As a general rule not less than six weeks' fixation in plaster-of-Paris is needed to bring about lasting relief of the eversion spasm, and in severe cases, especially among the older boys, eight weeks' fixation is better. When the plaster has been taken off, weight-bearing must be very cautiously resumed. Usually it is wise to make the patient use crutches at first; then gradually more weight can be borne on the foot, with the aid of two sticks, and then of one. Passive movements of the foot are contra-indicated, though the use of heat as a sedative may be recommended; the whirlpool bath may be used, or, in the home, simple soaking in a pailful of hot water, before exercise. Inside wedging of the sole and heel of the shoe is a wise precaution, and in severe cases showing a tendency to relapse it is well to make the patient use an outside steel and inside wedge and T-strap for a year or so.

Conclusion

I would here like to suggest that much useful information upon this difficult subject might be obtained if it henceforward became a routine practice to determine the blood sedimentation rate in these cases. Latterly I have been doing this, but my results are too few to be significant. I may say, however, that they seem to show that in at least half the patients there is no element of infection at all. These are probably the cases in which the eversion spasm is simply the result of mechanical strain, acute or prolonged, including all the cases of developmentally weak feet exposed to arduous conditions.

Finally, let me give one word of warning. In every case of acute spasmodic valgus it is worth while to have a special oblique radiograph of the foot made, to eliminate the possibility of calcaneo-navicular fusion. This developmental peculiarity usually gives rise to persistent rigid flat-foot, without spasm, but it may cause typical spasmodic valgus with tense peroneal tendons. It is evident that no improvement can result from antispasmodic treatment in such a case. Unless the true cause of the symptoms and signs is realized, as the result of a routine x-ray examination, time will be wasted on futile treatment, for the condition demands a skeletal operation.

Summary

The phrase "spasmodic flat-foot" connotes a familiar condition which is well defined clinically, but the pathology of which is still obscure.

A description is given of a characteristic case.

The incidence of the condition is assessed, and the aetiology and pathology are subjects of review.

Treatment consists in eliminating the cause of the spasm, not in treating the spasm itself. When the patient's occupation exposes the feet to a strain which they are unable to withstand, it is imperative that the occupation be changed.

Insulin Hypersensitivity.—Two patients with strong local reactions after insulin injections were proved to be allergic to insulin by the passive transmission of the hypersensitivity in the Prausnitz-Küster test. One of the patients was desensitized by protamine insulin. The other one proved to be sensitive to insulin from the calf, pig, and ox, but not to beef protein from other organs or to ox serum, which suggested hypersensitivity to the insulin protein. Skin tests with insulin should be performed in diabetics before starting insulin treatment.—K. Herzog (1939): *Zeitschrift für Klinische Medizin*, **136**, 297.

TREATMENT OF LEG FRACTURE CASUALTIES IN A CENTRAL CHINA WAR ZONE

BY

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Most established hospitals and surgical units working in war areas in China have been called upon, during these many months of hostilities, to deal with the greatest variety of military and civilian casualties. Among the former, who are forwarded from the various fronts, and the latter, who are bomb victims from the local community, few wounds present a greater problem than those which involve the long bones of the lower extremity. As a result of the difficulties of transportation, hospitals handling military casualties have been receiving many compound fractures of the femur or the tibia and fibula which are not only grossly infected, with great destruction of tissue, but show extensive overlapping of fragments with associated muscle shortening. Such cases have often been transported over most difficult country, where there is no system of roads and where the nearest unit adequately equipped to deal with them is one, two, or even three days behind the lines. Among civilian hospitalized bomb casualties this group of fractures has been proportionately large, possibly because of the very heavy immediate fatality of wounds of the head, chest, and abdomen. These cases, again, very commonly show great destruction of tissue and extensive comminution.

Method of Splinting

It has been just these types of leg wounds which this hospital undertook to handle in as large numbers as ward space would permit. There has therefore been ample opportunity to try to develop a method of splinting which will provide the necessary extension and fixation, and at the same time leave the large wounds easily accessible for frequent irrigations and dressings. We have found that these cases needed a splint which would not only be comfortable for many weeks of application but was such that the patient could be easily moved for safety during air raids. Furthermore, and in some ways most important, we needed a splint that was inexpensive and one that could be made by the local metal workers, as there are no instrument makers or supply houses to turn to in Central China.

