

Surgical Treatment of Anterior Shoulder Instabilities Using the Latarjet Technique (about 40 Cases)

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Abstract

Purpose: Surgical treatment of chronic anterior shoulder instability is a difficult therapeutic challenge for contact athletes. The aim of our study is to evaluate the clinical and radiological results of 40 cases of chronic anterior shoulder instability treated in our institution by Latarjet technique. **Methods:** We report our experience with the intervention of Latarjet modified by the analysis of a retrospective study of 40 cases. They were all young athletic men, with an average age of 29 years with a predominance of the dominant shoulder. **Results:** Eighty percent had bone lesions, the first dislocation being traumatic (plating). One patient had a recurrence of his instability due to a new trauma and 67% resumed sport within an average period of eight months, some of whom still had functional discomfort in sports practice (9 patients). After an average follow-up of 75 months, 93% of patients were satisfied with their intervention. Only two mechanical complications were observed. **Conclusion:** Chronic anterior shoulder instability is pathology of young and active subjects. The prereducoid coracoid block according to Latarjet represents the therapeutic method of choice in the treatment of chronic anterior instabilities of the shoulder, especially in young and athletic subjects. The result of this intervention remains good despite the complications that can occur such as pseudarthrosis, osteoarthritis, lysis or mobility of the screw.

Keywords

Shoulder, Instability, Latarjet, Results

1. Introduction

The anatomical organization of the glenohumeral joint gives it great mobility, while exposing it to problems of dislocation and instabilities. Among these instabilities, the anterior location is the most common form with a frequency of over 90%. When this dislocation heals poorly, it can lead to chronic instability.

The clinical examination is the fundamental time of the assessment of instability. It is he who in the vast majority of cases will make the diagnosis that additional examinations will only confirm. It will make it possible to raise the main trap which is shoulder instability associated with constitutional and multidirectional hyperlaxity [1].

Many surgical techniques have been proposed with a common goal: stabilization of the shoulder and rapid recovery of limb function and strength.

Among these techniques, the intervention of Latarjet remains the technique of choice. This technique is summarized in the realization of a bone stop constituted by the pedicled coracoid apophysis, to reinforce the antero-inferior part of the glenoid cavity of the scapula while constituting a hammock effect on the muscle under the scapularis.

Although generally yielding excellent results, the procedure carries a 15 to 30% complication rate. Although recurrent instability is a major concern, various complications such as infection, nerve injuries, and hardware impingement can also necessitate revision after a Latarjet procedure [2].

Latarjet surgery is difficult to operate and requires high technical requirements for the surgeons. It is necessary to continuously improve the surgical technology to reduce the complications related to Latarjet surgery and its revision surgery [3].

By comparing the open technique and that under arthroscopic control, studies have shown that arthroscopic Latarjet results in excellent graft position. Recurrent instability for arthroscopic Latarjet ranges from 0.3% to 4.8% and is comparable with open Latarjet procedures. In summary, the arthroscopic Latarjet procedure results in less pain early, excellent coracoid graft position, and has a similar complication rate to open Latarjet [4].

Indeed, the aim of our study is to evaluate the clinical and radiological results of 40 cases of chronic anterior shoulder instability treated in our institution by this technique.

2. Materials and Methods

It's about a studyretrospective carried out over a period of six years, from January 2015 to December 2020. This work included 40 patients hospitalized in our department for chronic anterior shoulder instability, and treated surgically using the Latarjet technique modified by Patte.

For each patient included in the study, an information sheet was completed in order to create a database.

All our patients were male, the average age at the indication for surgery was 27 years (17 to 55 years), and the dominant side was reached in 27 cases (67%).

No case of bilaterality was noted in our series. Twenty-two of our patients were athletes, 13 of whom were recreational (33%) and 9 competitive (23%), of whom 2 practiced a level III risky sport and seven a level IV risky sport (**Table 1**). The initial accident of this instability was of traumatic origin in 97% of the cases. The initial dislocation was reduced under sedation followed by immobilization in all our patients.

- **Inclusion criteria:**

Patients with recurrent shoulder dislocation, *i.e.* presenting more than two episodes of antero-internal dislocation of the shoulder, have been treated with a Latarjet type preglenoid abutment.

- **Exclusion criteria:**

Patients who have had surgical treatment for recurrent shoulder dislocations other than the Latarjet type preglenoid stop.

