A SPLINT FOR BROKEN CLAVICLES WHICH PRESERVES FUNCTION*

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The difficulty of maintaining reduction after fracture of the clavicle lies in finding a suitable place to which the shoulder of the injured side can be fixed. The favourite place at present is the other shoulder, using in some form the principle of the three-handkerchief method. Mere

bracing back of the two shoulders, however, cannot correct the downward displacement of the outer fragment; a sling is therefore required to raise the elbow of the injured side. In this way the ipsilateral limb is put almost entirely out of action, and the opposite shoulder, too,

FIG. 1.

FIG. 2.

is partly immobilized—a stiff price to pay for a minor fracture.

Seeking for a point of fixation that would leave the opposite limb free, it seemed to me that the pelvis might afford a solid seat for a plaster jacket, resembling in principle the "ambulatory plaster" used for spinal tuberculosis, but which would press into *one* axilla only, and support the weight of the shoulder. Thus, with the patient seated on a chair, I mould a plaster girdle to grip the iliac crests. An assistant meanwhile passes a loop of ordinary bandage under the axilla on the injured side; then, standing behind the patient on another chair, he uses this loop to pull the shoulder steadily backwards, outwards, and up as high as possible (Fig. 1). The plaster, after encasing the lower abdomen, is then brought to the axilla of the injured side, and surrounds the shoulder and upper third of the arm in such a way as to maintain the reduction obtained by the loop of bandage. The short sleeve enclosing the arm makes an angle of about 40 degrees with the side of the chest, and is wide enough to allow axial rotation of the limb. The opposite shoulder is left free (Fig. 2). Children require a wide bay in the jacket to allow room for meals.

* This splint was described at the annual general meeting of the Egyptian Branch of the British Medical Association at the Citadel Military Hospital.

Functional Results

As soon as the plaster has set the patient has painless use of the hand, wrist, and elbow on the injured side. The first patient treated by this method was a powerful labourer, aged 40, with a complete fracture at the middle third of his left clavicle. On the day after fixation, which was the third day after the fracture, he demonstrated the function of his injured limb by catching an orderly's wrist with his left hand and almost pulling him down on his face. I have a cinema film of another patient, a clerk, on the eighth day after a similar fracture and fixation. He is seen jerking with his injured limb at the arm of a hospital orderly weighing 15 stone, and moving him; then lifting a large fire-bucket almost full of water—actions that he was already able to perform without pain when I tested him three days earlier. Patients state that they can sleep comfortably in the jacket.

The plaster is removed on the twenty-first day. The patient at once has free use of the ipsilateral shoulder, except for vertical elevation of the arm, but this is soon recovered when the slight stiffness due to the plaster has gone—often within an hour. The function of the rest of the limb is normal. The patient requires no further treatment when the plaster is off, and can then resume hard work within a week. Disability, therefore, lasts less than four weeks from the date of injury, a period that compares favourably with the five or six weeks reported recently for clavicular fractures treated in organized fracture clinics.

I have had five cases of complete fracture of the middle third of the clavicle treated in this way, under my personal supervision, since November, 1934, the only modification being experimental changes in the length of the short plaster sleeve that surrounds the arm, and variations in the amount of plaster cut away to lighten the jacket. I have had no experience with the more expensive substitutes that would still further reduce its weight. A hand's breadth, measured from the axilla, is the best length for the short sleeve.

Provided that the plaster is properly based on the pelvis, and that care is taken to keep the shoulder high when it is drawn back, correction of the deformity will be almost as good as that which is said to reward those who lie on sandbags for three weeks.

My thanks are due to my resident surgeon, Dr. Mohamed Hasan El Zeneini, and to my house-surgeons, for their practical assistance.

Since this paper was completed a method similar in principle and differing only in detail has been independently described by A. J. Cokkinis, F.R.C.S. (*Practitioner*, October, 1935, p. 516), who, however, recommends it especially for children and lightly built women.

BIBLIOGRAPHY

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A body known as the Air Hygiene Foundation of America has been formed by a large group representing various industries, with headquarters at Thackeray Avenue and O'Hara Street, Pittsburgh, Pennsylvania. Its aim is to investigate and to stimulate research on problems in the field of air hygiene and to gather and disseminate information. It will also co-operate with other agencies in this field. A comprehensive investigation has been begun at the Mellon Institute of Industrial Research, Pittsburgh, in which the hygienic, technological, and economic aspects of air contamination, especially by dust in the industries, will be studied. The programme of the Foundation will also embrace medical considerations and studies with Dr. Samuel R. Haythorn, professor of preventive medicine in the school of medicine of the University of Pittsburgh, as medical adviser.