J Shoulder Elbow Surg (2017) ■■, ■■–■■

ELSEVIER

Journal of Shoulder and Elbow Surgery

www.elsevier.com/locate/ymse

ORIGINAL ARTICLE

# The modified Latarjet procedure in female patients: clinical outcomes and complications

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**Background:** The aim of this study was to assess the short- and medium-term complications and clinical outcomes of female patients after a modified Latarjet procedure. A review of the literature was also conducted for outcomes of the modified Latarjet procedure in female patients and differences reported between male and female patients.

**Method:** We retrospectively reviewed the clinical notes of all female patients who had modified Latarjet procedures from 2001 with at least 1 year of follow-up. Patients were interviewed for an Oxford Shoulder Score, Western Ontario Shoulder Instability Index, Oxford Shoulder Instability Score, and subjective shoulder value. A literature review was performed of the electronic database PubMed; 343 papers were assessed for clinical outcomes based on gender.

**Results:** Twenty-nine patients were available for inclusion in the study. There were 13 complications in 11 patients (34%). The median postoperative Western Ontario Shoulder Instability Index score was 433; Oxford Shoulder Score, 42; and Oxford Shoulder Instability Score, 36. The median subjective shoulder value was 87%. Of these patients, 37.5% returned to sport. The reoperation rate was 13.8%. We found no literature reporting the outcomes of the modified Latarjet procedure in female patients.

**Conclusion:** There are no published data comparing outcomes of the modified Latarjet procedure in male and female patients. Female patients had a lower postoperative return to sport and shoulder scores after the modified Latarjet procedure compared with literature reports. Whereas female gender should not be a contraindication to the Latarjet procedure, selection of patients in this group may need to be more stringent.

**Level of evidence:** Level IV; Case Series; Treatment Study



**Keywords:** Latarjet procedure; clinical outcomes; complications; female gender; shoulder instability; shoulder dislocation

The incidence of shoulder dislocations in female patients varies according to the population group being assessed. Many epidemiologic studies focus purely on high-risk populations, which are predominantly male.[18] A recent epidemiologic study looking at the incidence of shoulder dislocations in rugby players in France reported 1317

This study was approved by the University of Cape Town Faculty of Health Sciences Human Research Ethics Committee: HREC REF 490/2014.

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http://dx.doi.org/10.1016/j.jse.2017.07.030

dislocations in men and 28 in women, giving an incidence of 10/10,000 in men and 5/10,000 in women. This study looking at a predominantly male contact sport obviously does not reflect the general population.[5] Whereas young men have the highest risk of primary anterior shoulder dislocation requiring closed reduction and recurrent dislocation,[20,24] in the general population, female patients make up between 25% and 28.2% of primary anterior shoulder dislocations. Female patients are reported to have a higher median age at primary dislocation (49-54 years) compared with men (30 years). Young men have a 6.7 times greater incidence of primary anterior shoulder dislocation; overall, men had a 2.8 times higher incidence of primary dislocation.[20,21,31] In adolescent patients aged 10-16 years, female patients made up 20% of all primary anterior shoulder dislocations.[19] This illustrates that significant numbers of female patients have anterior shoulder dislocations.

The modified Latarjet procedure is well proven to stabilize recurrent anterior shoulder instability, with recurrence rates of <1% reported.[28,30] It has been suggested to provide superior results to soft tissue stabilization in patients with bone loss,[6,7] in patients playing contact or competitive sports, and in those with ligament laxity.[2] Recent literature has highlighted that it is not without complications, however.[12-14,26] The Instability Severity Index Score gives guidance in deciding who will or will not benefit from an arthroscopic stabilization and therefore when an open procedure may be indicated,[2] but there is little information about contraindications to a modified Latarjet procedure and which patients may do worse with this procedure. There is some evidence that complications may be more severe in patients who are epileptic or those who abuse alcohol or drugs.[12] Outcomes in terms of redislocation are also not as good in epileptic patients who have had the modified Latarjet procedure.[25] There is little evidence relating to outcomes and complications in other groups of patients. It seems that with the increased reports of complications after the modified Latarjet procedure, there is a need to narrow our selection of patients further to try to identify which patients benefit most from this procedure and in which patients it should be avoided.

