Acromioclavicular disruption in first class rugby players

Jonathan Webb FRCS and Gordon Bannister MChOrth FRCS FRCS(Ed)Orth

University of Bristol, Department of Orthopaedic Surgery, Southmead Hospital, Bristol, UK

In a random sample of 105 first class rugby players, 45% gave a history of injury of the acromioclavicular joint. All continued to play at the highest level. The effects of the injury appeared to be minimal. Supraspinatus impingement syndrome commonly associated with acromioclavicular pathology was sought, but not found.

Keywords: Acromioclavicular joint, rugby impingement syndrome

Acromioclavicular disruption can be detrimental to sporting activity. Sports injuries account for some 30% of patients presenting to orthopaedic surgeons with frank dislocation¹ and post-traumatic osteoarthritis is the commonest cause of rotator cuff impingement in British athletes².

While dislocation has been widely studied, there is little data on less severe acromioclavicular disruption. Thorndike and Quigley³ reported that 1% of acromioclavicular disruptions presenting to the Harvard Student Health Service comprised dislocations and that all of these made a good recovery with conservative treatment.

Acromioclavicular pathology especially affects athletes whose sport demands overhead upper limb activity and we were interested in establishing the prevalence and significance of acromioclavicular disruption in first class rugby players whose sport places such demands on shoulder movement.

Material and method

Between March 1990 and May 1991, 105 first class or international rugby players were assessed by the first author. Each player was questioned about the mechanism of their injury, the treatment received, and its outcome. They were then examined for tenderness, range of shoulder movement, and acromioclavicular deformity. Clinically, deformity was classified as minimal if there was a barely palpable ridge, mild if the clavicle was elevated by 3–8 mm in relation to the acromion, and moderate if the disruption exceeded 8 mm.

Statistical analysis

Data were analysed by the χ^2 test with Yates' correction.

Results

History

Of the 105 players, 47 (45%) stated that they had suffered an acromioclavicular injury during rugby at some time in the past. In 29 (28%) it had been injured once, 14 (13%) twice, and 4 (4%) on several occasions.

Incidence

Forwards were more vulnerable than backs; 65% of Forwards and 25% of backs had sustained injuries to the acromioclavicular joint ($P < 0.001$).

Mechanism of injury

Of those injured, 57% recollected falling on the tip of the acromion and the remainder were unclear, having been injured in the process of being tackled.

Medical treatment

In 53% of cases the injury was not diagnosed on presenting to their medical attendants after injury. The majority of cases were managed by local ultrasound and strapping. One case was treated by open reduction and coracoclavicular screw fixation.

Rehabilitation

All participants in the study had returned to first class rugby. The mean(s.d.) period of rehabilitation was 4.08(2.08) weeks and the median 4 weeks.

Deformity

The vast majority (87%) of the rugby players had minimal deformity, the remainder having mild or moderate displacement at the acromioclavicular joint.

Movement and tenderness

Three players (6.4%) had persistent tender acromioclavicular joints and two (4%) had a decreased range

Address for correspondence: Mr J. Webb, University of Bristol, Department of Orthopaedic Surgery, Medical School Block, Southmead Hospital, Westbury-on-Trym, Bristol BS10 5NB, UK

© 1992 Butterworth-Heinemann Ltd
0306-3674/92/040247-02

of shoulder movement. One patient had decreased internal and external rotation and the other decreased abduction and flexion. In both cases restriction occurred at the end of the normal range of movement and was accompanied by pain localized to the acromioclavicular joint. No patients demonstrated the painful arc suggestive of a supraspinatus impingement syndrome. The association between tenderness and stiffness was highly significant ($P < 0.001$).

Discussion

Incidence

Acromioclavicular disruption among the first class rugby players examined in this study was high, but the injury appeared benign. The absence of impingement syndrome would suggest that while acromioclavicular arthritis is commonly found in patients with impingement, impingement occurs rarely in those who have had disruption of the acromioclavicular joint.

The fact that forwards were affected more commonly than backs suggests that contact situations occur more commonly in the pack. The backs are at risk of higher speed impact, but this factor is outweighed by their relative lack of involvement in the game. If acromioclavicular disruption is an indicator, it would appear that changes in the rules of Rugby Union Football to involve the backs and encourage open play have been only partially successful.

Mechanism

The commonest mode of injury was falling on to the tip of the acromion. The true incidence of this may well be higher as the confusion engendered by tackling inevitably compromises the description given of the mode of injury.

Medical treatment

The low rate of diagnosis among the physiotherapists and physicians who attended patients immediately after shoulder trauma indicates a poor level of awareness of this injury among both the players and

attending paramedical personnel. However, in view of the minor morbidity associated with acromioclavicular disruption, it would appear that these omissions were of doubtful significance.

Rehabilitation

The mean length of rehabilitation of 4 weeks was just under half the 7 weeks reported in conservatively treated acromioclavicular dislocations⁴, and this reflects the lesser severity of the disruption reported here.

Deformity, movement and tenderness

In 1946, Marshall Urist observed that acromioclavicular disruptions that were of sufficient severity that the clavicle could be ballotted failed poorly after conservative management⁵. The close correlation of stiffness and tenderness in the minor acromioclavicular disruption reported in this study confirms the importance of physical signs in determining the severity of these injuries.

The only player who was treated surgically underwent open reduction and coracoclavicular screw fixation. The screw was left *in situ* for 6 weeks and when it was removed the acromioclavicular joint redislocated. Redislocation occurs in 35% of acromioclavicular dislocations when the screw has been removed after 6 weeks⁴, and if this method is used the fixation device should be left for at least 12 weeks⁶. In such cases only 16% of joints redisplace.

References

- 1 Bannister GC. MChOrth Thesis, University of Liverpool, 1983.
- 2 Watson M. The impingement syndrome in sportsmen. In: Bateman JE, Welsh RP, eds. *Surgery of the Shoulder*. Philadelphia, USA: BC Becker, 1984: 140-2.
- 3 Thorndike A, Quigley TB. Injuries to the acromioclavicular joint. *Am J Surg* 1942; 55: 250-61.
- 4 Bannister GC, Wallace WA, Stableforth PG, Hutson MA. The management of acute acromioclavicular dislocation. *J Bone Joint Surg [Br]* 1989; 71-B: 848-50.
- 5 Urist MR. Complete dislocations of the acromioclavicular joint. *J Bone Joint Surg* 1946; 28: 813-37.
- 6 Weitzman G. Treatment of acute acromioclavicular joint dislocation by a modified Bosworth method. Report on 24 cases. *J Bone Joint Surg [Am]* 1967; 49-A: 1167-77.