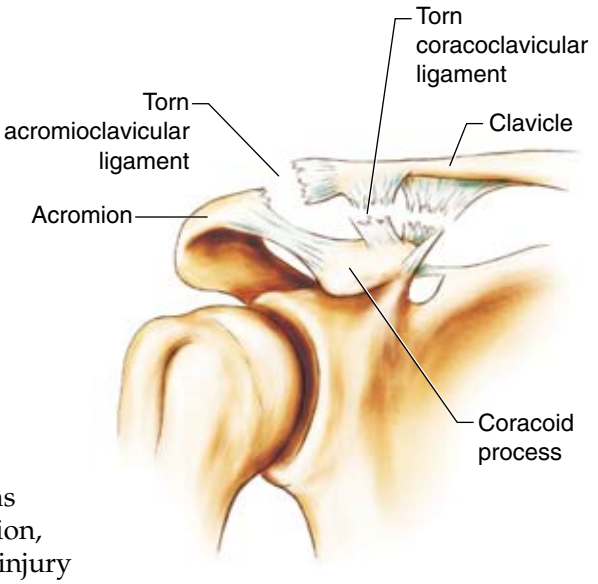
ACROMIOCLAVICULAR JOINT INJURY

Common Causes

Acromioclavicular (AC) joint injuries are common in contact or collision sports such as American football, rugby, hockey, or lacrosse. The injury typically occurs during a fall directly onto the acromion, or the point of the shoulder. It can also occur when an athlete sustains a direct blow on top of the shoulder when trying to tackle or hit another player.



Identification

An AC joint injury is also known as an AC joint sprain, AC joint separation, or shoulder separation. This type of injury involves a disruption to the joint formed between the end of the clavicle (collar bone) and the acromion. Athletes with this injury usually have pain and swelling directly over the AC joint and difficulty raising the arm overhead. An obvious deformity might also be present caused by the separation of the acromion and clavicle. This separation is known as a "step-off deformity."

After AC joint separations, a deformity with a bump at the AC joint often persists even after healing. This deformity is usually cosmetic with no related pain or symptoms. In rare cases when the athlete has persistent pain and symptoms following an AC joint separation, surgery might be an option. Athletes who have recurring injuries to the AC joint might develop early arthritis in the joint.

Treatment

Most AC joint injuries are treated conservatively. When a step-off deformity is present, X-rays can assess the degree of separation and rule out an underlying collar bone fracture. Only injuries with significant separation or displacement of the clavicle from the acromion might require surgery. Ice and anti-inflammatory medications can help reduce pain and inflammation. Short-term immobilization in a sling can be used for comfort, followed by gentle range-of-motion exercises as pain allows.

Return to Action

Following mild sprains of the AC joint without any deformity or separation, athletes can usually return to sports quickly. Depending on the degree of pain, return to play may be immediate or take up to one to two weeks. The athlete should have full pain-free range of motion and full strength in the muscles surrounding the shoulder before attempting a return. Following more significant injuries with obvious deformity and separation, athletes should usually avoid contact sports for a minimum of three weeks to allow for healing of the injured ligaments. Use foam padding or a donut cushion over the AC joint for extra protection and comfort when returning to contact sports.

ROTATOR CUFF TEAR

Common Causes

Rotator cuff tears usually occur in athletes over 40 who have a long history of involvement in repetitive overhead sports such as swimming, surfing, volleyball, or throwing sports. A fall or a direct blow to the shoulder during any sport can cause acute tearing or straining of the rotator cuff in such athletes. Several factors are thought to contribute to the development of rotator cuff tears. Many believe they result from repeated episodes of impingement (see p. 90). Over time, repeated inflammation and irritation of the rotator cuff can cause the cuff to tear. Other factors possibly contributing to tearing include repetitive microtrauma and overuse, degeneration of the cuff from aging, poor circulation to the rotator cuff tendon, and acute injury superimposed on chronic cuff degeneration. Rotator cuff tears typically occur in the outer aspect of the tendon near its attachment to the humerus. The supraspinatus tendon of the rotator cuff is the tendon most commonly torn.

Identification

Rotator cuff tear symptoms are similar to symptoms of impingement, rotator cuff tendinitis, or bursitis. Athletes have pain in the front or side of the shoulder that is aggravated by reaching or overhead activities. With smaller tears, weakness might not be apparent. With larger tears, weakness can be prominent. With massive tears, the athlete might be unable to hold the arm up at the side. Athletes with rotator cuff tears are typically over age 40 and might have a past history of recurrent episodes of rotator cuff tendinitis or bursitis. Pain might start suddenly after a precipitating event or occur gradually with no obvious cause. Severity of pain varies from minimal to severe. Studies show that some people may have no symptoms whatsoever.

Treatment

Treat most athletes with rotator cuff tears conservatively. Treatment varies depending on the athlete's age, level of function, size of the tear, weakness, and pain. Larger tears in younger athletes who are very active might require early surgery. Conservative treatment is identical to the treatment of athletes with shoulder impingement, rotator cuff tendinitis, and bursitis: relative rest, reducing pain and inflammation, restoring full pain-free range of motion, and progressing the athlete to a strengthening program for the rotator cuff and surrounding shoulder muscles.

