THE TREATMENT OF CHRONIC ACROMIO-CLAVICULAR DISLOCATION

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Tearing of the acromio-clavicular and coraco-clavicular ligaments permits complete dislocation of the acromio-clavicular joint (Neviaser 1952). Another striking feature of complete dislocation is extensive damage to the attachments of the deltoid and trapezius muscles to the clavicle (Horn 1954, Quigley 1963). When the clavicular strut is lost the scapula falls forwards and downwards on the chest wall.

It is not our purpose to describe the variety of methods of management of acute acromio-clavicular dislocation. It is generally recognised that if the torn ends of the acromio-clavicular and coraco-clavicular ligaments are held in anatomical apposition during the first six weeks after injury the integrity of the ligaments is firmly re-established. Occasionally, this desired end is not achieved and dislocation persists, with consequent asymmetry of the shoulder. Workmen engaged in heavy labour complain of weakness of the shoulder, early fatigue and pain.

Many surgical procedures have been devised for the treatment of chronic acromio-clavicular dislocation. Excision of the outer end of the clavicle removes the bony prominence but does not improve the drooping of the shoulder, and the symptoms persist (Gurd 1947, Gillespie 1964). Attempts to fix the clavicle to the coracoid process by internal fixation may fail from loosening of the device or fracture of the metal. Fixation of the clavicle to the coracoid by a lag screw (Bosworth 1949) has a place in the treatment of acute acromio-clavicular
dislocation, but not in chronic dislocation. Repair of the coraco-clavicular ligament and fixation of the acromio-clavicular joint by a variety of materials, including fascial suture, transfer of adjacent ligament or tendon, or by wire and silk sutures (Bunnell 1928, Vargas 1942, Urist 1946, Neviaser 1952) has, in our experience, often failed because of breaking or stretching, with recurrence of the dislocation. We have had no experience with arthrodesis of the acromio-clavicular joint (Caldwell 1943).

TREATMENT BY TRANSFER OF THE CORACOID PROCESS TO THE CLAVICLE

Over the past eight years five cases of chronic complete dislocation of the acromio-clavicular joint have been treated by the following technique.

With the patient supine, an incision is made from the acromio-clavicular joint to the delto-pectoral groove, exposing the joint and the subcutaneous surface of the clavicle. It is extended down the border of the deltid to a point midway between its origin and insertion. The deltid is stripped subperiosteally from the clavicle and the acromio-clavicular joint is inspected (Fig. 1). The coracoid process is then identified with its attachments and drilled in the axis of its terminal portion so that the part to be detached will accept a screw. The pectoralis minor tendon is divided in the line of its fibres at the junction of its medial two-thirds with the lateral one-third. The coracoid process is then divided transversely with an osteotome at this point. The under-surface of the clavicle is freshened and drilled from below at the point of attachment of the torn coraco-clavicular ligament or slightly medial—but never lateral—to this. A short screw of appropriate length is inserted through the tip of the coracoid process into the clavicular hole and the raw surfaces approximated and firmly held together. It is important to excise a sufficient length of coracoid tip (1 centimetre) to assure strength of fixation without fracture.

The transfer of the tip of the coracoid process with the attached coraco-brachialis, short head of biceps and a segment of pectoralis minor does little to weaken muscular control of the scapula, because two-thirds of the pectoralis minor remain attached to the proximal portion of the coracoid. After the wound is closed a Velpeau dressing is applied. Mobilisation is begun at four weeks.

CASE REPORTS

Case 1—A forty-one-year-old woman fell on to the point of her left shoulder. She complained of pain and restriction of movement in the arm and attended her family doctor. No injury was recognised. She was referred to hospital nearly eight months later still complaining of severe pain and weakness in the left shoulder which was aggravated by movement, especially by abduction. Radiographs showed a complete acromio-clavicular dislocation. She was admitted and a transfer of the tip of the coracoid process was done (Fig. 2). At the same time part of the outer end of the clavicle was excised because of malunion from an old fracture. The limb was supported in a thoraco-brachial splint and movement was begun at four weeks. She returned to her full work eight weeks after operation. Eight years later she was found to be free from pain and she had full function, with normal strength and movements in the shoulder; there was no tenderness on palpation.

Fig. 2
Case 1—Eight years after operation.
Case 2—A thirty-year-old Swiss miner was first seen five years after he had sustained a severe wrench to his left arm, which had caused persistent pain in the left shoulder. Because of this and the obvious deformity, the outer two inches of the clavicle were removed (Fig. 3). The pain and weakness continued and he had to change his work. Two years later the tip of the coracoid with its attached muscles was transected and fixed to the under-surface of the clavicle (Fig. 4).

He has subsequently moved elsewhere and because of the distance it has not been possible to examine him but he has given assurance by letter that he was able to do heavy work without difficulty and that all symptoms have completely subsided.

Case 3—A twenty-one-year-old bank clerk fell playing hockey and struck his left shoulder on the ice. He complained of pain and deformity, and radiographs showed a complete
acromio-clavicular dislocation (Fig. 5). He was treated with a sling for a month but this failed to hold the dislocation reduced. He was admitted to hospital and, six weeks after the accident, the tip of the coracoid process was transposed (Fig. 6). He was kept in a thoraco-brachial splint for one month and then the shoulder was mobilised. After a further month he had no complaints and he had a full range of movement.

Case 4—A thirty-four-year-old labourer fell from some scaffolding and landed on his left shoulder. Two months later an open reduction was done for the acromio-clavicular dislocation at which the fascial origin of coraco-brachialis was transferred to the clavicle and the acromio-clavicular joint was fixed with Kirschner wires. He continued to complain of pain and weakness of the shoulder and was unable to work. Clinical and radiological examination showed a recurrence of the dislocation, and, eighteen months later, in March 1964, he had a transfer of the tip of the coracoid process to the clavicle with screw fixation. He regained full movement of the gleno-humeral joint and, when last seen, the movement and strength in the coraco-clavicular articulation were improving.

Case 5—A fifty-six-year-old man was assaulted and fell on his right shoulder. He attended a hospital but a complete acromio-clavicular dislocation was missed. It was months before he was able to move his shoulder and then only with severe pain. Five months after the accident he was admitted to hospital and a transfer of the tip of the coracoid was done. He was seen again three and a half years after the operation, when he had no complaints in the shoulder and a full range of painless movement.

SUMMARY

1. A method of treating chronic acromio-clavicular dislocation by transfer of the coracoid process to the clavicle is described.
2. This has been successful when other procedures have failed.
3. Three patients have been reviewed a long time after this operation and two others after a short time. All obtained a good result.

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REFERENCES