The recurrence of the dislocation took place between five and 72 months. Regarding true dislocations, the average number of recurrences was 7 episodes, with a maximum of 18 and a minimum of 3. Preoperatively, all our patients showed apprehension in daily life and also discomfort in their activities, professionals. During the preoperative examination, no decrease in muscle strength was noted. The mobilities were symmetrical to the opposite side. The apprehension test and the anterior drawer were found positive in all patients.

Conventional radiographs included in all cases the combination of AP images (neutral rotation, internal rotation and external rotation) and a Bernageau profile. The most frequent lesions were above all the humeral notch in 18 cases (45%) and the crumbling of the antero-inferior edge of the glenoid in eight patients (20%).

CT arthrography was performed in only three of our patients (**Figure 1**).

All patients were operated on using the Latarjet technique modified by Patte, under general anesthesia and in position half seated to facilitate approach. The subscapularis has always been open at the upper 2/3 lower 1/3 junction. The lesion assessment made it possible to visualize the bone and capsular lesions and to treat them. The stop has been fixed in position lying, by a single screw in compression, 45 mm in diameter (**Figure 2**).

Table 1. Duplay classification of sports at risk of instability.

0: no sports

1: no risk: athletics aviro fencing, breaststroke, scuba diving voluntary gymnastics, cross-country skiing, sailing.

2: with contacts: martial arts, motorcycle cycling, cyclo or moto-cross, football, rugby, water sports, downhill skiing, parachuting and horse riding.

3: with arms: rock climbing, weightlifting shot puts, crawl, butterfly, perc figure skating, single canoe, hockey, tennis, pitchers.

4: arms countered or high risks: basketball, handball, volleyball, hang gliding, can kayak, goalkeeper, water polo hooker, ju karate, wrestling, free flight, windsurfing diving, ice hockey, acrobatics, gymnastics (floor, apparatus)

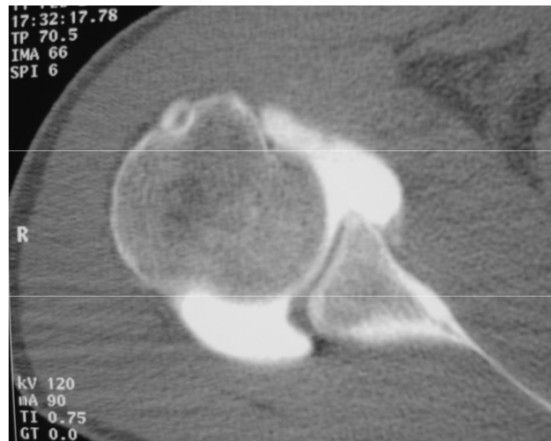


Figure 1. CT arthrography image showing avulsion of the anterior glenoid labrum.



Figure 2. Standard X-ray of a left shoulder postoperatively showing the abutment.

Relative immobilization with a sling for an average of 21 days allowed early rehabilitation, starting on average on the 5th day while avoiding external rotation. The resumption of violent sports was authorized at the end of the third month after a clinical and radiographic evaluation confirming bone consolidation.

3. Results

No postoperative complication, particularly infectious, or migration of synthetic material was observed in the study. All patients were reviewed clinically with an average follow-up of 27 months. The results were expressed according to the patient's degree of satisfaction with the intervention and also according to the Walch and Duplay score [5]. A review X-ray including face and profile views according to Bernageau was realized.

Activities of daily living were marked by the absence of discomfort in 19 patients (47.5%), and slight discomfort in forced movements in 16 patients (40%). Only 4 of our patients showed severe discomfort (10%) (**Figure 3**). Regarding stability, the test of apprehension disappeared in 16 patients (40%) (**Figure 4**). Half of the patients no longer had pain or presented meteorological pain. Pa-

tients who started rehabilitation early had the best results in terms of mobility. After regular rehabilitation sessions, seven cases (17%) managed to recover complete abduction against 83% with pure abduction less than 150° (Figure 5).

Subjectively, 84% of patients were satisfied or very satisfied (Figure 6). For the objective results, evaluated according to the Duplay and Walch score, 17 patients (43%) had a result deemed good or excellent, 17 (43%) average, and 6 (14%) had a poor result (Figure 7).

