at the narrow part of the neck of the femur, and is usually caused by comparatively slight forms of indirect violence, such as catching the foot in the flap of a carpet or missing a step on the curb stone of the pavement in the street.

Then fractures which occur immediately below the trochanters are very common and here the difficulty is to control the upper fragment of the femur; union taking place often with considerable shortening and deformity.

Fractures of the shaft of the femur are often of the oblique type and when the fracture takes place above the condyle or prominences at the lower end of the femur great displacement occurs.

The treatment of all fractures of the thigh are on the same principle. The most favourite splint at present in use is Thomas' Knee splint in which extension is applied without pulleys or weights. This splint is admirable for transporting cases on river boats and hospital ships, and has found great favour in Mesopotamia and I believe also in France.²

It consists of a ring and 2 iron bars, to one of these bars strips of flannel about 4 inches wide are attached. Extension strapping is next applied to the limb and the Thomas' splint put on and the strapping fixed to the end of the splint.

The flannel strips are brought round under the limb and fixed to the other bar of the frame.

By using this method of flannel strips any wound can be dressed as often as desired, without removing the extension or interfering with the splint in any way.

The extension strapping can be fixed by Sinclair's glue of which the following is a good receipt R Gelatine 50 parts. Water 50 parts. Thymol 1 part. Glycerine 2 parts. Calcium Chloride 1 part.

For patients in hospital one of the most comfortable splints is that devised by Hodgen which is similar in principle to Thomas' Knee splint, only the limb is suspended by means of cords passing obliquely over a pulley attached to an upright. The weight of the limb is made to act as the extending force and the patient is not hampered with a ring at his hip.

Liston's long splint gives better control of the joints above and below the seat of fracture but it is not nearly so comfortable to the patient as Hodgen's especially if the patient has a compound fracture or suffers from diarrhoea. If a Liston's long splint is called for, extension by weight and pulleys should be used, and to prevent turning out or rotation of the limb, the lower end of the splint should be placed in a foot-rest.

When a very powerful extension is needed two steel pins (Steinmann's apparatus) are driven into the lower end of the femur and through these extension is applied. But in war surgery these are hardly ever needed as the cases are seen early and yield well to non-operative treatment. All splints should be kept on for 6 to 8 weeks.

The adoption of the overhead rail for the suspension of limbs, to take the place of the pulley arrangements over the head of the patient's bed was devised at an early date of the war in Boulogne by Lieut.-Colonel Miles, and is known as the Balkan support. Combined with this apparatus Major Sinclair has devised many methods of modifying Hodgen's and Thomas' Knee splints by putting on foot extensions.⁽²⁾ Some of these are made of wood or metal and Plaster of Paris and vary according to the ingenuity of the surgeon.

(ii) *Patella*.—Fracture of the patella is due either to muscular action, for instance in trying to avoid falling backwards, or to direct violence on the knee. The treatment usually employed is to operate and wire the two fragments together. Or extension may be applied by fixing a large horseshoe shaped piece of adhesive plaster to the thigh embracing the fracture. Then the leg is put on an incline plane splint and the extension attached to the foot piece.

(iii) *Tibia and Fibula*. Fractures of the tibia and fibula are very common indeed. If the bones are fractured by direct violence then the fracture is usually transverse and the bones are broken at the same level. If the bones are broken by indirect violence then the fracture is oblique and the tibia breaks at a lower level than the fibula.

Since 1914 the Thomas' Knee splint has come into use even in this fracture and it is excellent where there is a compound fracture enabling the wound to be dressed without removing the splint and Canel-Dakin's method of irrigation easily carried on. But in the ordinary simple fracture a box splint with or without a Salter's cradle or a simple Croft splint is enough to keep the bones in position.

Some surgeons prefer McIntyre's metal splint, and it is indeed one of the most comfortable splints when padded well.

Fractures in the region of the ankle joint are generally grouped under the one term "Potts fracture" however they may vary in their clinical or anatomical aspects.⁽¹⁾ In these cases it is well to apply lateral splint swell padded at the ankle, if the foot turns outwards or inwards to correct the deformity and give support. Then there is a great tendency for the foot to fall backwards at the ankle joint and constant supervision is required to counteract this unnatural position. Syme's horseshoe or stirrup splint is sometimes used. It

is applied to the front of the leg and should be carefully padded to prevent pressure on the shin bone. In fractures of the tibia and fibula fixation of the knee if the fracture is at the upper end and loss of movement in the ankle joint if the fracture is at the lower end of the bones, are a frequent source of trouble and can only be combatted by gentle massage and passive movement commenced not later than a week after the accident. By these means the circulation of the blood will be improved and fixation of the joints avoided.

Greater care should be exercised in padding splints for a great deal of discomfort comes through metal parts rubbing against the skin. The nurse needs to be constantly on the look out at the heel of the foot, for blisters often occur there.

Jaconet or waterproof sheeting should only be placed over the splint padding in septic cases for it prevents evaporation of the sweat and makes the patient uncomfortable and hot.

Plaster of Paris splinting has gone out of fashion lately, but when it is employed watch for swelling of the ankles. It is useful to remember that salt added to the water used for making the plastic quickens setting while gum-mucilage delays it. (3)

In conclusion it is well to keep in mind the great evil to be avoided in fractures of the leg, is shortening of the limb and careful nursing will do much to avoid restlessness and separation of the fragments.

References—

1. Manual of Surgery. Thomson and Miles.
2. B. M. J. June 16, 1917, Sir Geo. Makins.
3. R. A. M. C. Training.

SIX MONTHS SURGICAL NURSING.

By SISTER M. KNOX-STRIP, Q.A.M.N.S.I.T.

THE Indian General Hospital to which I was posted had been long established and was well organised when the sisters arrived to take over the nursing of Indian troops. The patients were accommodated in tents, and being winter it was bitterly cold, especially during the rains. The tents were well erected and kept remarkably dry and the patients seemed comfortable. Heating stoves were provided at the rate of one per tent but there were no lockers nor bed-side tables, packing cases were used in place of these latter and sick room cooking was done on the stoves, not an over satisfactory arrangement. The nursing hitherto had been supervised by the sub-assistant surgeons and carried out by the ward orderlies—sepoys specially trained in those duties and it was really wonderful how well they managed. The arrival of the nursing sisters caused varying and mixed emotions and it was with some difficulty that the work was got to run smoothly until it was realised that the sister and the rest of the staff worked together for the general welfare of the patients and that training meant the alleviation of suffering. In a very