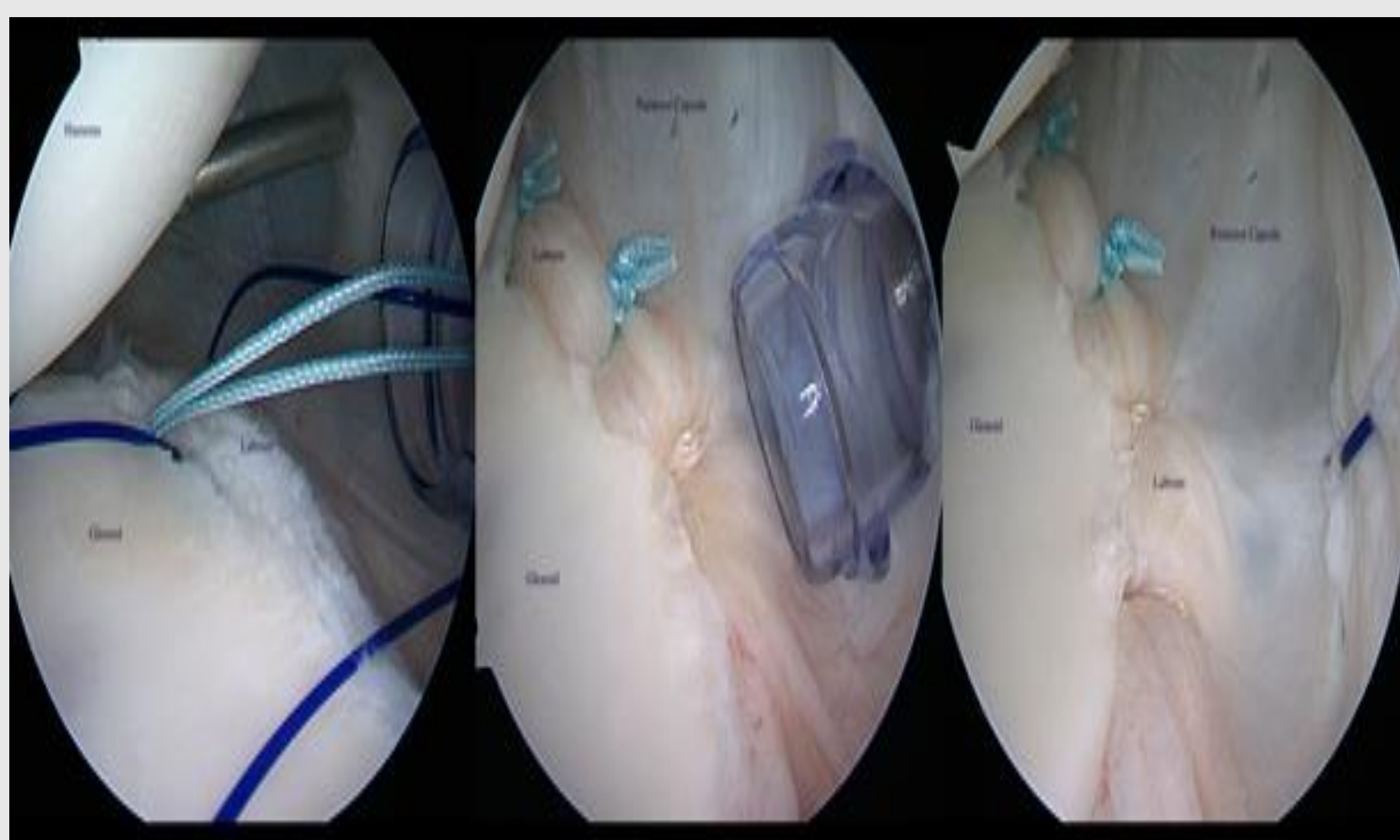


Abstract

This case report will explore multiple aspects of the shoulder's labrum, along with going into depth describing the anatomy of the shoulder as well as functionality of the labrum in the body. This paper will go into depth on the different surgical procedures that are being utilized to repair labral tears in the shoulder. This case report will go into depth on how rehabilitation should be handled and what different methods are to be considered when handling this injury. This paper utilized ten different research based articles from 2006 to present to compare and contrast the methods and progressions that may be utilized during the rehabilitation process. The structure and functions of the labrum should be analyzed along with understanding the procedures that are available to repair the injury in order to fully understand what is necessary to bring the athlete back to full strength.

Introduction

The shoulder's function is a perfect compromise between mobility and stability. Its large mobility is based on the structure of the glenohumeral joint and simultaneous motion of all segments of the shoulder girdle, including the labrum. The large range of mobility is based on fine-tuned muscle coordination around the joint. With that being said the joint's stability is mainly based on active muscle control with only a minor role for the glenohumeral capsule, ligaments, and labrum. The shoulder joint is composed of two bones articulating with one another, the humerus or upper arm has a proximal head which is convex. The other contributor of the shoulder joint is the glenoid fossa of the scapula, or shoulder blade, this structure has a concave shape that articulates with the head of the humerus. When these structures come together it is called a ball and socket joint. What causes the shoulder to be so mobile is the anatomy of the bones that make up the joint. This ball and socket joint is very shallow when compared to another joint that is similar, for example the hip has most of the same structures but the socket is much deeper so the joint is more stable and less mobile which is the opposite of the shoulder that is more mobile than stable. Since the joint is so mobile it is at risk of dislocation and subluxation, one of the features that help prevent this is the labrum. The labrum is there to deepen the joint and act as a bumper for the humeral head as it articulates with the glenoid. The labrum is also the attachment site for multiple ligaments in the shoulder that help with stability. If the labrum is torn, then there is a much higher possibility that the glenohumeral joint will dislocate. It is made up of fibro-cartilage which encircles the glenoid cavity. The labrum acts as if it is a washer that is enclosing the two sides of the joint together.



