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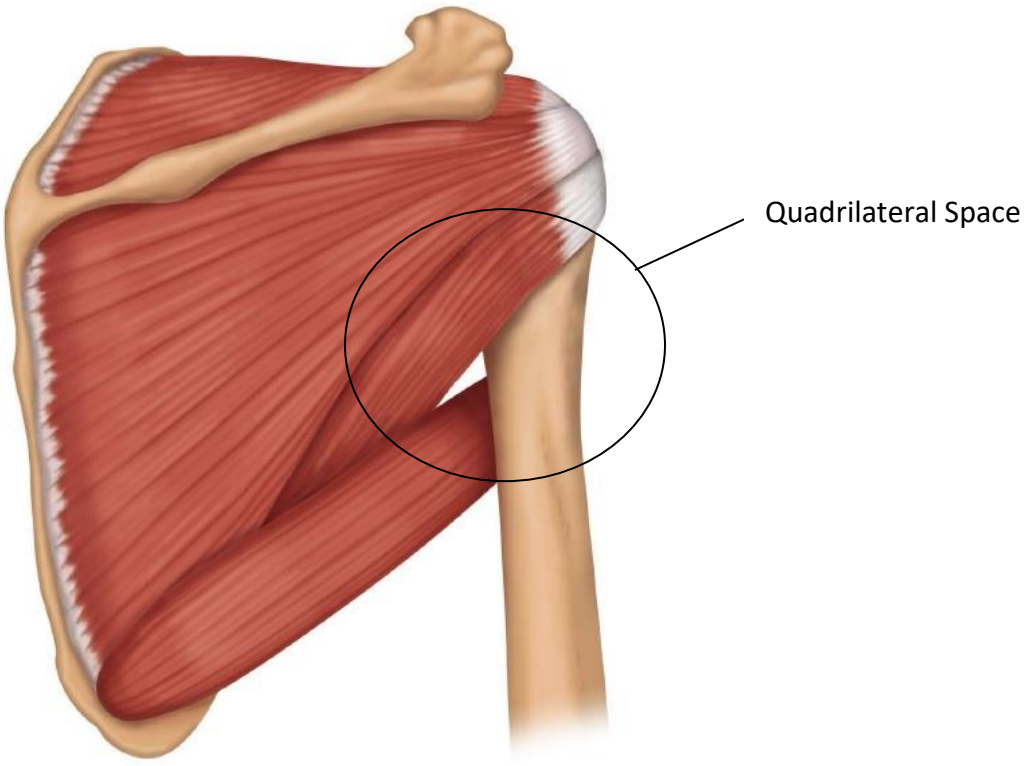
SHOULDER, KNEE & SPORTS MEDICINE

Quadrilateral Space Syndrome

In order for muscles to work properly, the nerves that innervate (supply) them also must function appropriately. If the nerves are somehow damaged or compressed somewhere along their course, it can affect their ability to conduct signals to the muscles. When this occurs, nerve function decreases and the targeted muscles experience weakness and atrophy (shrinking).

On the posterior (back) side of the shoulder, several muscles form the borders of a space called the Quadrilateral Space: the teres minor above, the teres major below, the triceps muscle to one side, and the humerus (arm) bone to the other side. The axillary nerve and the posterior circumflex humeral artery run through this space. When the arm is in certain positions, such as in a throwing motion, that space is closed down and the axillary nerve can be compressed. It is also possible for fibrous tissue to form and compress the nerve. The axillary nerve innervates the deltoid muscle, which is the muscle that covers the shoulder and plays a large role in powerful lifting the arm.



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Frequent Signs and Symptoms

- Pain and discomfort (burning or dull ache) that is poorly localized, often in the back of the shoulder, and occasionally the front of the shoulder and arm
- Heaviness or fatigue of the arm
- Pain made worse by putting the arm in the thrower's position
- Tingling, numbness, or burning in the back of the shoulder and occasionally the arm and forearm
- Tenderness in the back of the shoulder (over Quadrilateral Space)
- Atrophy (shrinkage) of the deltoid muscle or teres minor muscle

Etiology (Causes)

- Pressure on the axillary nerve at the back of the shoulder, often by a fibrous band or compression between the teres minor and teres major muscles
- Paralabral cysts from inferior labral tears
- Posterior shoulder dislocation
- Repetitive overuse that stretches and damages the axillary nerve at this level

Risk Factors

- Contact sports
- Sports that require throwing (i.e., baseball pitchers)
- Poor physical conditioning (strength and flexibility)

Prevention

- Appropriately warm up and stretch before practice or competition
- Maintain appropriate conditioning:
  - Shoulder flexibility
  - Muscle strength and endurance

Outcomes

Quadrilateral space syndrome may improve with rest from aggravating activities if the axillary nerve is dynamically compressed by overuse and repetitive activities. If symptoms of pain, atrophy, or weakness are progressive or fail to improve, surgical release of the space and axillary nerve may be required.

Potential Complications

- Permanent weakness of the shoulder, particularly when rotating arm outward, lifting the arm, and throwing
- Persistent pain in the shoulder
- Increasing weakness of the extremity
- Inability to compete at previous level

Treatment Considerations

Initially, a patient will usually be treated conservatively with rest from aggravating activities. Diagnostic corticosteroid injections may help or at least help localize the symptoms to the quadrilateral space. If symptoms do not improve with conservative treatment, surgery to decompress the axillary nerve in the quadrilateral space may relieve the pressure and symptoms.

Possible Medications

- Nonsteroidal anti-inflammatory medications, such as aspirin and ibuprofen (**DO NOT** take within 10-14 days before surgery), or other minor pain relievers, such as acetaminophen, are often recommended. Take these as directed by your physician. Contact your physician immediately if any bleeding, stomach upset, or signs of an allergic reaction occur.
- Pain relievers may be prescribed as necessary by your physician, usually only after surgery. Use only as directed and only as much as you need.
- Injections of corticosteroids may be given to reduce inflammation.

Modalities (Heat and Cold)

- Cold is used to relieve pain and reduce inflammation. Cold should be applied for 15 to 20 minutes every two to three hours for inflammation and pain and immediately after any activity that aggravates your symptoms. Use ice packs or an ice massage with a cloth between the ice and your skin to prevent burning /freezing your skin.
- Heat may be used before performing stretching and strengthening activities prescribed by your physician, physical therapist, or athletic trainer. Use a heat pack or a warm soak.

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