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Long-term results of the Latarjet procedure for anterior instability of the shoulder

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Background: The Latarjet procedure is effective in managing anterior glenohumeral instability in the short term, but there is concern for postoperative arthritis. The purpose of this study was to evaluate the long-term functional outcome after the Latarjet procedure and to assess the prevalence of and risk factors for glenohumeral arthritis after this procedure.

Materials and methods: A retrospective review was conducted of 68 Latarjet procedures at a mean of 20 years postoperatively. The mean age at surgery was 29.4 years. Functional outcome was determined by the Rowe score, subjective shoulder value, and recurrence of instability. Preoperative arthritis and postoperative radiographs were reviewed to evaluate the development or progression of arthritis.

Results: The mean Rowe score increased from 37.9 preoperatively to 89.6 at final follow-up ($P < .001$). The mean subjective shoulder value was 90.9% at final follow-up. The postoperative rate of recurrence was 5.9%. Of the 60 shoulders without arthritis preoperatively, 12 (20%) had developed arthritis at final follow-up. Among the 8 shoulders with preoperative arthritis (all stage 1), 4 (50%) demonstrated progression of arthritis at final follow-up. Overall, postoperative arthritis was stage 1 in 14.7%, stage 2 in 5.9%, and stage 3 in 8.8% of cases; no stage 4 arthritis was observed. Risk factors for postoperative arthritis were older age, high-demand sports activity, and lateral overhang of coracoid bone graft.

Conclusion: The Latarjet procedure provides excellent long-term outcomes in the treatment of recurrent anterior glenohumeral instability. Twenty years after the Latarjet procedure, arthritis may develop or progress in 23.5% of cases, but the majority of arthritis is mild.

Level of evidence: Level IV, Case Series, Treatment Study.

Keywords: Latarjet; anterior shoulder instability; long-term; glenohumeral joint; arthritis; risk factor

In 1954, Latarjet described a coracoid process transfer in which the inferior surface of the coracoid was passed through the subscapularis tendon and secured to the anteroinferior glenoid to treat anterior glenohumeral instability.[20] Patte proposed that the procedure provides stability by the "triple blocking effect" (Fig. 1), which includes the

The Institutional Review Board of the ethical committee of the Hôpital Privé Jean Mermoz and the Centre Orthopédique Santy, Lyon, France, approved this study (2013-05).

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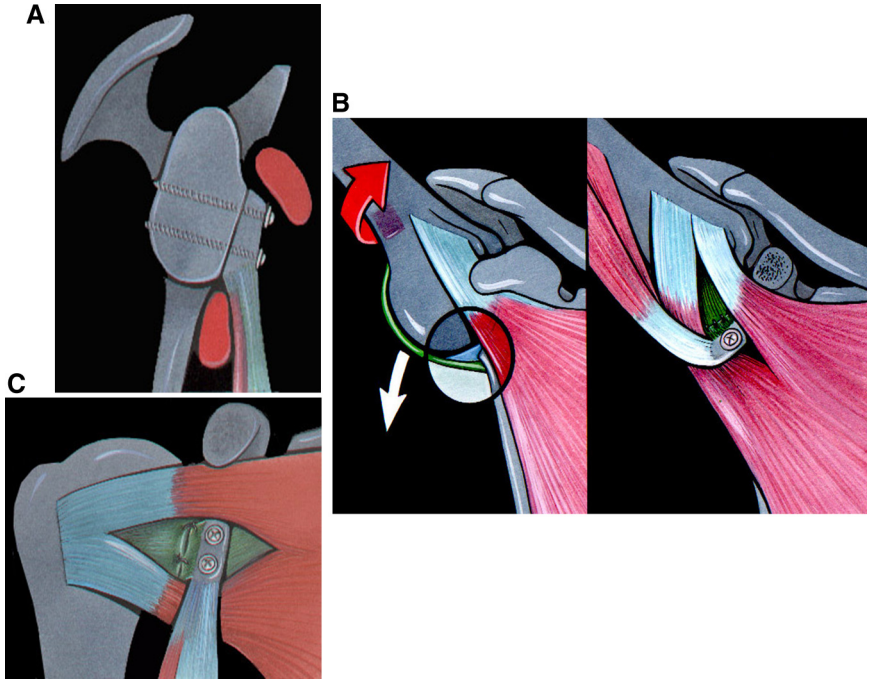

Figure 1 Triple blocking effect of Latarjet procedure. (**A**) A bone block effect occurs by use of the coracoid graft to restore glenoid bone loss. (**B**) A sling effect occurs through the conjoined tendon, which limits anterior translation in a position of abduction and external rotation. (**C**) A ligament effect occurs through the use of the coracoacromial ligament stump to reattach the medial capsule.

sling effect of the conjoint tendon on the subscapularis, the bone effect of the graft, and the ligament effect of the coracoacromial ligament stump.[25] Subsequently, Yamamoto et al[34] performed a biomechanical study that clarified the stabilizing mechanism of the Latarjet procedure. They reported that the primary mechanism is the sling effect at both the end-range and mid-range positions. Lesser contributions are provided by suturing the coracoacromial ligament to the capsular flap (capsular effect) at the end-range position and the glenoid bone reconstruction at the mid-range position.

Arthroscopic stabilization for anterior glenohumeral instability has been performed with increasingly good results.[1,9,18,19,24,27,28,33] However, there is a substantial failure rate with an arthroscopic approach in the setting of significant glenoid bone loss, large engaging Hill-Sachs lesions, or combined glenoid and humeral bone defects.[1,5,6,18,24,33] In these settings, the Latarjet procedure effectively reduces the rate of recurrent instability.[5,6,35] A few studies have reported good results of the Latarjet procedure at long-term follow-up. However, the prevalence of glenohumeral arthritis after the Latarjet procedure has ranged from 49% to 71%.[2,15,16,32]

There are several risk factors for arthritis in patients who have undergone treatment for anterior instability, including age at initial dislocation and at the time of surgery, number of preoperative dislocations, excessive anterior tissue tightening, intra-articular hardware, lateral overhang of the bone block, and longer follow-up.[4,7,10,12-15,22,23,26,28,29,36,37] However, there are few reports about the long-term risk factors for arthritis after a Latarjet procedure.

The purpose of this study was to evaluate the long-term results (minimum of 18 years) of the Latarjet procedure and to determine the prevalence of and risk factors for long-term glenohumeral arthritis after this procedure. We hypothesized that the Latarjet procedure would provide a low rate of recurrent instability with acceptable radiographic results in the long term. We also hypothesized that risk factors for postoperative arthritis would include patient factors, such as age and number of preoperative dislocations, as well as technical factors, such as position of the coracoid graft.

Materials and methods

Study group

We retrospectively reviewed Latarjet procedures performed by a single surgeon (G.W.) between 1988 and 1993. The indication for Latarjet reconstruction was recurrent traumatic anterior instability with or without hyperlaxity. Contraindications included "subtle" anterior instability without a Bankart lesion (painful shoulder in the throwing athlete) and voluntary habitual anterior instability. The inclusion criteria were a minimum follow-up of 18 years and complete preoperative and postoperative functional outcome and radiographic data. The exclusion criteria were a previous failed instability repair and incomplete functional outcome and radiographic data.