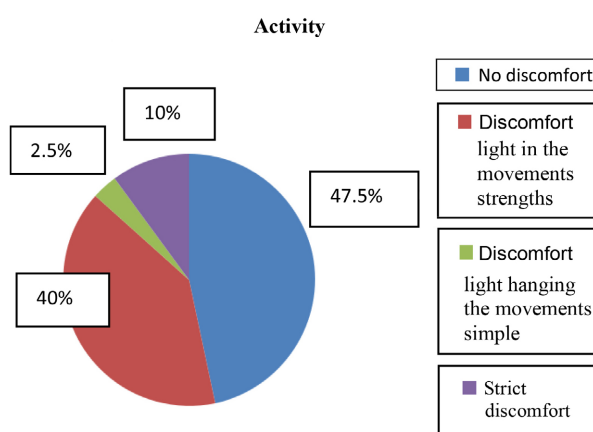


Figure 3. Activity results.

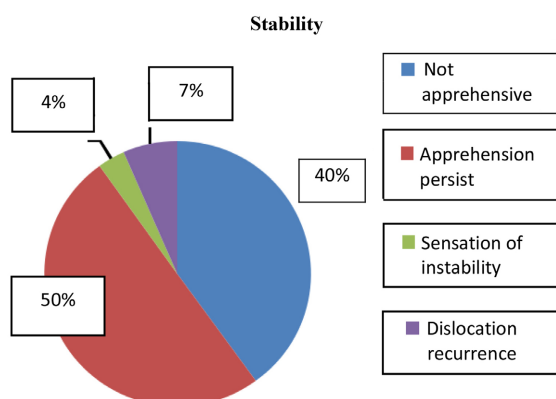


Figure 4. Stability results.

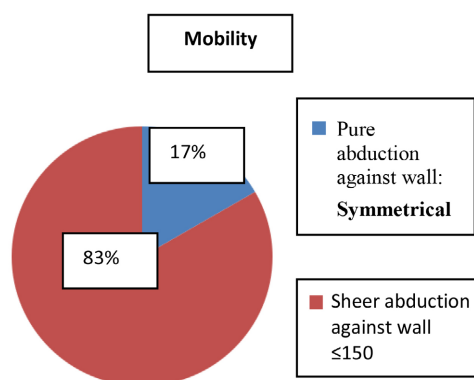


Figure 5. Mobility results.

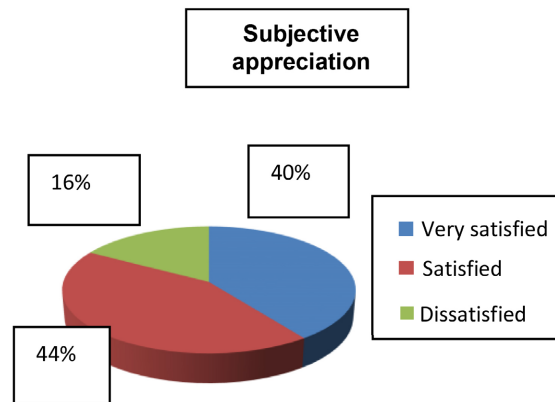


Figure 6. Results of the assessment according to the patients.

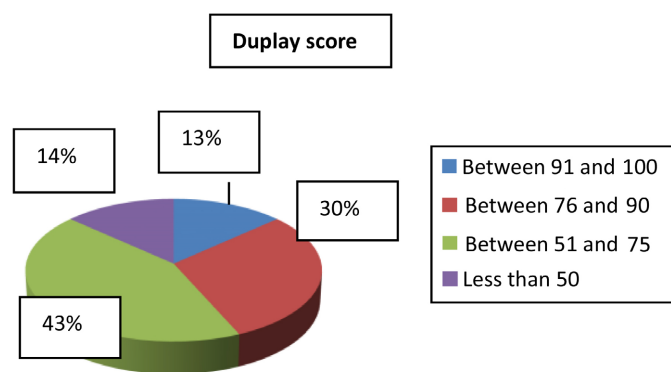


Figure 7. Objective results expressed by the Duplay score.

The radiographic analysis showed the correct position of the bone block and the search for complications such as pseudarthrosis or omarthrosis.

