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## SHOULDER INJURIES IN RUGBY

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## INTRODUCTION

An increase in the frequency and severity of shoulder injuries in rugby has been noted and this realisation has prompted guidelines such as this one to be drawn up as a guide for the coaches, physiotherapists and sport physicians caring for the players on the field. Of equal importance is that younger players are playing more competitively and aggressively and the specific injury patterns in these players with immature skeletal structures should be realised.

Why have a “manual” on shoulder injuries in rugby, and not simply use the standard references on shoulder injuries? The reasons are that certain injury patterns occur in rugby specific to the sport and that the players have different requirements as far as rehabilitation and return to this high contact activity within a relative short period.

## BASIC ANATOMY (FIG. 1)

The most relevant structures of the shoulder to recognise as far as injuries are concerned are:

### Trapezius muscle

The trapezius is the large muscle running from the neck to the shoulder and back

### Acromio-clavicular (AC) joint

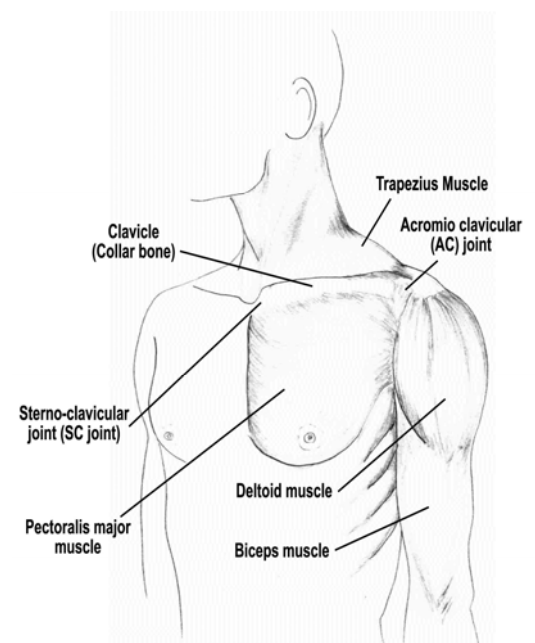
This is the junction between the collar bone and shoulder bone

### Deltoid muscle

The large muscle at the upper and outer aspect of the arm which is the main muscle used to lift the arm

### Rotator cuff tendon

This is also an important muscle and tendon to lift the arm and is situated deep to the deltoid



(Fig.1) SUPERFICIAL ANATOMY

### **Sterno-clavicular (SC) joint**

The junction between the breast bone and collar bone on the upper front part of the chest

### **Brachial plexus**

The large set of nerves above the collar bone, which run from the neck to the shoulder and arm

### **Shoulder joint (Gleno-humeral joint)**

This is the main ball and socket of the shoulder

### **Pectoralis major (Pec Major)**

The large muscle on the chest which draws the arm towards the body

### **Clavicle (collar bone)**

The collar bone supports the shoulder and can easily be felt under the skin

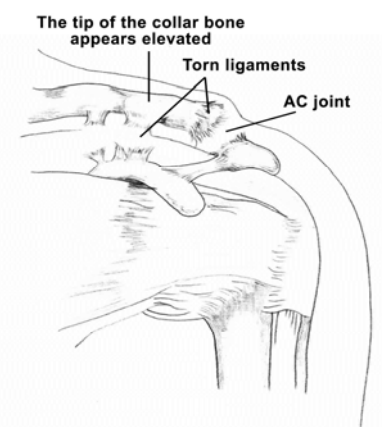
### **STRUCTURES MOST OFTEN INJURED (FIG 2)**

**Soft tissue around the shoulder:** In the game of rugby direct blows are common and soft tissue bruising of the trapezius muscle, the deltoid, the pec major and other soft tissue around the shoulder is usually not of long-term significance for the player.



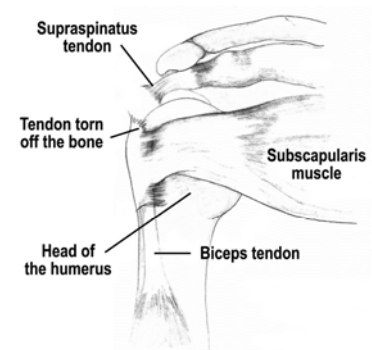
(Fig.2) ANATOMY  
Location of structures as seen from outside

**AC joint: (Fig 3):** This junction between the collar bone and shoulder bone is one of the most commonly injured structures during rugby games. It usually results from a fall directly onto the shoulder – usually slightly towards the back of the shoulder. This may result in either a sprain or an actual dislocation of this joint due to a rupture of the ligaments stabilising the AC joint.



