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No Significant Difference In Radiological Outcomes At 3 Months Between Single-Screw And Two-Screw Fixation In Latarjet Surgery

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Faculty Disclosure Information

- P. Landreau: Arthrex, Smith & Nephew, Beemed

Introduction

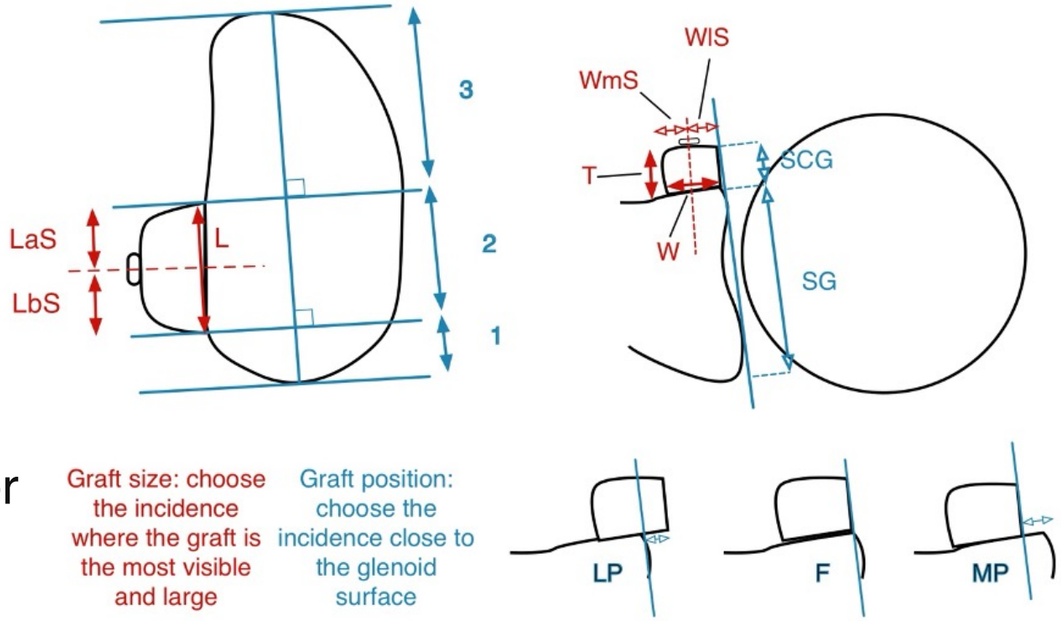
- The Latarjet procedure concept is to perform an osteotomy of the coracoid process and its transfer—with the conjoined tendon—to the anteroinferior glenoid rim through a split in the subscapularis muscle, combining static and dynamic effects.
- While initially fixed using a single screw, **the contemporary standard typically involves two screws**, a modification aimed at enhancing biomechanical stability and graft integration. However, the anatomical variability of the coracoid process—particularly in terms of size—raises concerns regarding the universal applicability of a two-screw fixation strategy.
- **Objective: To compare graft consolidation at 3 months on CT between single screw + washer and double screw fixation.**
- Secondary goals: assess graft position, contact surface, and rotation.

Materials and Methods

- **Design**: Bicentric (UAE and Belgium), retrospective, non-interventional study. Approved ethics by both institutions.
- **Cohort and surgeons**
  - **Group 1: 47 patients (UAE).** 1 partially threaded, non-cannulated screw with washer – *Surgeon P. Landreau*
  - **Group 2: 40 patients (Belgium)**: 2 partially threaded, cannulated screws – *Surgeon O. Verborgt*
- **Procedure**: Standard Open Latarjet described by Walch, differing only in fixation hardware.