As a basis for the method which we have developed the simple Thomas extension leg splint was chosen, with or without the Pearson knee-flexion piece. No other splint has in our opinion been of more general use, and it can be easily made, stored, and distributed. We had thoroughly tried most of the commoner methods of extension which utilize applications such as adhesive strapping or plaster boots, and those which use callipers, extension stirrups, or wires, but had encountered certain difficulties. We were not always obtaining the extension force required; there was so often insufficient skin to apply surface traction; the wounds were not easily accessible; the patients suffered considerable discomfort, especially when it was necessary to shift them quickly for air raids; and, finally, the wards were a virtual forest of frames, ropes, pulleys, and sand-bags. The last-mentioned difficulty, quite apart from the vigorous objections of the nursing staff, was made very apparent when the weeks of intense heat set in and adequate ventilation in the crowded wards was most difficult to maintain.

The skeletal traction attachment for a Thomas splint which we are now using for fractures of the shaft of the femur, or of the tibia and fibula, and which we are adapting for use in fractures of the upper extremity, seems to have removed most of our difficulties, and appears to

provide adequate flexibility to meet the peculiarities of the individual case. The attachment comprises two identical units, one for each bar of the Thomas splint. Each unit consists of a three-eighths-inch rod eighteen inches long, threaded throughout its length and having

a flat filed surface, which prevents the rotation of two sliding hook-riders, which may be moved or fixed at any point on the rod by four nuts, one for either side of each hook. This hook-rider is so designed that it will slide freely, may be reversed as required, and fits the flat surface to prevent rotation. It has, as is shown in the figure, a hook neck to receive the extension pin, with a small set screw to enclose but not fix the pin. The rod, with hooks and nuts, is attached to the side bar of the Thomas splint by two No. 14 gauge galvanized

sheet-metal clamps. Each clamp consists of two leaves three-quarters of an inch wide and two and a half inches long, bent to accommodate the Thomas splint bar and the attachment screw rod between them. The leaves are tightened by a central quarter-inch bolt and nut, the bolt-head of which is welded or soldered to one leaf.

Skeletal traction is applied with a pin through the bone or bones involved. We have been forced to use local material, and have therefore made our own pins from rickshaw-wheel spokes, which are roughly of No. 11 gauge spring-steel wire. We have found that, in order to obtain the necessary strength and spring, wire of this gauge is advisable, but there has not been the least evidence that pins of this size are more injurious to the bone than the finer gauges formerly used. The pins are of two lengths, eight inches and ten inches, and are made with drill points suitable for insertion with a surgical brace. In fractures of the femur two hooks are used, and the traction force is transmitted from the single pin through the Thomas splint to the ischial tuberosity. In fractures of the tibia and fibula four hooks are used, traction and countertraction being applied by the forcible separation of two pins, the Thomas splint serving as a suitable cradle for the limb. If it is considered advisable to have knee flexion the Pearson knee-flexion piece has been used, and may be attached without difficulty.

Routine Fracture Technique

The following routine technique for these fractures may be of some interest. As soon as possible after admission the applied dressing is removed and the wound thoroughly cleansed and irrigated. A fluoroscopic examination is made to determine the extent of fracture and to locate any small fragments that may be lying across and interposed between the main fragments. In fractures close to the joint the best level for pin insertion is marked on the skin surface. The site of insertion having been previously prepared and the screw rods having been adjusted to the Thomas splint, the leg is passed through the ring. The rods may now be folded down out of the way and the leg draped. The pin is inserted under local anaesthesia, after which the rods are returned to position and the clamps tightened. The hooks are brought to the pin, which is secured behind the set screws, and the thrust nuts are turned so as to force the hooks along the rods, giving as much traction as is necessary. It is essential at this time also to see that the ring of the Thomas splint is properly accommodated to the ischial tuberosity. Corks are now fitted to the sharp points of the pin, and sterile gauze dressings smeared with petroleum jelly are applied to the pin-insertion site. The leg is again fluoroscoped, and, if it is considered possible to complete the extension, it is done at this time, under visible control—otherwise a note is made of the remaining amount of overlapping of the fragments and the reduction is completed slowly in the ward by daily tightening of the thrust nuts. In fractures of the tibia and fibula it has been our practice to insert the upper pin through the tibia at the level of the tibial tuberosity and to put the lower pin through both bones at a point about one and a half inches above the tips of the malleoli. We have found that this has permitted free exercise of the ankle-joint without interference with the fracture or the extension, and that the attachment is flexible enough to allow the pin to be inserted in the necessarily slightly angulated position.