4. Discussion

The first detailed description of anterior shoulder dislocation and the first reduction treatments for acute dislocation have been attributed to Hippocrates. The shoulder is the most mobile joint and therefore the most unstable in the body, particularly in front, manifesting itself by recurrent dislocations or subluxations. The mechanical stability of the glenohumeral joint comes from a perfect synchronization of bone, joint, capsule-ligament and neuromuscular elements [6]. The repetition of serious or even minimal lesions of these different anatomical and functional structures can prove to be sources of internal disturbances that interfere with sports practice [7] or daily life, whereas they would remain subclinical in a sedentary person. Ligament lesions are therefore in the foreground and especially the inferior glenohumeral ligament (LGHI) which is crucial; It controls the stability of the shoulder with the arm and after an anterior dislocation, it can break at the level of its attachment to the glenoid and lead to detachment of the glenoid pad (Bankart lesion). These ligament lesions can start a healing that will generally be incomplete and will leave instability. With regard to bone lesions, they constitute an aggravating factor of instability and can ap-

pear from the first accident. The LGHI does not yield, but its bony attachment to the glenoid ruptures. There is therefore an effect of loosening of the ligament and in addition bone loss which will reduce the bearing surface of the humeral head on the glenoid. The existence of such a lesion modifies the prognosis and the surgical act, because if this fragment is important, it obliges to repair this bone loss. Constitutional hyper laxity is an important element in the appearance of instability. Some patients are more flexible than others. At the level of the shoulder, this particularity will have the consequence of making the stability of the shoulder more vulnerable. It will therefore be necessary to take into account all these elements when one wishes to treat anterior instability of the shoulder. This feature will result in making the stability of the shoulder more vulnerable. It will therefore be necessary to take into account all these elements when one wishes to treat anterior instability of the shoulder. This feature will result in making the stability of the shoulder more vulnerable. It will therefore be necessary to take into account all these elements when one wishes to treat anterior instability of the shoulder.

Several factors, of which age is the most significant factor, play a role in recidivism. Many studies have shown that the younger the subject, the greater the risk of recurrence, especially in the two years following the accident [8]. As far as we are concerned, the average age at the time of the intervention was between 25 and 35 years old. Our results are in line with those of the literature with an average age of 27 years old. The extent of trauma is not clearly correlated; The initial dislocation is most often of traumatic origin, generally occurring during a sports accident [9]. In 97% of cases in our series, the initial dislocation was traumatic compared to 3% of atraumatic cases. Several authors emphasize the predominance of chronic anterior shoulder instability in males [5], in our study all patients were male. The usually dominant right side is the most frequently found as was the case in our series with 67% of cases, no bilateral involvement was noted. In the literature, the rate of operative complications varies from 7% to 8.6% [10] these complications can be infectious (sepsis), neurological (lesions of the brachial plexus) or vascular (phlebitis of the upper limb). In our series, there were no cases of postoperative complications. The stability analysis shows that the results of our series are slightly different from those of the literature with a predominance of apprehension (53.3%), this can be explained by the low average follow-up of our study which is of 27 months. We found two cases of recurrence out of the 40 cases studied, VANDER-MAREN (3%) and more recently COLLIN (6%) [11] [12].

Several factors can generate long-term postoperative pain, we find:

- The high age at the time of the intervention.
- Osteoarthritis.
- The type of sports practice (athletes have less pain than non-athletes).
- A synthesis screw that is too long.

In our study, 50% of patients reported no pain, this rate is favorable and comparable to the rates of the SOO series [11]. The decrease in mobility may be

related either to the operative attitude vis-à-vis the subscapularis (external rotation is normal in case of dissociation and reduced in case of section of the upper half and even more reduced in case of complete section), Either to the existence of a postoperative osteoarthritis, or to an overflowing abutment in intra-articular. In our series, normal mobility is restored in 75.6% of cases, the decrease in mobility mainly related to external rotation as in all studies in the literature [11] [12] [13]. The overall objective result was evaluated according to the Duplay score. We obtained 43.3% of excellent and good results, which is a little reduced compared to the data of the literature [11] [12]. This is explained by the low decline in our series. On a subjective level, the result of our series agrees with the results of the series in the literature [8] [9] [10]. The occurrence of pseudarthrosis could be related to the use of a unicortical screw or to the synthesis by a single screw. In our series, we have not noted any cases; similarly, no case of abutment lysis or fracture was reported. This is due to the fact that the size of our series remains small compared to the series in the literature [14] [15]. The appearance of osteoarthritis is a pejorative factor since it will be the cause of poor clinical results. The clinical expression of osteoarthritis is not declares that from stage 2 for the mobility and stage 3 for pain postoperative, Stage 1 has no clinical impact. The frequency of osteoarthritis is variously assessed in literature, in our series three cases presented stage 1 osteoarthritis post operative. Several factors are involved in this:

- The high age at the time of the intervention.
- The number of recurrences of dislocations.
- The rate of osteoarthritis increases with hindsight.
- The deficit in external rotation is an arthrogenic factor.
- The existence of a rotator cuff tear.
- Preoperative osteoarthritis is correlated with postoperative osteoarthritis.
- The protrusion of the abutment is a significant factor in osteoarthritis.