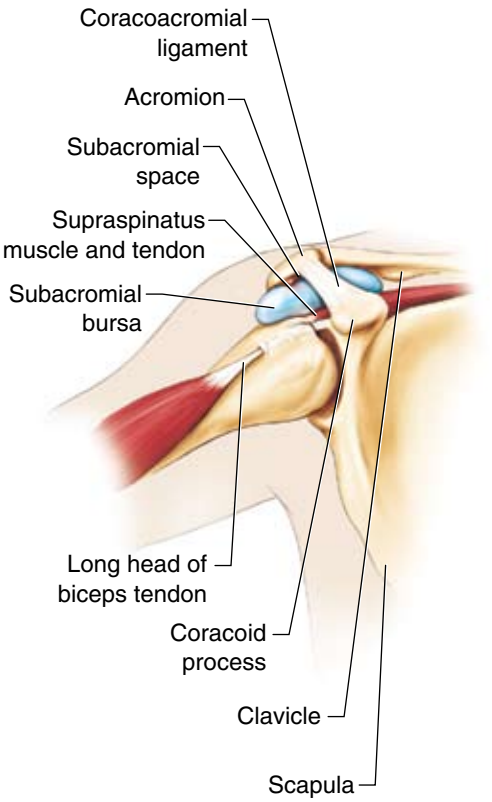
If symptoms persist after conservative treatment, surgery might be necessary. MRI will usually show the location and extent of the tear. Surgery might include repair of the torn rotator cuff tendon and a subacromial decompression to shave off arthritic bone and spurs to allow more room for the rotator cuff to travel.

Return to Action

After treatment, athletes may gradually return to their sport once they have full pain-free range of motion and full strength in the injured shoulder. Return time depends on the size of the tear, the athlete's symptoms, degree of weakness, and the sport. A full return often takes up to three months. If symptoms recur, stop participation. Taping or bracing is usually unnecessary on return. Athletes might need to adjust their participation or technique to avoid recurring symptoms. Athletes who undergo surgical repair of a torn rotator cuff usually cannot return for at least six months.

SHOULDER IMPINGEMENT

Common Causes



Shoulder impingement is common in sports that involve repetitive overhead motions or throwing, such as swimming, surfing, baseball, softball, water polo, and volleyball. During normal shoulder motion, the rotator cuff and subacromial bursa travel smoothly beneath the acromion in the subacromial space (the space between the acromion and humeral head). Additionally, the subacromial bursa, a small fluid-filled sac, helps the rotator cuff travel smoothly beneath the acromion and AC joint. In shoulder impingement, however, the rotator cuff and bursa get pinched or impinged underneath the acromion during overhead activities, resulting in pain.

Several factors can contribute to shoulder impingement. Structural or anatomic abnormalities might result in a narrower subacromial space. For example, some people are born with a curved or hook-shaped acromion that narrows the subacromial space. With aging, development of AC joint arthritis and bony spurs underneath the acromion can also narrow the subacromial space. The less room there is for the rotator cuff and bursa to travel, the more likely it is that these structures get pinched during shoulder motion.

A second factor is inflammation. Overuse or repetitive irritation of the rotator cuff underneath the acromion can lead to inflammation and swelling of the rotator cuff tendons and overlying bursa (tendinitis and bursitis). Not only are the inflamed tendons and bursa painful, but pain is aggravated when these inflamed and swollen structures get pinched or impinged underneath the acromion during overhead motions.

A third factor is shoulder instability, especially in young athletes. If the structures of the shoulder are ineffective in stabilizing the humeral head within the socket (glenoid fossa) during overhead motions, the humeral head might migrate upward out of the socket, causing impingement. Underlying shoulder instability is likely a primary cause of impingement symptoms in young athletes.

Identification

Shoulder impingement is an extremely common condition that affects athletes of all ages. Athletes typically experience gradual pain in the front or side of the shoulder that is aggravated by reaching or overhead activities. Sometimes the pain radiates

down into the upper arm. They might have decreased range of motion and subjective weakness with difficulty raising the arm overhead or behind the back. Night pain and difficulty sleeping on the affected shoulder are also common.

Repeated impingement usually leads to rotator cuff tendinitis (inflammation of the rotator cuff tendons) and bursitis (inflammation of the subacromial bursa that overlies the rotator cuff). Again, these two conditions can aggravate the impingement symptoms.

Treatment

Athletes can begin treating shoulder impingement at home. They should avoid repetitive overhead activities and other aggravating activities until pain and inflammation subside. Anti-inflammatory medications (e.g., ibuprofen) and ice might also be helpful in reducing pain and inflammation. Early in treatment, athletes should begin range-of-motion exercises to help restore normal pain-free motion; progress exercise as pain allows.

