

## Abstract/Case Study

**Background:** Instability is predominant and most commonly affects young athletes with high functional demands. This athlete is a 20-year-old female soccer collegiate athlete. She has a history of shoulder instability on both of her shoulders prior to arriving at the collegiate level and has had multiple surgeries to each of her shoulders to treat the issues and has failed multiple times. The athlete was a goalie in previous years has reported problems with diving for a save and landing on her shoulders repeatedly. Due to the impact stresses that are placed on her body every time she dives and lands, she was constantly subluxing her shoulders and damaging the surrounding structures. Unfortunately, these reoccurring injuries and treatments happened before entering the collegiate setting. Therefore, have a lack of information pertaining to the method of surgeries used, other than a Bankart repair surgery was performed **Treatment:** Athlete was originally given conservative treatment for her instability but after a few unsuccessful tries, they instead had 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 procedure known as the Latarjet Procedure as the last option for treating her reoccurring instability. The athlete has successfully gone through rehab for the surgery and she hasn't experienced any episodes of instability at the time of this information being gathered. Athlete will continue to come into the AT room for shoulder maintenance and shoulder strengthening program. **Uniqueness:** This type of surgery is very little known to the public, especially in the athletic world. While there are studies performed on its usefulness, this surgery hasn't been used as an option for many people who still suffer with instability after a failed arthroscopic surgery. not many would know how to approach in a rehabilitation standpoint. The mechanism of injury is common among athletes, but this choice of surgery is not common, therefore gives an opportunity to share information about this surgery and how well the outcomes have been.

## 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 predominant and most commonly affects young athletes with high functional demands. Traumatic anterior instability comprises both subluxation events and dislocations and accounts for 80% of instability experienced by young athletes (Owens, 2014). The goal for this study is to provide details regarding the usage of the Latarjet Procedure and why this procedure can be a viable option.

## Purpose

The purpose of this case report was to introduce a 20-year-old Division I college athlete who they performed the Latarjet Procedure on and has a satisfactory return to play and hasn't had an episode of instability. Even though the athlete experienced numerous subluxations and failed surgeries she strived towards one more operation that is relatively unknown among many people. An overview of this unique procedure is presented to obtain additional information and a better understanding regarding the entire surgery process and the requirements needed to receive this procedure.

## 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 provide stability. 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 to share the overall motion and increase its range. This arrangement allows the involved muscles to work in the most efficient part of their length-tension and the glenoid to be placed underneath the humeral head to bear some weight of the arm.

## Anterior Glenohumeral Instability

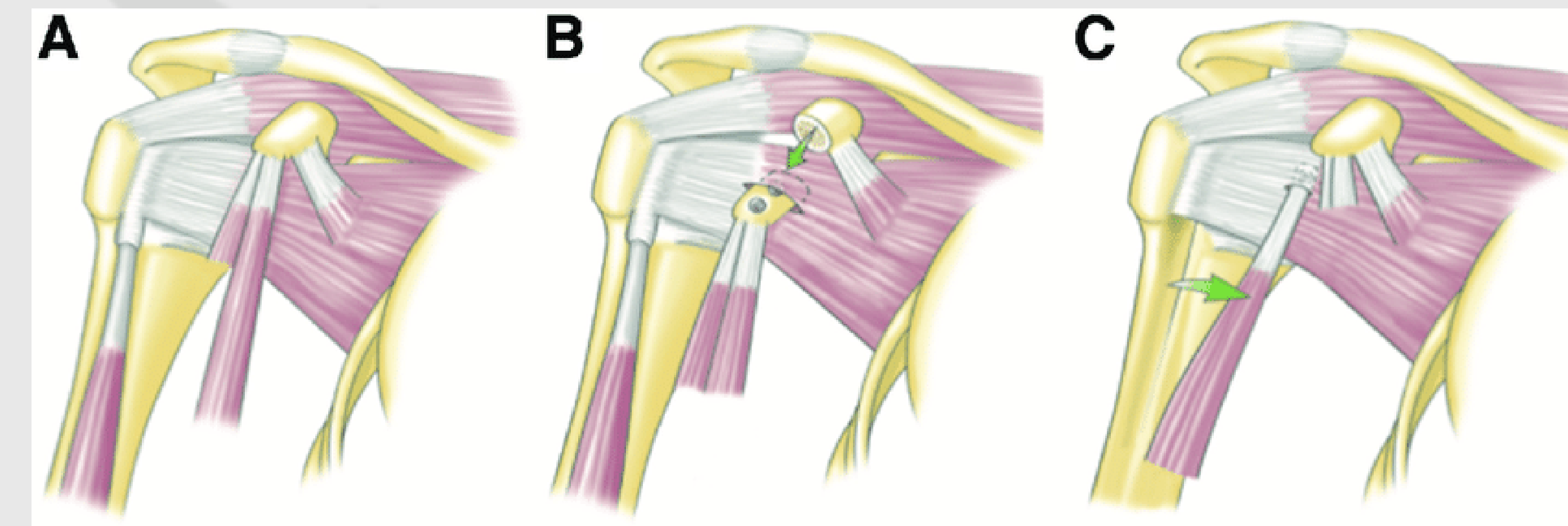
**Patient:** This Division I soccer player is a 20-year-old athlete that opted for a surgery to correct her instability after an unsuccessful conservative treatment and Bankart repair. The following information explains a few mechanism of injuries, diagnosis, treatments and return to play guidelines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

