

Ski-ing and Snowboarding – Common Upper Limb Injuries

Upper limb injuries account for about one-third of all injuries in skiers, and nearly 50% of all injuries in boarders. About half of all upper limb injuries are shoulder dislocations. Associated injuries are damage to the acromio-clavicular joint (ACJ), tears to the rotator cuff tendons and fractures to the upper part of the humerus and the collar bone. Virtually all are due to a fall onto an outstretched arm, or as a result of a direct blow either in a fall or collision.

Shoulder Dislocation - Mr Nick Philips, Consultant Orthopaedic Upper Limb Surgeon

Dislocation of the shoulder joint is a common upper limb injury that skiers and snow-boarders can suffer. An x-ray is necessary both to confirm the direction of the suspected dislocation (usually anterior, but beware of posterior instability) and to identify any associated injuries, especially to the tuberosities or the humeral neck. A key issue to note, with any dislocation of the shoulder, is that the patient should be assessed for other associated injuries and the consequences discussed accordingly.

When the clinician attempts to resolve the dislocation, there is a risk that a displaced tuberosity may prevent relocation or a previously undisplaced neck fracture may be displaced. This is particularly the case where the patient has a great deal of spasm, and relaxation is difficult to achieve. The function of the axillary nerve (deltoid contraction and sensation over the regimental badge area of the shoulder) should be documented.

Post-reduction care:

- The patient should be immobilised in a supportive broad-arm sling, not a collar-and-cuff
- Advice about analgesia and sleeping position should be given
- It is strongly advisable for the patient to see either a GP with a musculo-skeletal interest, a sports physician or an upper limb orthopaedic surgeon when they return to the UK.
- Appropriate rehabilitation of the specific injury should be arranged as soon as possible.

Recurrent instability is a significant risk for the young dislocator (approaching 90% if under 20 years of age) and tendon tears in those over the age of 40. Anybody suffering an associated fracture is advised to see an orthopaedic surgeon regardless of age.

Key point:

Any dislocation of the shoulder should be assessed for other associated injuries and the consequences discussed accordingly.

ACJ Injuries – Mr Matt Ravenscroft, Consultant Shoulder Surgeon

Acromio-clavicular joint (ACJ) injuries and fractures of the clavicle are relatively common in skiers and snowboarders and occur following a direct fall onto the point of the shoulder. The shoulder blade is driven medially, causing disruption of the strong ligaments between the coracoid process of the shoulder blade and the undersurface of the clavicle. The shoulder blade drops down and the lateral end of the clavicle becomes prominent.

A six grade classification system exists which describes the degree of injury to the ACJ and also gives guidance to the treatment options.

- Grades 1 and 2 are sprains of the ACJ and have normal X-rays. These grades are characterised by pain over the ACJ and will settle with conservative treatment in a broad arm sling. A broad arm sling must be used rather than a collar and cuff as the dislocation is reduced by supporting the elbow whereas a collar and cuff would have the opposite effect.
- Grade 3 injuries are the first type of injury where the X-ray is abnormal and the clavicle is sitting just above the acromium. Depending on the activity level of the person either operative or non operative treatment can be undertaken.
- Grades 4 to 6 are more severe dislocations of the ACJ and these usually require operative fixation. The less severe grades of ACJ injuries often cause no long term problems. If persistent symptoms do occur, then arthroscopic resection of the joint can be considered. Fractures of the lateral end of the clavicle can be grouped together with ACJ injuries and treated in a similar fashion.

Fractures of the Proximal Humerus – Mr Len Funk, Consultant Shoulder & Upper Limb Surgeon

Skiing is just as popular with people in their 50s and 60s as it is with younger generations. However, with age, joints tend to get stiffer and more stable, and bones more prone to injury. Mature skiers are therefore prone to different injuries to younger skiers; proximal humerus fractures are an example.

The proximal humerus is made up of thinner cortical bone than the rest of the humerus and as we get older, the inner cancellous bone also becomes thinner. Therefore high energy injuries in older people can place the proximal humerus at risk of fracture.

Proximal humeral fractures are typically sustained by mature skiers, landing and tumbling onto their shoulders and arms. A number of fracture patterns can be produced depending on the mechanism of injury. These include fractures of the greater and lesser tuberosities, humeral neck and humeral head.

Diagnosis and treatment:

- X-rays are required to identify the fracture pattern and these should include a full shoulder series – AP, lateral and axillary views. Sometimes a CT scan is required.
- In general, an undisplaced fracture can be managed without surgery. A sling is used for comfort for about 4 weeks and then physiotherapy commenced.
- Displaced fractures need surgical reduction and fixation. For optimal results, this is best performed by an experienced shoulder surgeon. Excellent results can be achieved with good fixation and rehabilitation.

Key points:

- Proximal humerus fracture is more commonly seen in mature skiers
- A full range of x-rays are required for accurate diagnosis
- For an optimal outcome, patients with displaced fractures should be referred to an experienced shoulder surgeon.

The Skier's Thumb - Mr Mike Hayton, Consultant Orthopaedic Hand Surgeon

The most common skiing injury of the upper limb is the "skier's thumb." This is a rupture of the thumb ulnar collateral ligament (UCL) at the metacarpo-phalangeal joint (MPJ). It is an acute injury that occurs when a skier falls and twists his thumb in the pole strapping. The thumb is deviated to the side (abducted) at the moment of trauma. This results in an injury to the ligament on the inside of the thumb. This is an important ligament as it stabilises the thumb during pinch and grip.

The skier will notice acute pain and swelling over the "knuckle" of the thumb on the side toward the web space. Attempts at pinching with the affected thumb against the index finger will be painful, and weak may show increased laxity. The amount of pain and laxity will depend on the severity of the injury.

These are very unstable injuries that often require surgery. The avulsed ligament often pulls off the bone and then flips out onto the other side of a nearby sheet of tendon; this situation is known as a Stener lesion. The now interposed tendon sheet will not allow the ligament to heal in its anatomical position unless surgically corrected. It is therefore vital that this injury is diagnosed early to prevent chronic laxity of the joint. These injuries produce few long-term problems when they are treated early and appropriately.

Key point:

Acute thumb sprain with pain on the inside of the MPJ requires careful assessment to exclude a UCL ligament tear.

