

## Original Article

# TREATMENT OF ANTERIOR SHOULDER INSTABILITY BY LATARJET CORACOID BONE BLOCK: PRELIMINARY FUNCTIONAL RESULTS IN A SUB-SAHARAN HOSPITAL

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## Abstract

**Background:** The Latarjet technique aims to stabilize the shoulder by reconstructing the glenoid rim using a bone fragment taken from the coracoid bone and generally fixed to the anteroinferior part of the glenoid. The aim of this study was to assess the functional outcome of this type of treatment.

**Methods:** This retrospective study was conducted in several health institutions in Ivory Coast from January 2008 to December 2013. Records of 15 patients whose shoulders were treated by the Latarjet coracoid bone block procedure for anterior shoulder instability and were followed-up for a minimum of 10 years were retrieved and data collected. Functional outcomes were assessed by the Rowe score. The data were evaluated and analysed using Epi Info and Excel statistical software.

**Results:** The functional assessment according to the Rowe score revealed three excellent results, nine good results, two average results and one poor result. One case of recurrence was observed in the postoperative period and required a revision.

**Conclusion:** This study suggests that the Latarjet pre-glenoid bone block procedure is an effective surgical procedure for treating anterior shoulder instability. It allows for a significant improvement in functional outcomes as well as a satisfactory return to sporting activity.

**Keywords:** Instability, Latarjet, Result, Shoulder, Sub-saharan, Treatment.

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## INTRODUCTION

Anterior shoulder instability is a common condition.<sup>1,2</sup> It is characterised by abnormal displacement of the humeral head relative to the glenoid cavity, which can lead to recurrent shoulder dislocation or subluxation.<sup>3</sup> This condition can lead to severe pain, loss of strength and mobility, and limitation.<sup>4,5</sup> Several surgical techniques are available to treat anterior shoulder instability including

arthroscopic ligament repair, biceps tendon repair or shortening, Latarjet coracoid bone block and Bristow coracoid bone block.<sup>6,7</sup> The Latarjet coracoid bone block is the most commonly used technique.<sup>8,9,10</sup> It is a surgical intervention that stabilises the shoulder by reconstructing the glenoid rim using a bone fragment taken from the coracoid bone and generally fixed to the anteroinferior part of the glenoid. The Latarjet-type pre-glenoid

coracoid bone block technique is increasingly used in patients because of its satisfactory functional outcome.<sup>11</sup> The aim of this study was to assess the functional outcome of the Latarjet technique in Abidjan (Ivory Coast).

## MATERIALS AND METHOD

### Study Design and Setting

This retrospective study was conducted in four health establishments (Farah Polyclinic, Sainte Anne Marie Polyclinic and the Orthopedic surgery departments of the university hospitals of Yopougon and Cocody) in Abidjan (Ivory Coast) from January 2008 to December 2013.

### Study Population

Data were collected from the records of 15 patients whose shoulders were treated by Latarjet pre-glenoid coracoid bone block for anterior shoulder instability.

### Inclusion Criteria

Inclusion criteria were age greater than 15 years, at least two anterior dislocations of the same shoulder, surgery using the Latarjet technique, regular monthly clinical examination, and a minimum follow-up of 10 years.

### Exclusion Criteria

Patient's suffering from rotator cuff injury, shoulder fracture, multidirectional shoulder instability or recent dislocation were excluded from this study.

### Data Collection

The data collected included demographic characteristics, medical history, characteristics of anterior shoulder instability, functional outcomes assessed by the Rowe score,<sup>12</sup> radiological outcomes, recurrence rate of anterior shoulder instability and patients' occupational prognosis after surgery.

**Table II: The averages of the scapular amplitudes.**

Amplitude	Preoperative	Postoperative	Normal value	p-value
<b>Antepulsion</b>	132.3°	155.6°	180°	0.0041
<b>Abduction</b>	170.8°	180°	180°	0.0456
<b>External rotation</b>	58.9°	45.0°	90°	0.0039

## Data Analysis

The data were evaluated and analysed using Epi Info and Excel statistical software.

