Clinical and other Notes.

REPORT OF A CASE OF CLAIRMONT'S OPERATION FOR
RECURRENT DISLOCATION OF THE SHOULDER.

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The surgical treatment of recurrent dislocation of the shoulder-joint cannot be said to be standardized, in the sense that there is any one operative procedure universally practised by surgeons for the cure of the condition. The oldest operation of arthrodesis, aiming at bony ankylosis of the joint, is not practised now and can seldom be justifiable. Ingenious operations have been devised and carried out by French surgeons to lengthen the coracoid process, and thus create a bony barrier to resist the tendency to dislocation; apparently a good deal of success has been obtained by those conversant with the technique.

Clairmont's operation has the advantage of aiming at a cure of the condition on physiological principles. The stability of this joint depends almost entirely on the support derived from the large muscles in intimate relationship with it, and the operation is designed to procure an extra muscular support across the lowest part of the joint, admittedly the weakest, where muscular tissue is lacking. It is supposed that the transplanted slip of the deltoid muscle, with its vascular and nervous supply intact, acts in conjunction and simultaneously with the main muscular mass, so that when the latter contracts and abducts the arm, the transplanted portion contracts too, below the surgical neck of the humerus, and keeps the head of the bone in the glenoid.

The teres minor muscle, supplied as it is through a ganglionic enlargement, from the circumflex nerve, normally acts in this manner in conjunction with the deltoid, and tends to hold the humeral head in the glenoid during abduction; possibly some abnormality in the development of this little muscle or in its nerve supply may predispose to recurrent dislocation. The deltoid slip is designed to produce, as it were, an accessory teres minor, similar in action and nerve supply, but different in attachments. It is a little doubtful whether this ideal is in fact attained, but at all events, even if the muscle does degenerate into fibrous tissue, an additional fibrous support acting as an inferior ligament is obtained.

Cases of recurrent dislocation of the shoulder are of sufficient rarity, and opportunities of carrying out this operation sufficiently few to make it worth while recording the present case. The patient was an Indian cavalry
Clinical and other Notes

soldier, aged 27. He had had four dislocations of the left shoulder-joint during the past four years; the last two were the result of a very mild degree of trauma. All were apparently subclavicular in type, and all were successfully reduced. When first seen, the shoulder-joint was normal in every way, with a full range of movement, and X-ray excluded any complicating bony lesion. The patient's mental attitude was somewhat upset by his repeated accidents; he was afraid to use the arm for any heavy work, and was anxious for an operation. This was carried out on December 3, 1929. The patient was placed on his back with a sand-bag beneath the left scapula, the arm slightly abducted at the shoulder. The anterior incision followed the anterior border of the deltoid for 5 inches, starting 1 inch below the clavicle. The anterior border of the deltoid was cleared, and by retracting this muscle outwards, the subscapularis muscle was reached. Finger and gauze dissection in the axillary fat, defined the interval between the subscapularis and teres major muscles, and separation of their adjacent edges exposed the quadrilateral space from the front. It was not necessary to divide the pectoralis major tendon, and no vessels of any size were encountered. The wound was now packed with gauze and the arm drawn forwards over the chest to expose the scapular region for the posterior incision. This was made one inch in front of and parallel to the posterior border of the deltoid, from the deltoid tuberosity upwards to within one inch of the spine of the scapula. This long incision proved, as a matter of fact, unnecessarily long; it is essential in this operation to go well down the arm, on to the deltoid tuberosity in order to get as great a length of muscle as possible for the deltoid flap, but there is no need to extend the incision higher than the junction of the upper and middle thirds of the deltoid. The deltoid muscle was next cleared and its posterior border defined by undercutting the skin backwards towards the middle line, and raised from its deep relations by finger and gauze dissection. The vertically running fibres of the long head of the triceps were thus exposed and retracted backwards (i.e., away from the arm), and the quadrilateral space exposed from behind; the posterior circumflex vessels, especially the vein which was a large vessel the size of a lead pencil, formed a prominent landmark at this stage, and as they emerged to the back of the arm showed the position of the contiguous margins of the teres minor and teres major muscles. The deltoid flap was next cut; it was made one inch broad at its upper end, where it was freed from the main mass of the muscle within 1½ inches of the spine of the scapula, and tapered to the point below, where the tendon was separated from the bone with a raspator; a few small nerves ran into the flap and were avoided, and a good many muscular vessels required ligature.

It was now possible by further finger dissection with a hand in each wound to open up completely the quadrilateral space from back to front. A pair of tissue forceps were passed from the anterior to the posterior wound through the quadrilateral space and made to grip the end of the flap.
Clinical and other Notes

Traction on the forceps drew the flap forwards through the quadrilateral space into the anterior wound.

The posterior wound was closed with a few deep catgut sutures and a continuous skin suture of silkworm gut. The anterior wound was reopened, and the apex of the flap sutured to the anterior border of the deltoid as high up as possible with a couple of mattress sutures of catgut; the anterior wound was similarly sutured with a continuous silkworm gut stitch. The arm was bandaged to the side with a pad of wool in the axilla. The progress of the case was uneventful from the first; the elbow was moved after a week and abduction of the arm started after two weeks, massage being begun at the same time. The extensive wounds healed by first intention. For some time there was a depression at the back of the shoulder corresponding to the place where the flap had been cut, and there was anaesthesia of the shoulder region in front of the posterior incision, from the section of the cutaneous branches of the circumflex nerve. The patient left hospital after six weeks with a normal range of movement at the shoulder-joint.

Unfortunately, while on leave in his village after leaving hospital, he contracted pneumonia, and a good deal of muscular wasting and stiffness of the shoulder resulted from his enforced confinement to bed during his illness. He was readmitted for this, and a fortnight's massage with active and passive movement got rid of the stiffness entirely.

When last seen, three and a half months after operation, there was again a full range of movement, and the patient was anxious to get back to duty. The depression along the posterior border of the deltoid was still noticeable, but the anaesthesia had cleared up.

The operation presented no technical difficulties; in fact it was easy to define and identify the various anatomical structures met with. The shoulder-joint itself and the large vessels and nerves of the axilla were neither seen, nor looked for. The operation was a nice anatomical exercise, and illustrated the difference, and to my mind the greater simplicity of the anatomy of the living body as compared with the cadaver. Some authorities recommend that the flap should be sutured anteriorly to the coracoid process; in the present operation this would not have been possible, as the flap could not have been cut long enough. Exposure of the coracoid would have necessitated division of the pectoralis major tendon, an unnecessary step in the present case. Suture to the deltoid in front seems quite adequate.

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