Materials and Methods

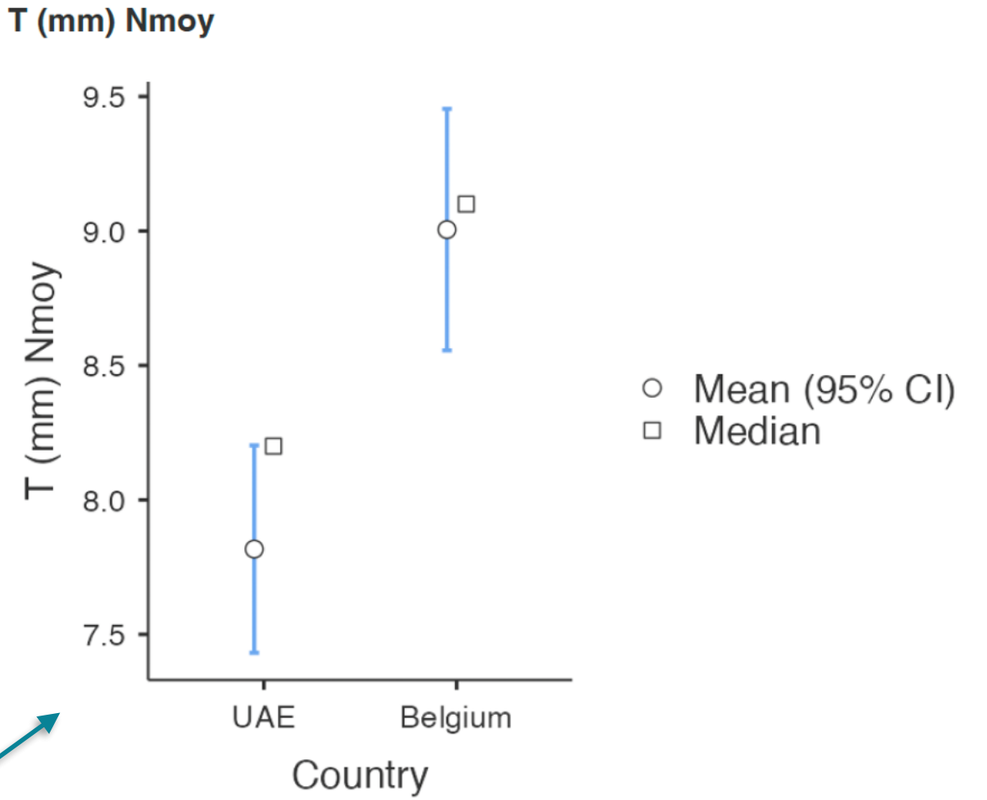
- **Radiological Assessment**:
  - Graft & glenoid morphology (length, width, thickness, surface area)
  - **Graft position**:
    - *Sagittal*: Clockface method (2–5h for right, 7–10h for left)
    - *Axial*: Medial / Flush / Lateral
  - **Consolidation**: Bony bridge on 4 axial & sagittal views
  - **Rotation**: Assessed via graft axis vs. glenoid on coronal plane
  - All patients underwent **CT at 3 months** post-op



- **Statistics**:
  - Shapiro-Wilk for normality
  - Student's/Welch's t-tests
  - Inter-observer reliability via ICC:
    - Poor (<0.5), Moderate (0.5–0.75), Good (0.75–0.9), Excellent (>0.9)
  - Software: **Jamovi v2.3**; significance threshold **p = 0.05**

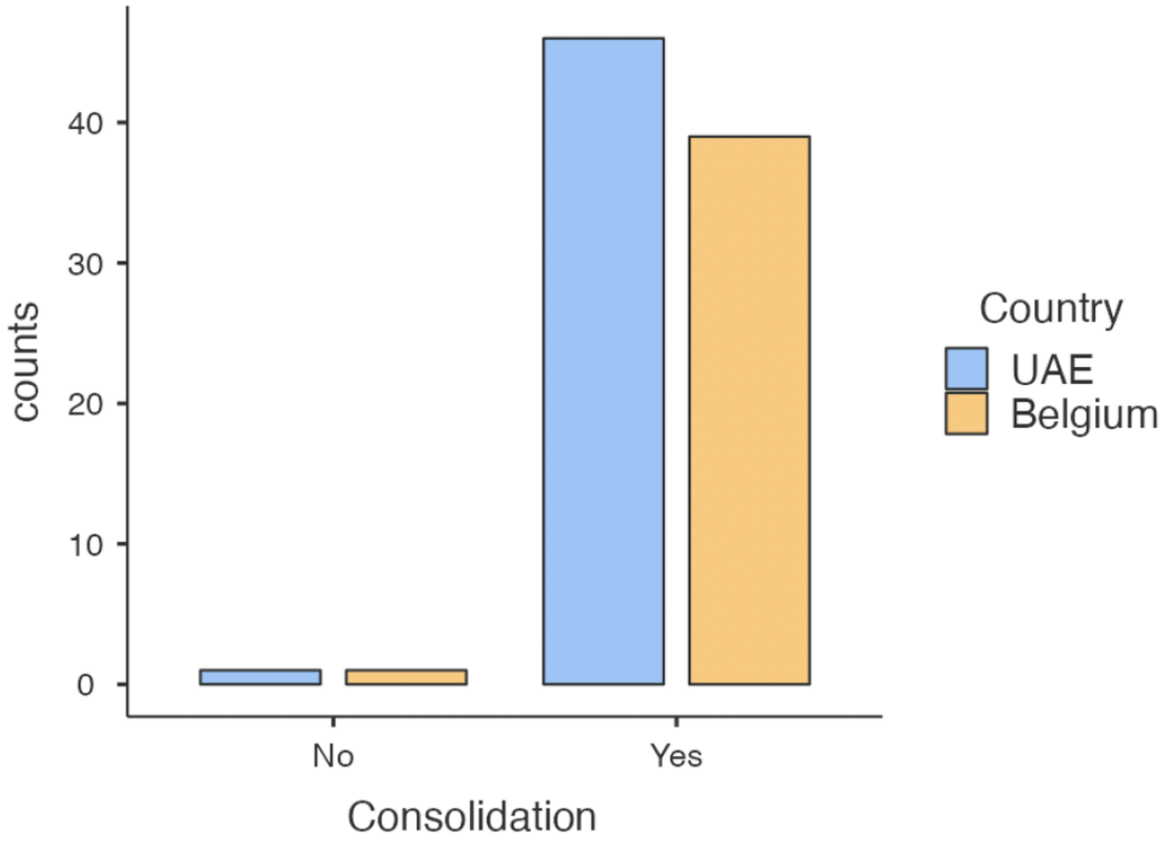
Results: Demographics & Graft Morphology