## RESULTS

The characteristics of the patients are shown in Table 1. The average age was  $27.8 \pm 3.53$  years, there were more males and they all did one sports activity or the other. One case of recurrence was observed in the post-operative period. There were no complications such as haematoma, local infection, omarthrosis, pseudarthrosis or migration of the bone block. Antepulsion and abduction of the operated shoulders were close to normal but external rotation remained around 45° (Table II). Periodic global evaluation by the ROWE score was used to assess functional improvement of the operated shoulders (Table III). Table IV showed that one patient was not satisfied with his clinical condition after surgery. Twelve patients had resumed with the same sports activities while three others had changed their sports activities altogether.

**Table I: Characteristics of the series.**

Characteristics	Values
<b>Age (years)</b>	
Average	27.8 ± 3.53
Extremes	19 and 42
<b>Gender</b>	
Male	12
Female	3
<b>Sport practiced</b>	
Rugby	7
Handball	4
Box	2
Judo	1
Others	1

**Table III: The periodic assessment outcomes according to the Rowe score.**

Score	At 2 years	Between 5 – 9 years	At 10 years
<b>Excellent</b>	1	2	4
<b>Good</b>	3	7	9
<b>Average</b>	11	6	2
<b>Bad</b>	1	0	0
<b>Total</b>	<b>15</b>	<b>15</b>	<b>15</b>

**Table IV: Occupational prognosis of patients at follow-up.**

Items	Numbers
<b>Patient satisfaction</b>	
Very satisfied	10
Satisfied	4
Disappointed	1
<b>Total</b>	<b>15</b>
<b>Patient decision on sport</b>	
Return to same sport	12
Change sport	3
Give-up sport	0
<b>Total</b>	<b>15</b>



**Figure 2: Postoperative range of motion in retrograde position, here abduction/external rotation of the arm.**



**Figure 1: Postoperative range of motion in retrograde position, here anteflexion of the limb.**



**Figure 3: Postoperative range of motion, here internal rotation of the arm.**



**Figure 4: Postoperative control X-ray.**

## DISCUSSION

### Characteristics of the series

Many studies agree on the average age of patients suffering from anterior shoulder instability. Toffoli *et al* found 27.7 years,<sup>13</sup> Thon *et al* 29.2 years,<sup>14</sup> Schmidt *et al* 25 years,<sup>15</sup> and Gerber *et al* 25.5 years.<sup>16</sup> In this study, the average age of the patients was 27.8 years. Therefore, the typical patient suffering from anterior shoulder instability is a young person under 30 years of age. In this age group, the patients are very active in sporting activities during which the pathology can reveal itself.

The second characteristics common to all studies is the predominance of male patients. This is a consistent finding in many other series.<sup>3,4,6,8,15-19</sup> Men are majorly involved in sporting activities. As they strive for performance, they are increasingly exposed to scapular trauma that can trigger anterior shoulder instability. It can also be stated therefore that anterior shoulder instability is commoner in young men under 30 years of age.

### Active scapular amplitudes

The clinical examination carried out during the follow-ups focused on measuring the patients' scapular amplitudes. In addition to the Rowe score, these parameters made it possible to assess the effectiveness of the treatment and the quality of the outcomes. Mean scapular amplitudes in the perioperative periods were close to normal thresholds after surgery and rehabilitation. Schmidt *et al* found the same outcomes as

ours.<sup>15</sup> They also found that external rotation values were decreasing in retrospect. The latter finding was due to the fact that external rotation of the arm is a procedure that can cause anterior glenohumeral dislocation, making patients not to perform it completely. In addition, postoperatively, the presence of pain also increased the limitation of external rotation of the arm. Dossim *et al* had obtained postoperative values similar to ours for antepulsion and external rotation.<sup>8</sup> They found 170° of antepulsion and 50° of external rotation of the arm.<sup>8</sup>

Allain *et al* only specified the values of external rotation observed postoperatively. They found  $63^{\circ} \pm 14^{\circ}$  ( $30^{\circ} - 95^{\circ}$ ) on the healthy side and  $42^{\circ} \pm 17^{\circ}$  ( $10^{\circ} - 80^{\circ}$ ) on the treated side.<sup>3</sup> These outcomes were similar to those in this study. The outcome in this work revealed a significant improvement in activity and muscle strength, assessed by the Rowe score. The decrease in mobility was in external rotation, which is related to the operative approach towards the subscapulari muscle. Other studies had also obtained satisfactory outcomes similar to those of this study.<sup>5</sup> The surgical technique opted for transectioning half of the subscapular muscle, resulted in a decrease in external rotation. The outcome was similar with previous studies that had shown the coracoid bone block technique is more effective in treating anterior shoulder instability.<sup>20</sup> Subjectively, 10 patients were very satisfied, four were satisfied and one was disappointed. The disappointed patient was the one in whom there was a recurrence that required revision surgery. In terms of return to sport, twelve returned to the same sport, three changed their sport and no-one gave-up their sport activities. These outcomes suggested that coracoid bone block technique may allow satisfactory return to activity in patients treated for anterior shoulder instability.<sup>17</sup>