(Fig.3) ACROMIO-CLAVICULAR (AC) JOINT DISLOCATION

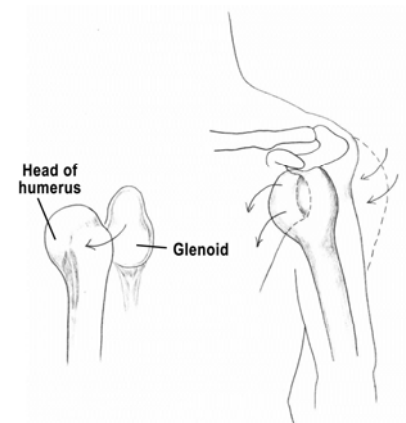
**Rotator cuff (Fig 4):** The rotator cuff tendon, deep to the deltoid, is commonly injured when the abducted or extended arm is forced downwards or backwards especially during a fall or a tackle. The injury may be a simple sprain or a frank tear of the tendon. The latter is rare in young players and usually a sprain of the tendon is more common.



(Fig.4) ROTATOR CUFF TEAR (SUPRASPINATUS TEAR)

**SC joint (Fig 2):** The junction between the breast bone and collar bone (upper front of the chest) is injured when the player falls directly onto the shoulder. The joint may be painful with swelling or dislocated.

**Shoulder Joint: (Fig.5)** The shoulder joint itself (ball and socket) may be injured during a direct fall and often when the arm is forced outwards and backwards. This may result in injuries to the labrum and ligaments. The stabilising ligaments of the shoulder attach to the rim of the socket called the labrum. If the labrum simply tears, the injury is referred to as a Bankart lesion. If the force is great



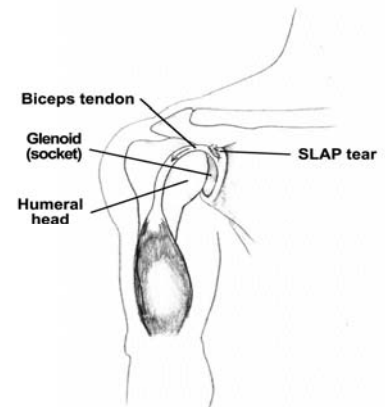
(Fig.5) SHOULDER DISLOCATION

enough the shoulder might actually dislocate. Shoulder dislocations in rugby are a frequent injury. The ligament may also be torn off the humeral head and is referred to as a "HAGL" ("humeral avulsion of the gleno-humeral ligaments") lesion. Another injury which could occur inside the joint is a bruise of the joint surface ("bone bruise") which may be sustained during a direct blow on the shoulder.

## SLAP lesions

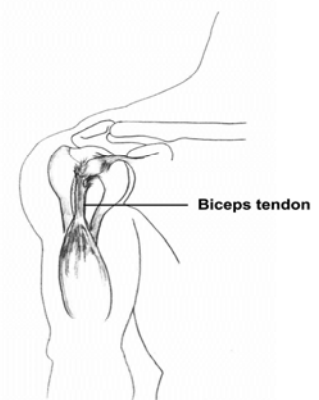
("Superior Labrum Anterior to Posterior") (**Fig 6**):

These are tears of the top part of the cartilage surrounding the glenoid (socket) of the shoulder joint. They may be caused by a fall on to the elbow with an upward force into the shoulder joint.



(Fig.6) SLAP lesion  
(Torn superior labrum)

**Biceps tendon (Fig 7):** The long head of the biceps muscle may be injured by traction forces on the biceps and may even be ruptured.



(Fig.7) BICEPS  
Tendon: Swollen or frayed out or even torn

**Fractures:** In adult players, fractures around the shoulder joint are rare but do occur with regular frequency in young schoolboy players. The cartilage growth plates of the upper humerus and the collar bone are most involved.

