

Abstract

The following is a case study on a 20-year-old division one football player with re-occurring episodes of instability. The first incidence of instability was reported in Fall of 2016. Said player completed one year of football at the United States Military Academy Preparatory School. Initial pre-participation examination noted Joint instability and laxity but allowed the player to play unless said player was apprehensive. Injury at United States Military Academy at West Point was noted first day of practice 8/8/19. Thereafter, the player was put in limited practice with a shoulder brace. On 8/17/19 the player stated he dislocated his shoulder several times each day over the course of 5 days of practice. An MRI arthrogram was conducted 8/19/2019. Surgery was performed on 8/27/19. What makes this case unique is the delayed surgery from initial injury date along with a year of no surgical intervention playing football within the year prior at the United States Military Preparatory School. The incidence of several subluxations at the start of the first practices is also peculiar. Incidence of re-instability after long periods of delayed surgery is not specifically mentioned in the literature. The longer one waits after an initial instability episode with re-occurring instability episodes, the greater the chance of instability post surgery longer term. Should imaging and surgical intervention be the standard of care after an initial instability episode and what are the rates of instability re-occurrence in longer delayed surgical intervention with frequent instability episodes?

Introduction

Glenoid lesions are first classified by the 6 sections of the glenoid they are found in and then the symptom upon which they come with i.e. pain or instability (Clavert, 2015). The labrum has three sides with the lateral side adhering to the joint capsule providing vascularization (Clavert, 2015). The labrum is composed of fibrocartilage and it increases the contact area between the humeral head and the scapula by 2 mm anteroposteriorly and 4.5 mm supero-inferiorly noting some contribution to stability within the shoulder (Clavert, 2015). With that being said it provides insertions for capsular structures and ligaments beneficial to stability within the shoulder. Out of the six sections of the glenoid, tears in the inferior posterior aspect are noted with instability (Clavert, 2015). A tear is simply the rip or detachment of this fibrocartilage. Common mechanisms of injury are dislocations, subluxations and impingements (Clavert, 2015). Its importance and incidence of instability will be discussed in more detail later.

Purpose

The purpose of this case report was to introduce a case where a player was asymptomatic for an extended period of time. The initial onset was also traumatic. There was a symptom free period and a later traumatic injury that reintroduced symptoms and subluxations. Conservative therapy failed and surgery was warranted. A very well documented question in the literature is whether a labral tear is the cause of instability or instability is the cause of labral tears. This case study aims to explore the durability of this repair in a football position with non-compromising positions of the shoulder and whether or not a long period of non-surgical intervention will intervene in the players durability in the sport. Likely compromising events would be an unfortunate tackle putting the shoulder in a vulnerable position. No literature explores how stable post-surgical shoulders are to various of these impacts. Furthermore, a Return to play for football players is not generalized and it was advised that a football players return to play is dependent on his position. Typically it will involve catching, blocking, cutting, pass routes, and receiving tackles. This part is highly clinician dependent. This case is unique in the sense that 2 years of pain free results and symptoms with a later warranted surgery.

Case Report

Patient: 20-year-old slotback/T-back subluxated shoulder posteriorly and tore the labrum anteriorly senior year of high-school two years ago; roughly 2 years ago. Athlete recalls multiple subluxations before subluxation at practice. With more posterior dislocations reported than anterior subluxations.

Mechanism of Injury:

Falling on elbow initially in 2016 and falling once more again on elbow during practice in pre-season.

