



Diagnosis and Management of Problems in the Athlete's Shoulder

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In this issue of *Orthopedics*, Dr Gregory Nicholson, a team orthopedic physician for the Chicago White Sox and the Chicago Bulls, discusses the diagnosis and management of problems in the athlete's shoulder.

When a patient presents with recurrent instability after a failed shoulder instability procedure, what are the most important history, physical examination, and imaging factors to ascertain before considering additional surgery?

If a patient presents with recurrent instability after a surgical repair for instability performed either open or arthroscopically, important information needs to be obtained. The history of the original instability is important. Was it traumatic? In which direction did it occur? How many occurrences were there? The operative report is important to obtain to determine the technique used and the findings at surgery. The patient's postoperative history is important. Did the patient experience recurrent instability early after surgery, or was there another trauma involved? The patient's expectation after a revision surgery is helpful to know. Are they going to return to overhead throwing or contact sports?

Physical examination is performed to determine the neurologic status of the limb, passive motion (is there post-surgical motion loss), any stigmata of ligamentous laxity, and if the patient exhibits apprehension or instability.

Imaging studies should be performed (Figure). Radiographs in the true anteroposterior of the glenohumeral joint, axillary, and outlet views are standard. A West Point view or Stryker notch view can help determine if there is anteroinferior glenoid

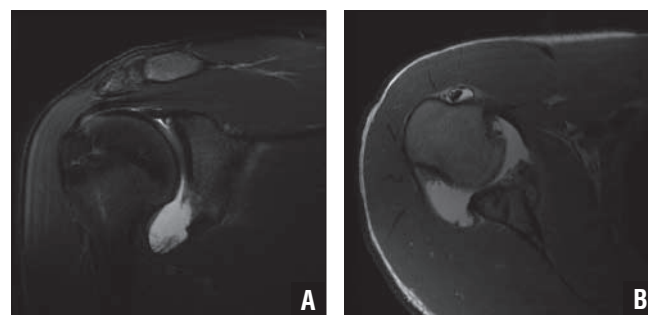


Figure: Gadolinium arthrogram/MRI of a right shoulder. Arthroscopic instability repair was performed 12 months prior. There was recurrent traumatic instability. Note the loss of subchondral bone off the glenoid on the coronal oblique view (A) and the loss of anteroinferior bone seen on the axillary view (B). This patient required a Latarjet procedure to address the anteroinferior glenoid bone loss and recurrent instability.

bone loss. However, an advanced imaging study will be needed. A gadolinium arthrogram/magnetic resonance imaging (MRI) is important. If the original surgery used metallic anchors, then an arthrogram/computed tomography scan. It may be better than MRI at determining glenoid rim bone erosion.

When is rotator interval repair necessary in the management of shoulder instability?

Rotator interval repair in the treatment of glenohumeral instability is an evolving issue. The anatomy of the interval appears different if viewed it from the joint side, as in arthroscopy, rather than from the external side, as in open repair. The variability of the capsular anatomy within the interval also is a factor. In the arthroscopic treatment of traumatic, recurrent anterior shoulder instability, I have never imbricated the rotator interval. The lesion of anterior instability is "below the equator" on the glenoid of the shoulder, while the interval is "above the equator." Overzealous

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repair or closure in the interval region can lead to external rotation loss. This can compromise the functional result of the surgical procedure. Interval closure should not be included in most instability repairs.

Interval closure may be more appropriate to consider in patients with true multidirectional instability. In these cases, the capsule is capacious and globally lax. Typically the posterior, inferior, anterior, and interval regions are involved. To symmetrically reduce pathologic capsular volume, the interval may need to be repaired or closed. This would involve closing the superior glenohumeral ligament to the middle glenohumeral ligament. The suture closure should be performed in the lateral aspect of the interval with the arm in at least neutral to 20° of external rotation to prevent iatrogenic motion restriction.

What is your treatment of choice for the chronic, symptomatic acromioclavicular joint separation?

For a chronic symptomatic acromioclavicular separation, my procedure of choice is an augmented coracoacromial ligament transfer. Also known as the Weaver-Dunn, the addition of subcoracoid augmentation sutures creates a versatile and strong construct. The distal clavicle will be resected. The coracoacromial ligament is transferred from the undersurface of the acromion into the medullary canal of the distal clavicle. Prior to the coracoacromial ligament transfer, two #5 braided nylon sutures are passed around the coracoid. A drill hole in the clavicle approximately 2 cm from the distal end is made through the superior and inferior cortices. The medial strands of the two #5 sutures are passed up through the clavicle. The clavicle is held reduced and the #5 sutures tied. The coracoacromial ligament has a #2 unbreakable polyethylene suture placed up each edge in a Krakow configuration. These two suture ends are passed up through drill holes in the superior cortex. This pulls the coracoacromial ligament into the intramedullary canal of the clavicle. The trapeziodeltoid fascia and acromioclavicular capsular remnant are closed. A sling is worn for 6 weeks, and then a global motion and strengthening program is begun.

How do you manage the athlete with a symptomatic rotator cuff tear and what are the expected outcomes (versus a traditionally older population)?

Athletes with symptomatic rotator cuff tears are a more difficult evaluation. Most are in good physical condition, and can be strong on examination even with a rotator cuff tear. The shoulder symptoms may present more subtly than in an older, degenerative, or traumatic population.

Arthroscopic repair of a deep partial- or full-thickness tear is an excellent technique to address this type of pathology. It also allows the surgeon to assess concomitant pathology such as labral tears, SLAP lesions, occult instability, and subacromial space issues.

Athletes have a higher demand to return to with their shoulders after rotator cuff repair. Postoperative therapy for the first 6 weeks is no different than for any rotator cuff repair. After adequate time for tendon healing, sport-specific exercises can begin at approximately 6-8 weeks postoperatively. The biggest issue is to have realistic time frames for rehabilitation and return to sport. This will be approximately 6-9 months for contact sport athletes. For upper extremity throwing athletes, it may take 9 months to begin throwing and 12-16 months to regain velocity and accuracy.

When do you graft for a deficient rotator cuff and what do you use for autograft or allograft?


Augmenting a deficient rotator cuff tendon is a difficult decision. It is not just the tendon that is affected, but also the muscle belly. Magnetic resonance imaging can assess the degree of fatty infiltration and atrophy of the rotator cuff muscle belly involved. If they are severely involved, repairing the tendon may not lead to significant functional gains, but still can provide pain relief.

Grafting of a cuff defect with inert material has not been successful. Biologic augmentation patches may offer biomechanical support and biologic tendon healing enhancement. These types of

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patches are best considered when there is a reparable tear with some vulnerable areas that would benefit from augmentation. They should not be used as a “gap” filler or a bridge from tendon to bone.

What is the best surgical repair for a recurrent shoulder dislocation in an athlete?

The best operative repair for recurrent shoulder instability in an athlete is the one that can address the pathology, not lose motion as a goal of the surgery, and have low complication and recurrence rates. Both open instability repairs and, more recently, arthroscopic repairs have satisfied these criteria. Data exists to suggest that in collision athletes open repair may have a lower recurrence rate, but other studies show that arthroscopic repair is equal. The subscapularis tendon is not taken down in arthroscopic repairs. The ability to assess and address concomitant pathology such as SLAP lesions, partial cuff tears, and articular cartilage injury is superior with arthroscopy in the athletic population. That being said, the surgeon should perform the operation that he or she feels most comfortable with and is best at, and that addresses the pathology of recurrent shoulder instability. 

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