- **Demographics**:
  - No significant difference in age or CT timing between groups
  - **Male-to-female ratio**:
    - UAE: 14.6
    - Belgium: 3.44
  - **Right/left shoulder ratio**:
    - UAE: 1.26
    - Belgium: 1.0
- **Graft Morphology**:
  - No difference in graft **length**, **width**, or **contact surface**
  - **Significant difference** in **graft thickness** between groups



Results: Graft Positioning & Consolidation

- **Axial Positioning**:
  - 4 lateral grafts in each group
  - 2 medial grafts in the single screw group
  - All other grafts were flush with the glenoid
- **Sagittal Positioning**:
  - Grafts placed more equatorially in the single screw group
  - All grafts were within the accepted anatomical range
- **Consolidation & Rotation**:
  - One non-union in each group
  - ***Overall consolidation rate > 97% at 3 months***
  - **No rotation** observed in either group



Discussion: Background and Literature review

- Two-screw fixation gained popularity due to concerns with single-screw outcomes (non-union, malrotation, osteolysis).
- However, complication rates have not clearly improved with two screws.
- No prior clinical studies compare single screw + washer vs two screws.
- Prior series show mixed consolidation results: better when washer is used with single screw.

Discussion: Morphology, Position & Consolidation

- Graft morphology similar except for thickness (significantly different).

  Variations due to ethnicity and/or decortication technique.

- Axial position: no difference. Sagittal: more equatorial in single-screw group.

- **Consolidation: 98% (1 screw), 97% (2 screws), no malrotation observed.**

  Technique and compression maybe more important than screw number alone.

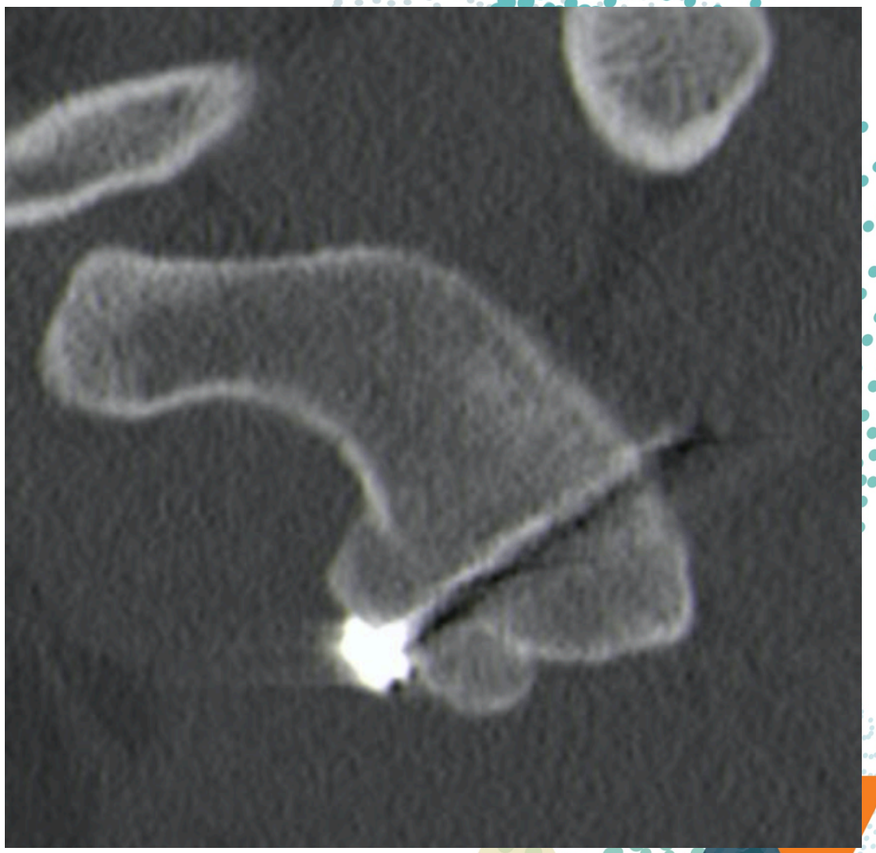
Discussion: Clinical Relevance

- Fixation strategy depends on screw type, threading, and graft size.
- Single screw + washer effective for small grafts (<2.5 cm), reduces fracture risk.
- Study limited by retrospective design and operator bias.
- Relevance: Use of one screw + washer is a valid and adaptable alternative based on graft morphology.

Conclusion

No statistical difference in the consolidation of a correctly positioned coracoid graft using **one partially threaded**, non-cannulated steel screw (diameter 4 mm) with a washer and **two partially threaded**, cannulated steel screws (diameter 4.5 or 3.75 mm) without a washer at 3 months post-operation on CT scans.

One-screw partially-threaded fixation with washer and compression is a valid alternative for Latarjet procedure.



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