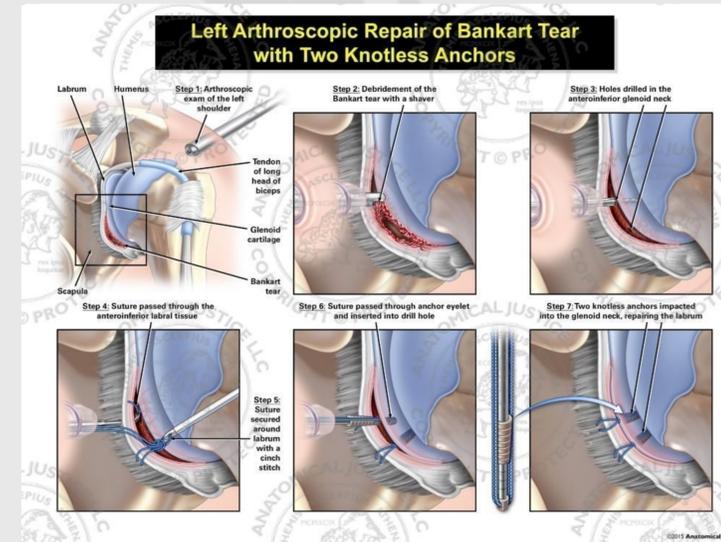
Clinical Examination:

Said player completed one year of football at the United States Military Academy Preparatory School. Initial pre-participation examination noted Joint instability and laxity but allowed the player to play unless said player was apprehensive. Injury at United States Military Academy at West Point was noted first day of practice 8/8/19. Thereafter, the player was put in limited practice with a shoulder brace. On 8/17/19 the player stated he dislocated his shoulder several times each day over the course of 5 days of practice.

Radiographic Findings: Both MR imaging and MR arthrography as imaging tools are used to diagnose labral tears. MR arthrography in the body of literature is only marginally superior to MR imaging for detection of glenohumeral labral lesions (Coninck et al., 2016). MR arthrography can be performed directly with intra-articular contrast material injection or indirectly via intravenous means; direct MR arthrography allows for joint distension allowing the capsule to be distinguished from labral tissue and passage of contrast material into the unstable tears (Coninck et al., 2016). Direct MR arthrography is superior to MR imaging. MR intravenous imaging was used in this particular case (Coninck et al., 2016).

Clinical Examination:

Athlete started conservative rehabilitation until assigned surgery date. After initial subluxation athlete was given ice and monitored daily. Ice was given after each rehabilitation session. Rehabilitation sessions included scapular strengthening, assisted active Range of motion, Prone shoulder strengthening involving abduction, retraction protraction exercises. Each session was emphasized to include P! free range of motion. Initial diagnostic tests: (+) Crank test, (+), Anterior Release/Surprise Test, (+) Clunk test. P! in all ROM of shoulder.



Rehabilitation and Results

Phase One: Weeks 0 to 6

The focus of this goal is protecting surgical repair and avoiding a "stiff" shoulder. The sling is worn for six weeks even while sleeping and only taken off during ROM exercises. The importance of this phase is to maintain structural integrity of the suture sites while providing appropriate stresses. Passive or active assisted range of motion exercises are appropriate. Strengthening is not yet recommended as healing takes priority. The only strengthening is submaximal isometric contractions as other forms of strengthening may stress the anterior capsule inappropriately and jeopardize the sutures. Active assisted ROM restrictions are limited to 90 degrees of flexion and external rotation to 30 degrees for the first 3 weeks. Weeks 4-6 are Limited flexion to 135 degrees and external rotation to 50 degrees. The patient will eventually reach these set limitations relative to ROM. Wound care involves suture removal 10-14 days after surgery and not submerging the shoulder in water for four weeks. Scar massage after incision site starts scabbing can be performed; according to the healing process 21 days is when fibroblasts begin synthesizing collagenous scar tissue at the suture line and remodeling. Minimal stresses in this stage are appropriate along with soft tissue massage. Flexion, abduction, and external rotation are limited as the anterior capsule and the inferior glenohumeral ligament are most at stress with these ranges of motions. Sample Treatment: Codman's, active assisted wand ROM (in flexion only) seated Scapular retraction/protraction 3 second holds Assisted Pulley flexion Wrist 4-way Theraband grip strengthening Two finger isometrics Recumbent bike with sling on, dowel elbow extension and flexion.

