SHOULDER INJURIES IN SPORT

DAVID S. MUCKLE, F.R.C.S.,

Nuffield Orthopaedic Centre.

Shoulder injuries account for one half of serious injuries to the upper limbs in association football (personal series) with dislocations of the shoulder and the acromio-clavicular joint predominating. Fractures involving the shaft of the clavicle and greater tuberosity of the humerus are also frequent. Overuse injuries and peri-arthritis of the glenohumeral joint may severely limit athletic activity especially in throwing events, while prolonged control by the deltoid and rotator muscles in swimming and bowling puts considerable pressures on the subjacent sub-achromial bursa.

Fig. 1. Some of the stresses on joints due to a specific sporting activity - bowling at cricket.

Dislocation of the shoulder, classically seen in a hands-off at rugby football when the arm is abducted, extended and externally rotated, produces an anterior dislocation with avulsion of the capsule and usually a tearing or detachment of the glenoid labrum. This form of anterior dislocation differs from the pure abduction dislocation found in the elderly, when the head of the humerus is thrust downwards through the weakest part of the capsule (its inferior margin). Although an anterior dislocation can be readily reduced, recurrence may follow trivial injuries if the anterior glenoid fragment is extensively damaged or if the humeral defect (a flattening of the head seen on the postero-lateral sector) is marked. External rotation of the forearm, if combined with elevation of the limb as in a high smash at tennis, can easily cause a re-dislocation. Once recurrent shoulder dislocation is established, then a limitation of external rotation by shortening the sub-

scapularis muscle (Putti-Platt operation) combined with a repair of the defect in the glenoid labrum (Bankart repair) will produce a stable shoulder; but the limitation of external rotation severely affects athletic ability.

About two per cent of all shoulder dislocations occur in a posterior direction, and the injury, although unusual in athletes, has been reported following a blow to the anterior aspect of the shoulder in boxing. Posterior displacement is uncommon because nearly all injuries to which the shoulder is subjected, including most falls on the outstretched hand and all external rotation and extension strains, drive the humeral head forwards. Difficulty in diagnosis of a posterior dislocation is often encountered for the outline of the shoulder may appear normal, but one important sign is undue prominence of the coracoid process. After reduction the limb must be immobilised in external rotation.

Fractures of the humeral neck occasionally occur with dislocations, and a precautionary X-Ray should precede reduction in all but the most recurrent of dislocations. Damage to the axillary (circumflex) nerve can produce weakness of the deltoid muscle, but a case demonstrating permanent paralysis of the anterior two-thirds of deltoid after a rugby injury revealed that the muscle weakness did not prevent the person from rowing for his College at Cambridge, the supraspinatus muscle compensating for the weak deltoid. (Watson-Jones, 1955). Simultaneous tears of the rotator cuff, especially the supraspinatus muscle, may cause shoulder stiffness and painful movements sufficient to limit athletic ability once the dislocation has been reduced.

Acromioclavicular dislocation with over-riding of the clavicle on the acromion may indicate rupture of the trapezoid and conoid ligaments. Many sportsmen can carry out first class activities - including goal-keeping up to county standards - providing there is sufficient clavicular rotation at the point of dislocation not to hamper shoulder mobility. Adhesions limiting clavicular movement can be divided and the acromioclavicular joint arthrodesed using metal pins or screws, although redislocation is frequent. In extreme cases the lateral two centimetres of the clavicle can be excised.

Fractures of the clavicle usually heal rapidly in the conventional figure of eight bandage and goalkeepers, being amongst the most unfortunate in this respect, are

often back in full activity within six to eight weeks of the injury.

Fig. 2. Common sites of injury to the clavicle and scapula.

Periarthritis of the shoulder and subacromial bursitis respond to heat, general physiotherapy and steroid injections combined with anti-inflammatory tablets, although a recent review at Oxford tends to indicate that the natural outcome of the disease is little affected if treatment is not commenced early. The painful stiff shoulder is amongst the most refractory of joint ailments, and requires energetic physiotherapy and, in certain instances, manipulation under anaesthesia. The more common rotator cuff injury, especially the supraspinatus tear with limited abduction and external rotation, is commonly missed and operative intervention undertaken too late. Studies on the micro-circulation of the tendons and muscles around the shoulder joint (Rathbun et al, 1970) have shown relatively avascular areas in the supraspinatus and biceps tendons due to compression of the tendons against the humeral head. The authors suggest that these avascular areas may be the site of subsequent tears due to degeneration of the collagen fibres. Direct surgical intervention in chronic supraspinatus tendinitis has been advocated, with complete acromionectomy (Hammond, 1962) or osteotomy through the neck of the scapula to relieve pressure on the inflamed tendon by increasing the distance between the humeral head and acromion (Symp. Surgical Lesions, 1962). The

importance of arthrography in detecting tears in the rotator muscles has been emphasised (Neviaser, 1962). Calcified deposits within the supraspinatus tendons can be excised, but such lesions are rare in sportsmen. Subacromial bursitis, per se, may be a manifestation of gout or other rheumatoid diseases and the appro-

Fig. 3. Calcified nodule in supraspinatus muscle has caused - by friction - a swelling of the subacromial bursa.

priate biochemical investigations performed.

Pain on the anterior aspect of the shoulder with tenderness in the bicipital groove indicates tendinitis of the long head of biceps (although it has been stated that many tendons of the body are tender on deep palpation without concurrent pathology) commonly called golfer's shoulder. Treatment is by anti-inflammatory agents and physiotherapy. Rupture of the tendon requires operative repair in the athlete; usually the tendon being sutured to the humerus in the bicipital groove.

The enormous range of movement in the shoulder compared to other joints, and the strong compensatory adaptations of small muscles to act as ligaments, are vital in athletic activity. Unfortunately a reduction in mobility after injury can be a serious barrier to regaining peak performance. The ubiquity of shoulder dislocations or clavicular fractures should not detract from their potential seriousness as far as future sporting activity is concerned, and shoulder injuries require prompt and planned therapy to restore mobility, extensibility and power.

* Illustration from 'Sports Injuries', D. S. Muckle, Oriel Press 1971

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