In the cases in which we have used this extension attachment we have consistently found that the patients are

remarkably comfortable, even though the leg should be freely moved at the hip or the patient lifted or turned as is necessary for usual nursing care. Perhaps more important is the fact that these cases can now be rapidly moved from their beds to stretchers and carried without complaint. Only in very few instances has it been necessary to administer morphine after the first day, and we have on several occasions reduced, without the use of sedatives, fractures which have shown as much as two to three inches of shortening. Dressings can now be carried out with greater facility, and, if necessary, sequestra can be removed, or other surgical procedures undertaken, without relaxation of traction. Reduction having been completed, the leg may be released from the hooks and the pins either removed and a simple retention splint applied or the pins may be incorporated into a plaster cast.

Summary

A simple attachment for the Thomas extension leg splint is described, as developed in a hospital in Central China, under present war conditions. It provides controlled and powerful traction and countertraction, together with required fixation, and yet allows ready access to wounds, has considerable flexibility of adaption, and obviates the usual complex and cumbersome frame-and-pulley apparatus. It provides a comfortable splinting method, and extension can be slowly and steadily attained without distress to the patient. It permits the patient to be moved, lifted, and transported with ease, and is recommended as having great practical value in the early splinting of leg fracture casualties which must face a long and rough journey back from the front lines.

Clinical Memoranda

An Unusual Desmoid Tumour of the Abdominal Wall

Desmoid tumours of the abdominal wall are not uncommon, but the following case is worth recording on account of the very unusual size of the tumour.

CASE REPORT

A housewife aged 35 was admitted to St. Bartholomew's Hospital on November 11, 1938, complaining of an abdominal swelling. An accurate history was difficult to obtain, but the patient stated that approximately three years previously she had first noticed a small white swelling in the lower part of the abdomen; this was painless and it had gradually increased in size until the time of admission. There were no other symptoms, and apart from the size and weight of the swelling the patient suffered no inconvenience. There was no history of trauma and nothing relevant in her past history other than the fact that her last pregnancy terminated in July, 1935, three or four months previous to the first appearance of the swelling. On admission, her general condition was found to be healthy.

The abdominal swelling (see photograph) bore a superficial resemblance to that occurring in pregnancy. The tumour, which occupied the right rather more than the left side of the abdomen, measured 10 by 8 inches and extended upwards and to the right from the symphysis pubis to the right costal margin and from the right anterior-superior spine to within three and a half inches of the left anterior-superior spine. The swelling was firm and elastic in consistency, and the skin over

it was not attached and was normal in texture. With the abdomen relaxed a small amount of movement was possible, but as soon as the abdominal muscles were put into action the swelling became more prominent and completely fixed. Numerous dilated veins were evident under the skin. A diagnosis of desmoid tumour of the abdominal wall was made and an operation for its removal was undertaken by Mr. Reginald M. Vick on November 22.

A long curved incision was made over the right side of the tumour, and considerable haemorrhage occurred from the

large thin-walled veins coursing over it. The tumour extended right through the abdominal musculature, and it had to be removed at the expense of the latter. An area of peritoneum, 5 by 2 inches, which was adherent to the tumour, had also to be removed. After removal the peritoneum came together without much difficulty, but there was a great deficiency of muscle. There was no right rectus, and only a very small portion of the left rectus remained, with very little of the oblique and transverse muscles on the right side. This large deficiency could not be met, so the skin flaps were brought together, closing the wound. Temporary support for the abdomen was obtained by firmly bandaging a moulded plaster-of-Paris cast to the anterior wall. Healing occurred readily, and, apart from the scar, a remarkably normal appearance of the anterior abdominal wall resulted; as there was an adequate amount of subcutaneous fat no visible peristalsis was evident. On palpation the edge of the rectus was readily felt on the left side, and on raising the shoulders a large bulge appeared on the right side of the abdomen. The patient was discharged, with a well-fitting and extensive abdominal belt. The tumour weighed 5 lb. and measured 8 by 6½ by 3½ inches after fixation. The cut surface was pinkish white in colour and of uniform firm consistency. Numerous irregular narrow white strands could be seen coursing through it. There were no areas of degeneration or calcification. The section reported upon by Dr. H. A. Magnus showed a mass of relatively acellular collagenous tissue. At the periphery, however, muscle is included in the tumour substance, and there is clear evidence of infiltration of muscle, showing the characteristic appearance of a "desmoid" tumour.

I am indebted to Mr. Reginald M. Vick, under whose care this patient was treated, for permission to publish this case.

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