Phase Two: 7-12 Weeks

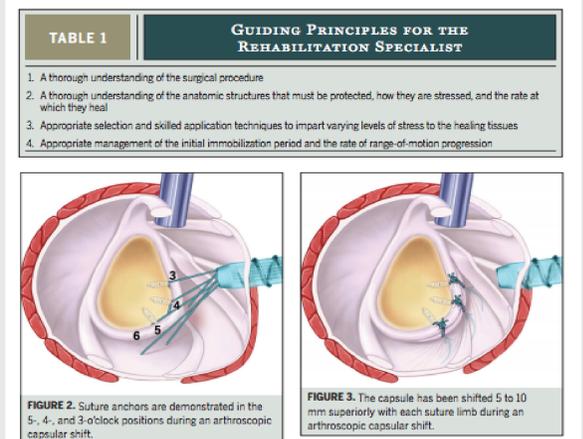
At the end of the six weeks the patient removed his sling and continued phase I exercises as needed with progression in either ROM or weight introduced. Here more progressive strengthening will be incorporated and more range of motion will be allowed during active assisted or passive range of motion exercises. Here the anterior capsule can be stressed further due to the stages of healing and remodeling will be aligned according to the stimulus of stresses; meaning that from 90 degrees to full elevation of the shoulder in all planes of motion is when the inferior capsule and inferior glenohumeral ligament is stressed most. (Blackburn and Guido et al. 2000). It is around this time that remodeling and maturation of scar tissue forms (Gaunt et al., 2010). Rotator cuff and scapular neuromuscular control exercises within ROM will be introduced. According to the American Society of Shoulder and Elbow therapist consensus rehabilitation Guideline for Arthroscopic Anterior Capsulolabral Repair of the shoulder, ROM milestones are as follows for week 9: Passive forward flexion at 155 degrees, passive external rotation at 50-65 degrees and passive external rotation within 75 degrees at 90 degrees of abduction. At the end of these 12 weeks ROM should be WNL except 90 degrees of abduction with 90 degrees of external rotation as this puts the most stress on the anterior capsule. This ROM is extremely limited until after 4-6 months' post surgery. AROM limitations within this phase are up to 90-120 degrees relative to strengthening exercises. Its important to note that throughout the whole rehabilitative process there are no precise guidelines for abduction and external rotation; this is clinician dependent and patient dependent based on pain and the healing process. In general pain free range of motion should be instructed throughout the whole rehabilitative process.

Sample exercises in this Phase:

Aquatic therapy up to 90 degrees with water weights (FF, ABD, IR/ER)
 UBE 5 min fwd/5min bckwd
 Theraband shrugs, Theraband bicep curls
 Theraband (Scaption, FF)
 Dumbbell Prone punches
 Tubing retraction Rows
 AROM (Flexion, abduction, IR, ER)
 body blade,
 rhythmic stabilization
 single ball rebound toss.

Phase Three: 4-6 months

Phase three should involve normalizing neuromuscular function with strengthen, endurance, power, and dynamic stability exercises. Any range of motion deficits should be addressed through low load stretching. Here preparation for return to sport should be prioritized. Push-ups should be progressed at patient dependent pace without pain and 90% of ER/IR strength should be established. Plyometric with higher load may also be introduced. Functional tests to progress to return to play that will be used are: Unilateral shot put test, upper quarter Y-balance test, Pushup position no greater than 12in apart, and greater than 90% of limb symmetry calculated by composite reach score.



Discussion and Summary

Conclusions:

The rehabilitative procedures for a Bankart repair are wide and varied. There is no universally accepted protocol; furthermore, return to play is always patient dependent. In this case, the athlete is involved in a collision sport with minimal overhead requirement. Return to play is not necessarily established for a football player or for the general athlete. Clinical judgment and experience are used to make a return to play for the football player. General guidelines from ASSET were used in this patient's clinical rehabilitative process. Further considerations are likely incidence of recurrence of instability with a very delayed long surgical intervention.

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