Functional outcomes after open versus arthroscopic Latarjet procedure: A prospective comparative study

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\section*{ABSTRACT}

Introduction: The Latarjet procedure provides effective stabilization of chronically unstable shoulders. Since this procedure is mainly performed in a young athletic population, the functional impact is significant. Published data does not shed light on the time needed to recover work-related or sports-related function. Performing this procedure arthroscopically may improve functional recovery. This led us to carry out a prospective, multicenter study to compare the functional recovery after arthroscopic versus open Latarjet procedure.

Material and methods: Between June and November 2014, 184 patients were included in a prospective multicenter study: 85 in the open group and 99 in the arthroscopy group. The patients were evaluated preoperatively with the WOSI score. The early postoperative pain was evaluated on D3, D7 and D30. The WOSI score was determined postoperatively at 1, 3, 6 and 12 months of follow-up.

Results: The functional scores of the shoulder in both cohorts were identical overall preoperatively. In the immediate postoperative period, the arthroscopy group had statistically lower pain levels on D3 and D7. The postoperative WOSI was improved in both groups at 3 months, then continued to improve until it reached a plateau at 1 year. The WOSI score was better in the arthroscopy group at 3 months, but better in the open group at 6 months.

Conclusion: This study found that a Latarjet procedure performed arthroscopically generates less immediately postoperative pain than when it is performed as an open procedure. The Latarjet procedure (whether open or arthroscopic) improves shoulder function, with normal function returning after 1 year.

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1. Introduction

Compared to the Bankart procedure, the results of the Latarjet procedure – first described in 1954 \cite{1} – are satisfactory in terms of stability and range of motion for patients with chronic shoulder instability \cite{2}. The possibility of performing this surgery arthroscopically was demonstrated about 10 years ago \cite{3}. Theoretical advantages of arthroscopy are similar to those described for rotator cuff surgery: lower morbidity, reduced infection risk, faster recovery. Independent of the complexity of the surgical technique, and given the extra cost of this technique, we felt it was appropriate to evaluate the functional benefit provided by arthroscopic coracoid bone block techniques. Among the available assessment methods, we chose to analyze postoperative pain and shoulder function using the WOSI score \cite{4}.

In the context of the 2015 French Arthroscopy Society (SFA) symposium on open versus arthroscopic bone block procedures, we conducted a prospective multicenter study comparing the functional outcomes of operated shoulders in two different groups. The working hypothesis was that the arthroscopic method would result in better, or at least as good, postoperative functional recovery than the open method. The primary objective of this study was to determine if there were any differences in the postoperative pain and recovery rate that would suggest that one method is superior to the other.

2. Material and methods

Of the patients operated between June and November 2014 at the various healthcare centers who met the usual indications,
184 were included prospectively in this study. The inclusion criteria were patients above 18 years of age who had experienced at least one shoulder dislocation episode and were undergoing anterior bone block surgery. Patients with postoperative complications who required revision surgery were excluded. The cohort of open patients was taken from two centers, while the cohort of arthroscopic patients was taken from four centers. Only Latarjet procedures in which two-screw fixation was used were included in the study. All surgeons were experienced; hence, the patients included in this study were not operated on as part of the learning curve.

All patients received the same regional anesthesia protocol in addition to general anesthesia. The rehabilitation protocol was similar in the two groups: it consisted of rehabilitation or self-directed rehabilitation with early mobilization to the limits of pain; no strengthening was performed during the first 6 weeks.

Patients were followed prospectively using computerized data collection. Preoperatively, all patients were evaluated using the Western Ontario Shoulder Instability Index (WOSI), which is a patient-reported outcomes tool used to evaluate a patient’s functional status [4,5]. Postoperatively, patients were contacted to evaluate their pain level on D3, D7 and D30. The WOSI was repeated after 1, 3, 6 and 12 months. This study focused solely on functional outcomes, not clinical or radiological ones. Patients were invited to respond by the internet or phone. Only the functional outcomes were of interest; bone union and bone block positioning were not evaluated.

2.1. Statistics

Postoperative pain levels were compared using a Mann-Whitney test with a statistically significant distribution for a risk < 10%, since the values were not normally distributed. The distribution of the overall WOSI and its four subcomponents (physical symptoms, sports/recreation/work, lifestyle, emotion) was analyzed using the Lilliefors test. Each group was compared using the Mann-Whitney test, using a distribution of statistically significant values for a risk < 5%.

3. Results

The study included 184 patients: 85 underwent an open procedure and 99 underwent an arthroscopic procedure.

