

Journal Club: 17 February 2015

Reviewer: Mr. Simon Robinson FRCS (Tr & Orth)

Attendees: Len Funk, Jeremy Granville-Chapman, Dave Copas, Abbas Rashid, Ananth Ebinesan, Alistair Hunter, Elizabeth Pinder, Joshua Ong

Wrightington Upper Limb Unit

Mizuno N, Denard PJ, Raiss P, Melis B, Walch G. Long-term results of the Latarjet procedure for anterior instability of the shoulder. *J Shoulder Elbow Surg* 2014; 23:1691-1699.

Aim:

- To determine the long-term functional outcome after Latarjet procedure, at a minimum of 18 year follow-up
- To assess the prevalence and risk factors for osteoarthritis in patients undergoing a Latarjet procedure

Introduction: Latarjet described the transfer of the coracoid process through the subscapularis tendon to the antero-inferior glenoid in 1954. The mechanism of action is said to be three fold with the conjoint tendon acting like a sling through the subscapularis being said to be more important than the bone block and the coracoacromial ligament stump by Yanamoto et al. Studies have shown that the procedure effectively reduces instability but the prevalence of osteoarthritis is reported to be between 49 and 71%.

METHODS

- The case series is a retrospective (Level 4) single surgeon series of patients who underwent surgery between 1988 and 1993.
- Operative indications were 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 same operative technique was used for all.
- The coracoid was osteotomised at the junction between the vertical and horizontal aspects.
- The inferior cortex was removed. The coracoid is passed through the subscapularis split at the junction of the lower 1/3 and placed and fixed flush with the glenoid with two screws. The capsule is then repaired to the coracoacromial ligament stump.
- Post-operatively the patient was in a sling for 2 weeks. Three days after surgery, active-assisted forward flexion and external rotation were allowed as tolerated. Four weeks after surgery lower limb conditioning was allowed, with shoulder strengthening at 8 weeks. Return to sport after clinical and radiological assessment, usually at 3 months.

Inclusion criteria

- Minimum of 18-year follow-up
Complete pre- and post-operative functional outcomes and radiographic data

Exclusion criteria

- A previous failed instability repair
- Incomplete functional and radiographic data

Outcomes

- Patient demographics, activity (return to sport) and a number of pre-operative dislocations were assessed. A physical examination was performed where possible. When not a questionnaire was used to assess self-reported range of motion, strength, stability, activity, satisfaction and a subjective shoulder value (SSV), a patient-reported percentage of their shoulder function, with 100% being an entirely normal shoulder. A Rowe score was then calculated to give a score out of 100. The score is made up of four parts - pain, stability, motion and function are assessed, with function being more heavily-weighted.
- Radiographs were obtained pre-operatively, at 3 months then at final follow-up. Arthritis was graded into 4 stages according to the Samilson and Prieto classification, as modified by Buscayret et al. In this modified classification, stage 1 consists of humeral or glenoid osteophytes <3 mm, stage 2 consists of osteophytes 3 to 7 mm with slight irregularity of the glenohumeral joint, stage 3 consists of osteophytes >7 mm with glenohumeral joint space narrowing and sclerosis, and stage 4 consists of complete glenohumeral joint space loss. Post-operative position of the coracoid graft at 3 months was recorded. Flush was within 1 mm. If more than 1 mm medial or lateral the position was defined as 'overhang'.

RESULTS

334 procedures performed.

Complete data in 68 shoulders (60 patients).

Average age 29 years, 79% male and 57% dominant shoulder.

89.7% participated in sports (38.2% professionally).

Five shoulders suffered with recurrent subluxations, the rest dislocations or dislocations and subluxations.

Bone defect in 22.1% of glenoids and a Hill-Sachs lesion in 82.4%. 8 patients (11.8%) demonstrated Grade 1 glenohumeral arthritis pre-operatively.

Post-operative function

60.3% had no pain, 26.5% experienced pain during athletic activities and 13.2% had pain during ADLs.

Patient satisfaction rated 80.8% very, 14.7% satisfied & 4.4% disappointed.

In returning to sports, 93.4% returned at the same level, 8.2% to a different sport or lower level.

SSV mean 90.9%.

Post-operative instability

Recurrence in 4 patients (5.9%).

Two dislocations and 2 with subluxations.

One patient had a medial coracoid and required revision surgery.

Post-operative radiographs

Position of graft was flush at 79.4%, medial at 7.4% and lateral overhang at 13.2%.

Osteoarthritis seen in 50% of patients with pre-operative arthritis and 20% of patients without.

Mainly stage 1, and no stage 4.

One graft pseudoarthrosis, 1 screw fracture and 2 screws loosened.

Risk factors for OA

Higher age at surgery

High-demand sports

Lateral overhang and pre-operative SSV

Number of pre-operative dislocations not a risk

DISCUSSION

The authors highlight their excellent long-term clinical results at 20 years. Progression to osteoarthritis lower than previously published but natural history of shoulder joint not well understood. Similar levels of OA as compared to the non-operated shoulder in patients undergoing Bankart repair. From a technical point the main controlling surgical factor is lateral overhang and this must be avoided.

CRITIQUE

Strengths of the study

Good clinical and radiological data. Only complete data. One of the longest follow-ups in the literature. 60 patients / 68 shoulders is a good number for over 18 year follow-up.

Methodological concerns

Retrospective. There is an 80% loss to follow-up, which may have introduced bias. Mainly patient reported outcomes. Rowe score calculated using subjective patient reported scores, not objective as should be the case. No control / comparison group. Small numbers of patients had OA making stats less reliable. Some numbers and therefore statements don't add up. (Return to sports: 57 at the same level, 5 to a different sport or lower level = 62 patients) Radiographs reported by single unnamed observer. Measurements within a millimeter required and it's not mentioned whether plain films or PACS system used but exact measurements may be difficult.

Overall Conclusion

80% loss to follow-up makes reliable conclusions difficult.

The Latarjet procedure appears to provide excellent long-term functional outcome, with low rates of recurrence (5.9%).

Just under 2/3 of patients are pain free but over 90% return to sport.

The prevalence of post-operative development of arthritis and progression of preoperative arthritis is lower than previously reported at 23.5% at 20 years of follow-up, but the majority of arthritis is mild and is relatively asymptomatic. How much higher this is than the background population is not known.

Risk factors for development of osteoarthritis after Latarjet reconstruction include old age at final follow-up, high-demand sports activity, and lateral overhang of the coracoid graft. The number of pre-operative dislocations does not appear to be relevant, as reported in previous papers.

This paper will help in the consent process when discussing surgical options with patients who have not had any previous operative intervention.