## MECHANISMS OF INJURY MOST COMMONLY SEEN IN RUGBY

The most common mechanism of injuries are:

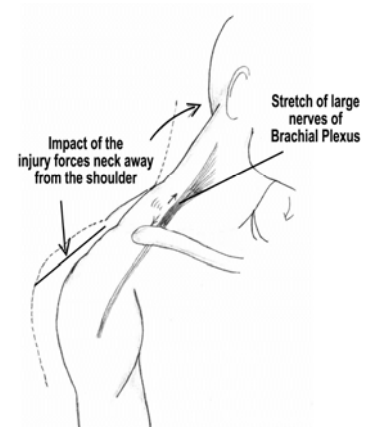
**Direct blow to the shoulder.** This may happen when a player impacts on the shoulder from either the front or the back. This may result in simple bruising of the shoulder or even dislocation.

**Falls directly onto the shoulder with the arm by the side:** AC joint injuries often occur due to this mechanism – direct falls onto the shoulder often result in AC joint sprain or dislocation. In some instances rotator cuff injuries may also occur due to this mechanism.

**Rotator cuff injuries:** These usually occur when the arm is forced downward when it is held up forwards or to the side or even from a fall onto the shoulder.

**Shoulder dislocation:** The usual mechanism is when the arm is forced outwards and backwards. This would happen during a “straight arm tackle” or when another player falls onto the back of the shoulder forcing the upper arm backwards.

**Brachial plexus injuries (Fig 8):** These usually happen when the head is forced away from the shoulder and the shoulder is pushed downwards – the result is a severe stretch of the tissues between the shoulder and neck. This would happen when a player falls forward and downwards contacting the arm and the head at the same time. This leads to a stretch of the big nerve above the collar bone (brachial plexus).



(Fig.8) BRACHIAL PLEXUS (NERVE) STRETCH INJURY

**AC joint:** This joint is usually injured with a direct fall onto the shoulder.

**Pec Major tears (Fig 9):** This powerful pectoralis major muscle is very rarely torn but the mechanism in rugby would especially be when a forward has his arm engaging another player in a scrum. When the scrum collapses the contracting muscle gets stretched out and away from the body and may result in a tear of the pec major .

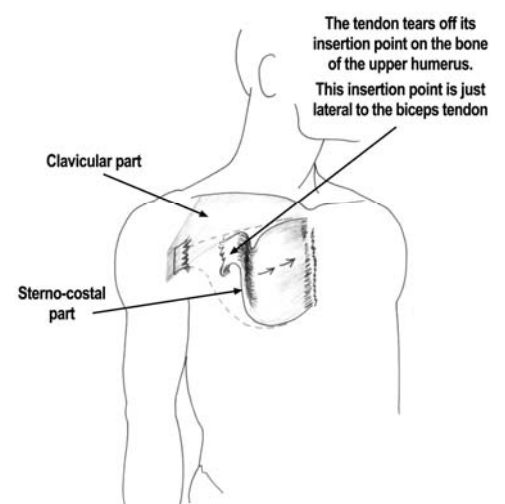


Fig 9. A tear of the sterno costal part of the Pec major muscle. This part tears more commonly than the clavicular part. In rare instances both parts may tear together.

**Collar bone:** A fracture of this bone occurs during a direct fall onto the shoulder, but this is less common in rugby, mostly seen in younger schoolboy players.

After injuring a shoulder the relevant medical or other attendants would assess the shoulder in the following manner. This assessment will lead to a decision as to the immediate further management:

**Obvious bruising or deformity**

**Swelling or deformity over the AC joint** – this may indicate an AC joint injury / dislocation

**Bruising or swelling over the trapezius or deltoid** – this may be soft tissue bruising of these muscles

**Pain inside the joint** – this may be a labral or rotator cuff injury

**Deformity of the joint itself with inability to move it** – this is usually due to a dislocation of the shoulder joint

**Obvious rupture of the pec major** – a bulge will be seen over the pec major area with a bruising in the upper arm

#### **GUIDELINES ON WHEN TO REMOVE THE PLAYER FROM THE FIELD FOLLOWING A SHOULDER INJURY:**

**If the shoulder is obviously dislocated** the player is removed and is managed by the medical practitioner on the side of the field or referred to a hospital for reduction of the dislocation.

**Deformity over the AC joint:** pain can be the determining factor. Should the player be able to continue he may do so without any serious effects. On the other hand, should his pain be of such a nature that he is not able to play competently, he will be removed. Trying to play on does not have any serious deleterious effect though, but the pain and associated loss of function may limit his/her rugby playing performance from a team perspective.