Types of Labral Tears

The two most common types of labral injuries are SLAP (Superior Labrum from Anterior to Posterior) tears and Bankart tears. SLAP tears occur at the front of the upper arm where the biceps tendon connects to the shoulder. Bankart tears, on the other hand, typically occur with shoulder dislocation in younger patients; the head of the humerus either shifts toward the front of the body, leading to anterior instability, or the back of the body, causing posterior instability. With Bankart tears in particular, patients may have the feeling that the shoulder may slip out of place or dislocate in certain positions during range of motion testing. Patients with SLAP tears may experience pain at the front of the shoulder near the biceps tendon based on where the tear is. Another common labral tear is the tearing of the labrum posteriorly. Tears of the posterior labrum usually occur from a dislocation, fall, or overhead sports. Tears cause laxity of the capsule at the top-back portion or the inferior glenohumeral ligament (IGHL) and at the bottom-back portion of the shoulder. Similar to a SLAP tear, a posterior labral tear can be ignored if asymptomatic.

Special Test

Some special tests that are used to help identify or rule out labral tears are, Active Compression test, Speeds test, Clunk test, and the push pull test to name a few. According to the Active Compression test, the shoulder is placed into ninety degrees of flexion and thirty degrees of horizontal adduction across the midline of the body. Resistance is applied, using an isometric hold, in this position with the shoulder both internally and externally rotated. The clunk test is performed with the patient lying supine. The examiner places one hand on the posterior aspect of the glenohumeral joint while the other grasps the bicondylar aspect of the humerus at the elbow. The examiner's proximal hand should provide an anterior translation of the humeral head while simultaneously rotating the humerus externally with the hand holding the elbow. The examiner is attempting to trap the torn labrum between the glenoid and the humeral head. A positive test is produced by the presence of a clunk or grinding sound and is indicative of a labral tear. Lastly the push pull test, the patient is supine and the arm held by the wrist with the shoulder at ninety degrees' abduction and in neutral. The examiner places the other hand on the proximal humerus and while pulling with the arm holding the patient's wrist, the examiner pushes with the arm on the proximal humerus, this often puts the joint in maximal translation of the humeral head posteriorly which reproduces the athlete's symptoms.

Differential Diagnosis

- Labral Tear
- Rotator Cuff Tear
- Internal Impingement

Procedure/Rehabilitation

Before the athlete went in for surgery, he was in the training room multiple times a day doing pre-rehabilitation where we try to maintain full range of motion as well as muscle tone, so when he came out of the surgery he is not completely atrophied in the involved limb and it also helps the rehabilitation process go smoothly. His surgery was an arthroscopic surgery in which they took the flattened torn labrum and put individual anchors into the glenoid fossa that were then looped with a poly carbonate wire through the anchor to pull the labrum back up so it could retain its original shape of the labrum. In his surgery, the surgeons used a total of six anchors to rebuild the labrum. Posterior shoulder instability is more prevalent than traditionally believed. Surgical repairs of posterior shoulder instability have overall good success rates. The two goals of posterior shoulder stabilization surgery are secure fixation of the labrum to the glenoid and re-tensioning the posterior capsulolabral complex. The first phase of any rehabilitation plan was to control and eliminate pain and swelling, before you can do anything with range of motion or strengthening. Swelling and pain is modulated by both medications as well as treatment methods, including hivamats, milk massage and ice to name a few. The next portion of the rehabilitation process is two phases, the early and late convalescent phase. Their range of movement and external loads can be increased cautiously and passively according to the medical treatment regimens. Early mobilization results in the improvement of the tissue structure and the avoidance of adhesions. A special attention was given in this section of the rehabilitation program for the strengthening of the core muscles as well as the progressive isotonic muscle building within the kinetic chain. At the same time, the joint stability and sensorimotor skills are being promoted and neuromuscular functions are being trained. In this phase of the transition from the static to the dynamic Scapula setting, Scapula mobilization and training of scapulohoracic rhythm should be taking place. In the late convalescent phase, transition to building a specific muscle strength and endurance in the shoulder is done, physiological movement patterns can be trained as well (D1,D2). The final phase of the rehabilitation process was the functional phase, this phase starts around three months' post operation. There were no limitations in ranges of motion and weight resistance steadily increases as long as the patient does not feel pain or swell up after the treatment session. There was also a transition from passive exercises to active exercises. There was an introduction of sport specific exercises.



Discussion and Summary

This case report went into explicit detail on how important the labrum is for the structural and functional anatomy of the shoulder, without the labrum your shoulder would be more susceptible to dislocating your shoulder in all directions. This paper also went into detail on the different types of tears there are for the labrum and which are the most common. The types of special tests that are used to identify or rule of the injury were also brought up but said could lead to false negatives as well as false positives, so the best way to guarantee the injury is through MRI. This report went into great depth on the rehabilitation process and the different stages that are associated with it, the general ranges of time were given but it is important to remember that they may be different for all athletes. The shoulder is the most mobile ball and socket joint in the body and in return is very unstable, the labrum is there to try to deepen the joint to gain some dynamic stability. The labrum is made up of fibrocartilage and is a bumper to the humeral head. Posterior labral tears are one of the most common tears in contact athletes and is even more common in football linemen because they are in an arm extended position being pushed back with force, this causes posterior instability and ultimately posterior labral tears.

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