### Assessment according to the Rowe score

The functional aspect of the score assesses the various ranges of motion of the shoulder. Pain is subjectively approved in the immediate post-operative period and in the long-run after the operation to residual defect. Stability and mobility are assessed in relation to possible recurrence of dislocation after surgery. Recurrence of dislocation after the Latarjet technique is not rare.<sup>19</sup> A study conducted in Dakar concluded that the Latarjet technique offered patients stabilisation of the shoulder, almost normal mobility, and the possibility of resuming

professional and sporting activities under good conditions.<sup>4</sup> Under similar conditions and with almost the same sample size, Gueye *et al* used the Rowe score to assess their patients.<sup>4</sup> These were similar outcomes to those observed in this study. The difference was that the authors obtained average and poor outcomes, unlike Gueye's team where there were no average or poor outcomes. In addition, in Morocco, with the same score and out of a total of 77 patients collected, Jamal's team obtained 28 excellent outcomes, 45 good outcomes, 4 average outcomes and 4 poor outcomes.<sup>19</sup> These results demonstrated the good stability of using the Latarjet technique. Other studies have also shown similar satisfactory outcomes.<sup>5</sup> Some studies have shown a significant improvement in the Rowe score in patients treated with the Latarjet strut, with a recurrence rate of 4.2% - 9.43%.<sup>8,13,17</sup> Several studies have assessed the outcomes of the Latarjet-type coracoid bone block for the treatment of anterior shoulder instability in professional athletes, with satisfactory results.<sup>21,22</sup>

In this study, there were no major complications. Complications are usually few in the Latarjet technique.<sup>23,24</sup> However, some studies have highlighted the shortcomings of the Latarjet coracoid bone block technique, including surgery complications such as coracoid bone block fractures, infections and chronic pain.<sup>19</sup> It is important to note that the result of surgery may vary depending on the technique used, the severity of the shoulder instability and the individual characteristics of the patient. Overall, the literature suggests that Latarjet pre-glenoid bone block technique is an effective surgical procedure for treating anterior shoulder instability, with satisfactory functional and radiological outcomes.<sup>19</sup> However, it is necessary to consider the limitations and possible complications of the procedure, as well as the individual characteristics of the patients, when choosing the surgical technique.<sup>25</sup>

This study suggests that the Latarjet pre-glenoid bone block technique is an effective surgical procedure for treating anterior shoulder instability. It provides a significant improvement in functional outcome and a satisfactory return to sport. Patients should be informed of the outcomes and risks of this surgery in order to make an informed decision regarding their treatment.

## **Limitations of the study**

The small sample size did not allow for significant statistical testing. There were not many patients and women who suffer anterior instability, as some of them could have consulted elsewhere. Some patients were excluded from the study because their anterior scapular instabilities were associated with other lesions such as rotator cuff tears or glenoid rim fractures which are contraindications to the Latarjet technique. Another weakness of this study was the difficulty in following up some fussy patients who did not comply with the surgery instructions or follow-up appointment dates.

## **CONCLUSION**

This retrospective study of 15 patients treated for anterior shoulder instability using the Latarjet pre-glenoid bone block technique showed satisfactory outcomes. This surgical procedure resulted in a significant improvement in functional outcomes and a satisfactory return to activity in the majority of patients.

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## **AUTHOR CONTRIBUTIONS**

Author HVF designed the study and wrote the protocol which was reviewed by all authors; led data collection and analysis along with Author DP and WDTB. Author TM conceptualized the study Author PA supervised the manuscript. All authors read and approved the final draft.

## **CONFLICT OF INTEREST**

The authors declare they have no conflicts of interest that are directly or indirectly related to the research.

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## **ETHICAL APPROVAL**

Ethical approval was obtained from the Félix Houphouët-Boigny University of Cocody, TRU/MSA, Abidjan, Ivory Coast.

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