**Deeper injuries of the rotator cuff and labrum:** These may not be visible from the surface and a simple test would be to ask the player to lift his arm. If he can do this comfortably, there is no immediate indication to remove him off the field and he could be allowed to play if pain allows him to. If, however, he is unable to elevate the arm he should be removed from the field.

**Collar bone:** If severe pain and deformity is evident over the collar bone this may be a fracture and he should be removed for further medical attention.

**Brachial plexus injuries:** This is referred to as a “burner” or “stinger”. The neck and the shoulder are often forced away from each other during a fall – this results in a stretch of the nerves of the brachial plexus with immediate burning pain and inability to move the arm. Often this settles quite quickly, usually in a few minutes and the player can continue to play. Where pain and weakness persist as a result of this stretch the player should be removed from the field. The diagnosis is usually obvious.

**SC injury:** Often the player points to a painful lump at the medial (inner) side of the collar bone at the upper part of the chest (sterno-clavicular joint). If pain is not severe the player often continues and it is noteworthy that many players only present with these injuries after the game. It is common for these joints sprains to be painful and rugby players find it difficult to continue playing the contact situations ie tackling and often remove themselves from the field or indicate that they are unable to continue playing. Some of these SC joint injuries may be more serious (the medical staff should check that the joint is not posteriorly dislocated - if they are posteriorly dislocated and impinging on the vital structures) and in general it is advised that the player with these injuries be removed for medical assessment- mostly to exclude the posterior dislocations.

**Biceps tendon injury/rupture:** Although further damage with continued play is unlikely to cause more damage, the pain following the injury will usually be too intense to allow continuation.

**Pec major rupture:** Pec major rupture often goes unnoticed as the pain may be brief when the tendon tears off its insertion. The player could continue as there is not an immediate indication for removal off the field, however the loss of arm function due to weakness impairs



further rugby playing ability and the player usually indicates that they are unable to continue but soon after the match he should be referred for an assessment.

#### **FURTHER MANAGEMENT OF SPECIFIC INJURIES FOLLOWING THE RUGBY MATCH:**

**Soft tissue injuries:** These could be treated conservatively by physiotherapists.

**AC joint injuries:** These seldom, if ever, require immediate surgical intervention and can usually be managed conservatively by the physiotherapist and attending physician. Surgery is seldom, if ever, necessary in the acute phase and a rare few may require it in the longer run. Surgery does result in a very favourable outcome in those who have chronic AC joint pain and associated rotator cuff symptoms.

**Rotator cuff injuries:** The majority of rotator cuff injuries in rugby players are sprains / tendonitis. These could be managed conservatively by the physiotherapist and medical attendants and may require a cortisone injection on some occasions. If a rotator cuff tear (which is rare in these young players) is suspected referral to a specialist may become indicated to verify the extent of the injury and possible surgical repair. Some players have been able to play with complete rotator cuff tears, but this is the exception and not the rule, and delaying surgery too long in these cases may lead to a less favourable rehabilitation outcome and permanent joint changes.

**Shoulder dislocations:** After the shoulder has initially been reduced referral to a specialist is preferable to exclude significant damage: labral tears and bony lesions of the glenoid may need to be addressed and not infrequently surgery could be indicated to prevent further dislocations. In rugby, conservative treatment is often not ideal as the pattern of repeated and more frequent dislocations becomes apparent. Surgery provides the best long term outcome especially in professional players.

**Brachial plexus injuries:** If such an injury is diagnosed by the attending medical officer referral to a neurologist may be indicated to confirm the extent and prognosis of the injury. These are usually managed conservatively by the physiotherapist by relieving associated muscle spasm.

**Clavicle fracture:** These may usually be managed conservatively with immobilisation in a shoulder sling. In cases where the displacement seems too severe, or there is associated nerve and muscle compromise, consultation with a specialist may be indicated to consider the need for open reduction and internal fixation

**Pec Major rupture:** This injury would require referral for specialist opinion as most of them may require surgical repair in order to return to a level of function in order to play rugby.

**Conclusion:**

With the appropriate management of shoulder injuries in rugby players most of the players should be able to return to the sport and not suffer long term consequences to the well-being of this important joint