Anterior Shoulder Instability in a College Soccer Athlete

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Abstract/Case Study

Background: Instability is predominantly and most commonly affects young athletes with high functional demands. This athlete is a 20-year-old female Division I college soccer athlete who optimizes her training and performance by engaging in multiple sports such as tennis, swimming, and gymnastics. After a collision with another player, she sustained an injury to her left shoulder. Upon arrival at the hospital, she was diagnosed with anterior instability. A physical examination was performed, and the athlete was found to have a positive apprehension test. This patient was referred to a sports medicine specialist for further evaluation and management.

Introduction

The incidence of anterior shoulder instability in the United States (US) population is 0.08 per 1000 person-years. Anterior shoulder instability has been reported to occur at one of the highest rates (0.12 per 1000 exposures) in collegiate athletes (Bliven and Parr, 2018). Furthermore, collision athletes, such as football and rugby players, have incidence rates as high as 0.51 per 1000 athlete exposures (Galvin, 2017). Instability is most commonly and most commonly affects young athletes with high functional demands. Traumatic anterior instability comprises both subluxation events and dislocations and/or compromise of the anterior inferior capsule, IGHL complex, and labrum often contributes to recurrent anterior instability, and certain variants may include anterior labral ligamentous peritendinous sleeve avulsion (ALPSA), humeral avulsion of the glenohumeral ligament (HAGL), glenohumeral arthritic disruption (GLAD), bony Bankart tear, and Hill–Sachs lesions.

Clinical Examination:
Physical examination should consist of inspection, palpation, and range of motion assessment, with comparison to the contralateral shoulder. Increased external rotation may imply superior hydropathy and asymptomatic hyperabduction greater than 30° difference from the contralateral shoulder (Gaggy’s test) with scapular stabilization manual examination. Anterior instability may be present, if the apprehension test is also relevant to the exclusion of associated injuries, particularly the axillary nerve due to its tethered position near the zone of retraction, the Latarjet procedure is contraindicated. First-time players, have incidence rates as high as 0.51 per 1000 athlete exposures (Galvin, 2017). Instability is most commonly and most commonly affects young athletes with high functional demands. Traumatic anterior instability comprises both subluxation events and dislocations and/or compromise of the anterior inferior capsule, IGHL complex, and labrum often contributes to recurrent anterior instability, and certain variants may include anterior labral ligamentous peritendinous sleeve avulsion (ALPSA), humeral avulsion of the glenohumeral ligament (HAGL), glenohumeral arthritic disruption (GLAD), bony Bankart tear, and Hill–Sachs lesions.

Surgical Procedure:
First defined in 1954 by Dr. Michel Latarjet, Latarjet procedure addresses both soft tissue and bony lesions that affect the anterior glenohumeral joint by separating the subscapularis to create a window to the anterior glenohumeral joint and transverse the horizontal aspect of the coracoid process to the anteroinferior glenoid rim (Bliven, 2018). Although, there has been changes over the years, it remains an accepted treatment for recurrent instability and a considerable amount of glenoid bone loss (Bhalla, 2017). In 1956, Heffet published his results using a similar procedure that he attributed to his mentor, Rowley Bristow; this technique became known as the Bristow operation in the English language (Bhatia, 2017). In fact, the original Bristow procedure was more unique as it required the coracoid process to be sutured to the anterior part of the scapular neck through a transversely split subscapularis muscle without any muscle attachments. However, in recent years the modifications have turned the procedure into a procedure like the Latarjet.

Anatomy
The shoulder complex has the greatest mobility of all joints. On one hand, this mobility is because of little bony congruity of its articulating surfaces. The joints of the shoulder complex must rely on adjacent ligaments and muscles to achieve its mobility. Consequently, they are susceptible to injury and degeneration. On the other hand, the shoulder complex is composed of the scapulothoracic articulation and the glenohumeral joint, which are a single joint known as the scapula or scapulothoracic joint. This arrangement allows the involved muscles to work in the most efficient part of their length-tension and the glenoid to be placed beneath the humeral head to bear some weight of the arm.

Anterior Glenohumeral Instability

Patient: This Division I soccer player is a 20-year-old athlete who opted for a surgery to correct her instability after an unsuccessful conservative treatment and Bankart repair. The following information explains a few mechanisms of injuries, diagnosis, treatments and return to play guidelines for the Latarjet Procedure.

Mechanism of Injury: Shoulder instability is described by the disturbance of stresses that are placed on her body every time she dives and lands, she was constantly subluxing her shoulder and damaging the surrounding structures. Unfortunately, these recurrent injuries and treatments opened before entering the collegiate setting. Therefore, there is a lack of information pertaining to the method of surgeries used, other than a Bankart repair surgery was performed.