In the literature, some studies have tried to compare the Latarjet technique to other surgical techniques, in particular that described by Bankart [12] [16] [17], which has shown in them a superiority of the Latarjet technique with regard to the stability and comfort in everyday life with a very good rate of satisfaction.

By comparing the open Latarjet technique versus Latarjet under arthroscopic control, Apart from the coronal position, there is no superiority of the guided arthroscopic technique. The rate of consolidation of arthroscopic abutments less than 3 months becomes equivalent to 6 months [18].

There is another comparative study that did not prove the superiority of the cortical-button arthroscopic Latarjet procedure over the open Latarjet procedure. A delay in the resumption of sports, longer time to recover range of motion, and no benefit regarding postoperative pain or the aesthetic aspect of the scar were observed in this study with the arthroscopic procedure [19].

Another study showed that up to one-third of the overall surgical complications associated with the Latarjet procedure may be related to the use of screw fixation [2], arthroscopic Latarjet procedure did not decrease the rate of screw

related complications. The reported rate of screw-removal may be higher after the arthroscopic Latarjet procedures (up to 18%) than after open procedures (up to 7.3%), and is mainly indicated for persistent shoulder pain and/or screw loosening [20].

Good functional results were obtained after both open and arthroscopic Latarjet procedures for the treatment of chronic osseous anterior shoulder instability. Comparative analysis showed small but statistically significant differences in internal rotation loss favoring open and in WOSI favoring arthroscopic techniques. All measured radiographic parameters were similar with the exception of a significant difference in alpha angle with improved screw position in open surgery. OL and AL techniques provide similar clinical and radiographic outcomes [21].

The Latarjet procedure yielded satisfactory functional outcomes with low recurrent rate at mid-term follow-up. Development or progression of arthritis was observed in 18.2% of patients, postoperatively. Glenohumeral arthritis after the Latarjet procedure had an adverse effect on clinical outcome. Generalized laxity and lateral overhang should be considered as risk factors of progression to glenohumeral arthritis after the Latarjet procedure [22].

The Latarjet is a safe and effective procedure for patients with shoulder instability. The majority of patients return to sport, though at long-term follow-up, a trend towards an increased incidence of recurrent instability is appreciated, while a significant number may demonstrate arthritis progression [23].

The Latarjet procedure is a valid and safe surgical treatment in recurrent anterior shoulder instability with a low risk of developing moderate or severe OA also at long-term follow-up. The overhanging position of the bone graft represents the principal risk factor of joint degeneration, whereas the hyperlaxity seems to be protective. Finally, age, gender, time between first dislocation and surgery, and number of dislocations do not seem to affect the onset of OA after Latarjet procedure. Therefore, an accurate execution of the Latarjet procedure can be considered a valid treatment even in young and athletes thanks to the low recurrence rates and the low development of major long-term complications [24].

5. Conclusions

Chronic anterior shoulder instability is the pathology of young and active subjects. The late management of patients is responsible for the large number of recurrences and leads to almost systematic bone lesions, hence the need to prevent recurrences after the first dislocation. The prereducible coracoid block according to Latarjet represents the therapeutic method of choice in the treatment of chronic anterior instabilities of the shoulder, especially in young and athletic subjects. The result of this intervention remains good despite the complications that can occur such as pseudarthrosis, osteoarthritis, lysis or mobility of the screw. Rigorous management can reduce its occurrence.

Quick and easy to perform, the Latarjet technique is effective on physiopathological factors and should lead to excellent results, especially on stability, but

exposes you to a risk of long-term osteoarthritis.

Conflicts of Interest

The authors declare that they have no conflict of interest.

Informed consent

Informed consent was obtained from all individual participants included in the study (All patients participating in the study were summoned and gave their consent to participate in the study in writing in the medical file).

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