**Mechanism of Injury:** Shoulder instability is described by the disturbance of the native dynamic and static stabilizers of the glenohumeral joint, leading to dislocation, subluxation, or apprehension with associated pain. The articular conformity, negative intra-articular pressure, glenoid labrum, and glenohumeral ligament complex, specifically the anterior and posterior bands of the inferior glenohumeral ligament (IGHL), are critical to maintenance of shoulder stability. Additionally, the rotator cuff and scapular stabilizers are important dynamic sources of restraint. It is well known that osseous defects of the glenoid and humeral head defects contribute significantly to the risk of subsequent instability, and the glenoid track concept has assisted in the identification of engaging, high-risk lesions. Recently, studies have also shown that scapular morphology measurements, such as increased glenoid version and inferior inclination, are associated with anterior shoulder instability.

Commonly known as a Bankart lesion, anterior-inferior labral disruption is the most common pathoanatomic feature of an anterior shoulder instability event that is seen in up to 96% of patients that presents with both subluxation and dislocation events. A combination of plastic deformation 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 periosteal sleeve avulsion (ALPSA), humeral avulsion of the glenohumeral ligament (HAGL), glenolabral articular 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 anterior hyperlaxity, and asymmetric hyperabduction greater than 15° difference from the contralateral shoulder (Gagey's test) with scapular stabilization may indicate incompetency of the IGHL complex. Neurovascular examination is also relevant to exclude the presence of associated injuries, particularly the axillary nerve due to its tethered position near the zone of injury. Resting and dynamic scapular position throughout an overhead arc of motion should also be carefully scrutinized, as scapular dyskinesis may unmask underlying shoulder laxity or exacerbate prior history of shoulder instability. Despite the value of these findings, special testing is often considered the most critical portion of the examination. Apprehension and Jobe relocation tests are considered the most diagnostic for identifying anterior shoulder instability, with a positive predictive value of 96%. Additional special tests include the sulcus sign for inferior instability, anterior and posterior load, and shift. The Jerk test, Kim test, and push-pull exam maneuvers will help exclude posterior instability and multidirectional instability, while pathology of the biceps-superior labral complex may also be assessed with O'Brien's test, Crank test, dynamic labral shear test, and Yergason's test.

**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 transferring 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 effective method for solving a recurrent instability in patients with recurrent anterior instability and a considerable amount of glenoid bone loss (Bhatia, 2017). In 1958, Helfet 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, over the years the modifications have turned the procedure into a procedure like the Latarjet.



## 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 exercise.

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 usage of the sling. Patient is allowed to continue with passive ROM in shoulder flexion, elevation, and abduction in the scapular plane. Full elevation in the scapular plane should be achieved before starting any elevation in other planes. A balanced active ROM and strengthening program is started with low elevation of the arm and high repetitions with low resistance, TheraBand's could also be used to strengthen rotator cuff muscles.

Phase 3 is the strengthening phase of rehabilitation and begins at approximately postoperative week 10. Progressive strengthening of the subscapularis, biceps brachii, and pectoralis major and minor muscles can begin as long as the therapist avoids overstressing the capsules. 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 activities prior to progressing to the final phase of rehabilitation.

As the patient enters phase 4 the final phase of rehabilitation, which begins approximately 16 weeks postoperative, patients may start focusing on overhead activities and progression toward return to preinjury level of function. The patient can initiate overhead strengthening exercises if ROM and strength with the arm at < 90° of abduction and flexion are appropriate.

## 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 predominant and most commonly affects young athletes with high functional demands. Traumatic anterior instability comprises both subluxation events and dislocations and accounts for 80% of instability experienced by young athletes (Owens, 2014). The goal for this study is to provide details regarding the usage of the Latarjet Procedure and why this procedure can be a viable option.

The indication for surgery is based on the instability or the pain secondary to the rotator cuff tear. The type of the surgical technique depends on how repairable the rotator cuff is, which requires assessment with systematic preoperative imaging (the size and retraction of the tear, fatty infiltration of the rotator cuff muscle) (Domos, 2018). This technique with an alteration of the anteroinferior part of the glenoid has clear advantages especially in cases with significant bone loss, although the mechanism is still not fully understood. According to Domos (2018), The possible mechanism has been described previously as a triple effect.

- 1.The dynamic 'sling' effect of the conjoint tendon acting on the subscapularis and capsule in certain arm position (probably the most important 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.

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