Treatmet: Athlete was originally given conservative treatment for her instability but after a few unsuccessful tries, she instead opted for an arthroscopic repair and has had total of 3 Bankart repair procedures performed on her shoulders (1 on left and 2 on right). After the shoulder surgery failed the second time on her left shoulder, the surgeon recommended her get a Latarjet Procedure as the last option for treating her recurring instability. The athlete has successfully gone through rehabilitation for the surgery and she hasn’t experienced any episodes of instability at the time of this information being entered. Athlete will continue to come into the AT room for shoulder maintenance and shoulder strengthening program.

Discussion and Summary

The incidence of anterior shoulder instability in the United States (US) population is 0.08 per 1000 person-years. Anterior shoulder instability has been reported to occur at one of the highest rates (0.12 per 1000 exposures) in collegiate athletes (Bliven and Parr, 2018). Furthermore, collision athletes, such as football and rugby players, have incidence rates as high as 0.51 per 1000 athlete exposures (Galvin, 2017). Instability is most commonly and most commonly affects young athletes with high functional demands. Traumatic anterior instability comprises both subluxation events and dislocations and/or compromise of the anterior inferior capsule, IGHL complex, and labrum often contributes to recurrent anterior instability, and certain variants may include anterior labral ligamentous peritendinous sleeve avulsion (ALPSA), humeral avulsion of the glenohumeral ligament (HAGL), glenohumeral arthritic disruption (GLAD), bony Bankart tear, and Hill–Sachs lesions.

Rehabilitation and Results

In Phase 1, the goals is to protect the bony glenoid augmentation and subscapularis repair, as it takes 6 to 8 weeks to complete bony union. In the first 3 weeks postoperative stage, the patient is performing only passive ROM of shoulder in scapular plane. Active or assisted active ROM of the elbow, wrist and hand is allowed and must always remain in sling except for hygiene and exercises. To continue into next phase the patient must have adequate passive ROM and biomechanics. Phase 2 begins at after week 4 and the goals for this phase is to gradually restore active ROM and to discourage use of the sling. Patient is allowed to continue with passive ROM in shoulder flexion, elevation, and abduction in the scapular plane. Full elevation to the scapular plane can be achieved after week 6 and the goals for this phase is to gradually allow patient to reach full scapular plane elevation. A balanced active ROM and strengthening program is started with low elevation of the arm and high repetitions with low resistance. Thereiband’s could also be used to strengthen rotator cuff muscles.

Phase 3 is the strengthening phase of rehabilitation and begins at approximately postoperatively week 10. Progressive strengthening of the subscapularis, biceps brachii, and pectoralis major and minor muscles can begin as long as the humerus avoids overhead capsing. The patient must achieve full passive and active forward flexion and external rotation with good mechanics and appropriate rotator cuff and scapular mechanics for chest muscle activities prior to progressing to the final phase of rehabilitation.

As the patient enters phase 4 the final phase of rehabilitation begins. At this point, the patient is evaluating for return to play readiness, particularly the axillary nerve due to its tethered position near the zone of retraction, the Latarjet procedure is contraindicated. First-time players, have incidence rates as high as 0.51 per 1000 athlete exposures (Galvin, 2017). Instability is most commonly and most commonly affects young athletes with high functional demands. Traumatic anterior instability comprises both subluxation events and dislocations and/or compromise of the anterior inferior capsule, IGHL complex, and labrum often contributes to recurrent anterior instability, and certain variants may include anterior labral ligamentous peritendinous sleeve avulsion (ALPSA), humeral avulsion of the glenohumeral ligament (HAGL), glenohumeral arthritic disruption (GLAD), bony Bankart tear, and Hill–Sachs lesions.

References

1. The dynamic ‘sling’ effect of the conjoint tendon acting on the subscapularis and capsule in certain arm position (probably the most critical effect)
2. The ‘bony effect’ of increasing the glenoid surface area.
3. The ‘Bankart effect’ of repairing the capsulolabral complex to the bone or the stump of the coraco-acromial ligament (CAL) to the capsule.

When the rotator cuff is not repairable (severe fatty infiltration retraction), the Latarjet procedure is contraindicated. First-time traumatic dislocation in the older population with or without large glenoid rim fracture because of the quality of bone and accelerated degenerative changes. Patients who can voluntarily dislocate their shoulder anteriorly are an absolute contraindication to the Latarjet procedure because laxity is difficult to correct by surgery.