Preoperatively for the Symptoms component of the WOSI, the average was 34% in the open group and 30% in the arthroscopy group (P = 0.3). For the Sports/recreation/work component, the average was 56% in the open group and 49% in the arthroscopy group (P = 0.06). For the Lifestyle component, the average was 41% in the open group and 39% in the arthroscopy group (P = 0.5). For the Emotion component, the average values were similar: 64% in the open group and 60% in the arthroscopy group (P = 0.5). Hence, these two cohorts were similar in terms of the overall WOSI score preoperatively.

Pain levels were evaluated postoperatively on a visual analog scale (VAS) (Fig. 1). On Day 3, the pain was significantly higher in the open group (VAS 4) than in the arthroscopic group (VAS 3.5) (P = 0.09). On Day 7, the pain was again significantly higher in the open group (VAS 3) than in the arthroscopic group (VAS 2.2) (P = 0.007). On Day 30, the pain levels were no longer different between the two groups (1.6 open vs. 1.2 arthroscopy, P = 0.14).

On Day 30, 143 patients filled out the WOSI questionnaire again (Fig. 2). For the Symptoms component, the average was 34% in the open group and 30% in the arthroscopy group (P = 0.27). For the Sports/recreation/work component, the average was 66% in the open group and 61% in the arthroscopy group (P = 0.17). For the Lifestyle component, the average was 48% in the open group and 46% in the arthroscopy group (P = 0.6). For the Emotion component, the average values were similar: 40% in the open group and 33% in the arthroscopy group (P = 0.11). We can conclude that there was no effect of the arthroscopic method versus the open method on the WOSI at 1 month.

At 3 months postoperative, 30 patients completed the WOSI questionnaire. Although this sample size was relatively small, there were statistically significant changes in favor of the arthroscopy method.
group. For the Symptoms component, the average was 13% in the open group and 7% in the arthroscopy group (P = 0.08). There was also a statistically significant difference in terms of the Lifestyle component: 2.5% for the arthroscopy group versus 13% for the open group (P = 0.03). There were no differences in the Sports/recreation/work and Emotion components.

At 6 months postoperative, 99 patients completed the WOSI questionnaire. The open group had a significantly better Symptoms score (13%) than the arthroscopy group (18%) (P = 0.02). Similarly, on the Sports/recreation/work component, the open group (15%) had a significant better score than the arthroscopy group (24%) (P = 0.003). The Lifestyle and Emotion scores were similar. The arthroscopy cohort was followed beyond 6 months; the overall WOSI score continued to decrease and was nearly normal (5%) at 1 year.

4. Discussion

Some studies have analyzed the clinical and radiological results of open versus arthroscopic Latarjet procedures [6,7], but up to now, no prospective multicenter has looked at functional outcomes. This multicenter study was the first to prospectively evaluate the functional outcomes of the Latarjet procedure overall, specifically by how it was performed: arthroscopy or open.

The WOSI consists of 21 items that the patient answers on a scale of 0 to 100. The lowest score of 0 is good; the highest score of 100 is poor. There are four components to the WOSI. Physical symptoms are evaluated using 10 items. The Sports/recreation/work score consists of 4 items, the Lifestyle score of 4 items and the Emotion score of 3 items. The WOSI has been correlated significantly with other well-known shoulder scores (ASES, UCLA, Constant, DASH, Rowe, SF12) and range of motion scores. A validated French version exists, making it a practical tool for patients to subjectively describe their functional recovery [4,5].

This study found clear differences between the arthroscopy and open groups in terms of their immediate postoperative pain. Beyond 1 week, the pain levels were similar between the two groups, with no advantage of arthroscopy at 1 month postoperative.

In terms of functional outcomes, this study had two important findings. The functional recovery after the Latarjet procedure is relatively quick early on (within 3 months) but complete recovery of function requires 1 year. A 1-year recovery time frame is needed for return of all the patient’s activities and recovery for all four components of the WOSI.

This study had some limitations: the two groups were slightly different preoperatively on the Sports/recreation/work component of the WOSI, and only a small number of patients were evaluated at 3 months. Lastly, the 1-year time point only included patients operated arthroscopically.

5. Conclusion

This prospective study comparing arthroscopic and open Latarjet procedures found clear benefits of arthroscopy on immediate postoperative pain. In the longer term (3, 6, 12 months), we found no evidence that one method is superior to the other when it comes to shoulder function.

Disclosure of interest

The authors declare that they have no competing interest.

References