In our practice, we noticed that a number of our female patients did not respond well to the modified Latarjet procedure. With this in mind, we undertook to review the clinical results of the female patients in our practice who had undergone the modified Latarjet procedure. We also searched the literature for outcomes in female patients with which we could compare our results.

## Materials and methods

### Clinical review

The databases of the 3 senior surgeons were reviewed to identify female patients who had undergone the modified Latarjet procedure. Patients included had undergone the anterior shoulder stabilization surgery between 2001 and 2014; this allowed at least 1 year of follow-up.

Thirty-two patients were identified. Twenty-nine patients had adequate clinical notes (91%) that allowed inclusion in the study. Nineteen patients were able to be contacted for a full telephone interview (60%). Ten were not able to be contacted, and so only their latest clinical notes were available for use. Three (9.4%) patients were lost to follow-up.

Patients identified were interviewed by telephone to complete the Western Ontario Shoulder Instability Index (WOSI) score, Oxford Shoulder Instability Score, and Oxford Shoulder Score and to provide a subjective shoulder value. These scores were completed by telephone or where possible by e-mail. The WOSI score has been shown to be one of the most reliable, valid, and responsive scores for assessing shoulder instability. The other scores were included to assess outcomes in areas other than instability.

Patients were not subjected to further radiologic investigation specifically for this study. All patients had routine follow up radiographs at 6 weeks postoperatively. Symptomatic patients had further radiologic studies only if required. Radiologic complications were documented only in symptomatic patients. Bone resorption and healing were assessed in these patients using plain radiographs of the shoulder. They were assessed on 3 views, the anteroposterior, lateral, and modified axillary views.

The average age at first dislocation was 27.6 years (range, 11-47 years). The average age at which they had the modified Latarjet procedure was 37.2 years (range, 20-66 years); 78.3% of patients had the modified Latarjet procedure on the dominant arm. Preoperatively, 16 patients played sport (55%); 6 patients played >1 sport.

A number of patients had medical comorbidities that may affect outcomes in instability surgery.[12] Three patients were epileptic, 2 patients had documented alcohol problems, and 1 of the epileptic patients also had problems with drug abuse. Our policy is to operate only on epileptic patients who are seizure free for at least 3 months and are under the care of a neurologist.

The indication for the modified Latarjet procedure was recurrent anterior instability in patients playing contact sport, those with significant bone loss (defined as anterior glenoid bone loss of >10% or a Hill-Sachs lesion of >20%), and those with a failed soft tissue stabilization procedure. Bone loss was assessed by arthroscopic examination or on preoperative computed tomography (CT) scan. A failed soft tissue stabilization was the indication in 4 patients.

In all cases, the operation was performed by a fellowship-trained shoulder surgeon or a fellow under direct supervision. The surgical technique of the modified Latarjet procedure is that described by Walch and Boileau.[28] A relatively low beach chair position was used with the patient at 45° to the horizontal. The approach was through an anterior axillary incision and the deltopectoral interval. The coracoid was harvested as close to the base as possible, leaving the coracoclavicular ligaments intact. The graft was prepared on the inferior surface, removing soft tissue and decorticating the bone. In all cases, the axillary and musculocutaneous nerves were checked to confirm their position, and they were protected throughout the procedure. The glenohumeral joint was then approached through a subscapularis split at the junction of the superior two-thirds and the inferior third. The anterior glenoid was prepared, and the graft was fixed in position using 2 screws. The articular surface of the glenoid was visualized to confirm that there were no screws in the joint and also to confirm that the placement of the graft was not too lateral. The capsule and tendon of the subscapularis were closed. Hemostasis was achieved, and the wound was closed. After the operation, the patients were placed in a shoulder immobilizer for comfort and allowed to begin range of motion exercises guided by pain. Positions