If symptoms persist despite initial treatment, formal physical therapy might be needed to assist in decreasing inflammation and pain through electrical stimulation, ultrasound, or other modalities. A cortisone injection into the subacromial bursa can be a quick, effective way to reduce pain and inflammation. Eventually, all athletes should begin a shoulder-strengthening program with particular attention to the rotator cuff muscles. This is especially important for younger athletes, in whom impingement symptoms usually involve underlying instability.

Athletes who continue to have disabling symptoms may require surgery to correct underlying structural or anatomic abnormalities causing the impingement. In older athletes, this might involve a subacromial decompression in which arthritic bone and spurs are shaved off the acromion to allow more room for the rotator cuff to travel. In younger athletes, shoulder stabilization surgery might be required to prevent impingement related to underlying instability. If shoulder impingement continues over time, the repeated inflammation and irritation of the rotator cuff might eventually cause the cuff to wear down, degenerate, and tear.

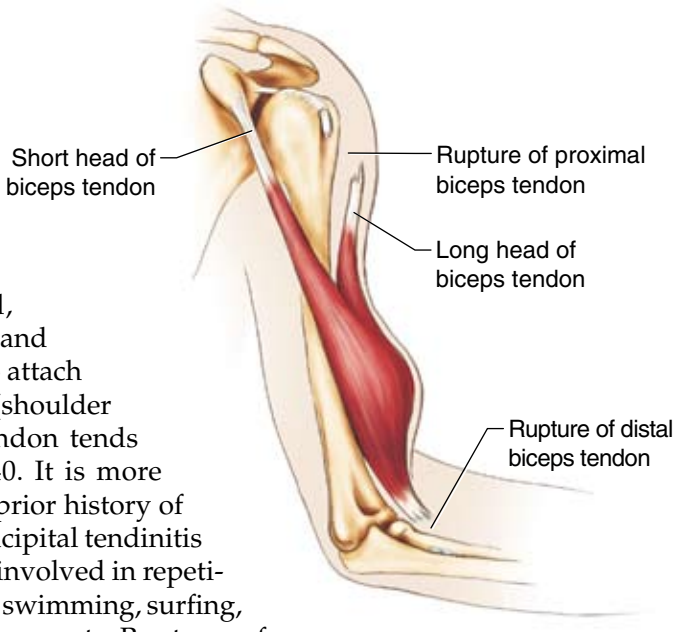
Return to Action

Most athletes improve with conservative treatment and gradually return to sport after attaining full pain-free range of motion and full strength in the muscles surrounding the affected shoulder. Return time varies from a few weeks to a few months, depending on the degree of symptoms, extent of injury, and the sport. Taping or bracing is usually not necessary when returning to play. If symptoms recur, the athlete should stop the sport or painful activity until the sport or activity is no longer painful.

To prevent recurrence of symptoms, athletes might need to limit or avoid certain movements in their sport. They might also benefit from modifying their technique. For example, a thrower might choose to throw sidearm instead of overhead, which might prevent the rotator cuff and bursa from getting impinged underneath the acromion.

BICEPS TENDON RUPTURE

Common Causes



The biceps muscle has two proximal tendons and one distal tendon. By far the most common tendon to be ruptured is the proximal long head of the biceps tendon. This tendon travels up and around the humeral head, through the shoulder joint, and underneath the acromion to attach onto the top of the glenoid (shoulder socket). Rupture of this tendon tends to occur in athletes over 40. It is more common in athletes with a prior history of shoulder impingement or bicipital tendinitis (see pp. 90 and 94) who are involved in repetitive overhead sports such as swimming, surfing, and volleyball or in throwing sports. Ruptures of the proximal biceps tendon usually occur because of a weakening and degeneration of the tendon over time. Because of its location beneath the acromion (roof of the shoulder), this tendon is predisposed to getting pinched during overhead activities, similar to the rotator cuff. Over time, the tendon can get frayed and weak and might eventually tear or rupture.

A biceps tendon can also rupture at its more distal attachment onto the radial tuberosity on the radius of the forearm. But a rupture at this location is far less common than a proximal rupture. Distal biceps tendon ruptures tend to occur in middle-aged weekend warrior athletes who are lifting heavy weights.

Identification

Typically, athletes with a proximal biceps tendon rupture describe a sudden pain in the shoulder often accompanied by an audible snap or tearing sensation. Within a few days, bruising develops in the biceps area, and a bulge in the lower biceps is readily apparent. This bulge is accentuated when flexing the biceps muscle (think of Popeye after eating some spinach). The bulge occurs because the torn biceps tendon and muscle get bunched up into the lower aspect of the upper arm. Sometimes when a proximal biceps tendon rupture occurs acutely, very little pain results, and the injury might even go undetected. Because the other proximal biceps tendon remains attached to the coracoid process in the shoulder, significant weakness is rarely a complaint.

Athletes with a distal biceps tendon rupture might describe a sudden pain in their distal arm and over their elbow. They often say the injury occurred while they were trying to lift a heavy load; they might mention hearing or feeling a snap or pop in their arm. They might also note swelling and bruising at the elbow. Unlike a proximal tendon rupture, a distal rupture is likely to result in arm weakness.