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Patient specific instrumentation for open Latarjet procedure. Technique, accuracy and short-term outcome. A prospective Case Series.

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Faculty Disclosure Information

- My disclosure is;
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Background

- The Latarjet procedure is widely used to treat anteroinferior shoulder instability.
- Inadequate coracoid bone block positioning may result in persistent instability or early glenohumeral osteoarthritis.
- Reported complication rates are as high as 15%.
- 3D-printed Patient Specific instrumentation (PSI) incorporates individual scapular morphology.
- PSI guides will enhance the accuracy of coracoid bone block positioning in the open Latarjet procedure.

Objective

To optimize the PSI Latarjet procedure by detailing the technique and assessing the accuracy of graft positioning through a comparison of the digitally planned and actual surgical outcomes.

Methods

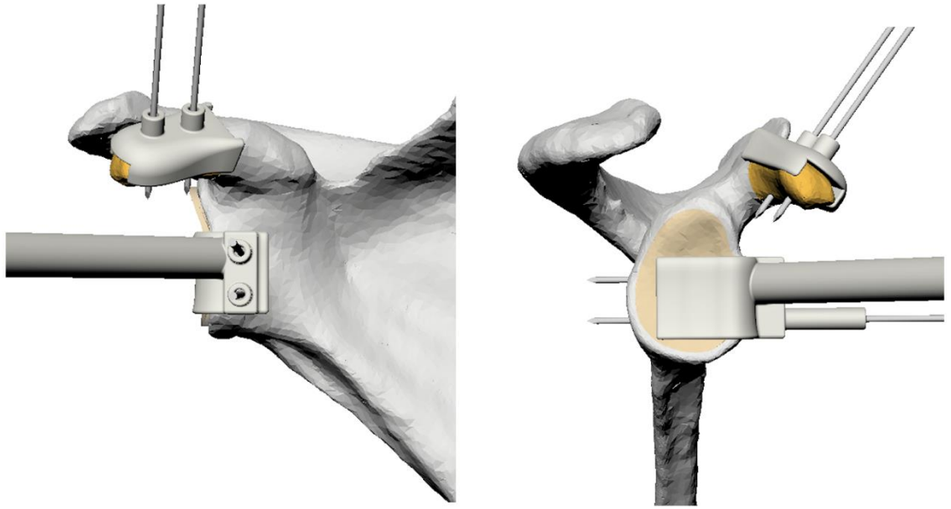
Prospective case series Jan-May 2024

Pre-op planning

- Preoperative CT scans were converted to 3D scans.
- Design software used to digitally design the coracoid bone graft, coracoid drill guide, and glenoid drill guide.
- Open Latarjet procedure digitally planned and executed based on patient-specific anatomy.
- 3D-printed PSI drill guides were produced and sterilized.

Surgical Procedure

Double screw open Latarjet procedure



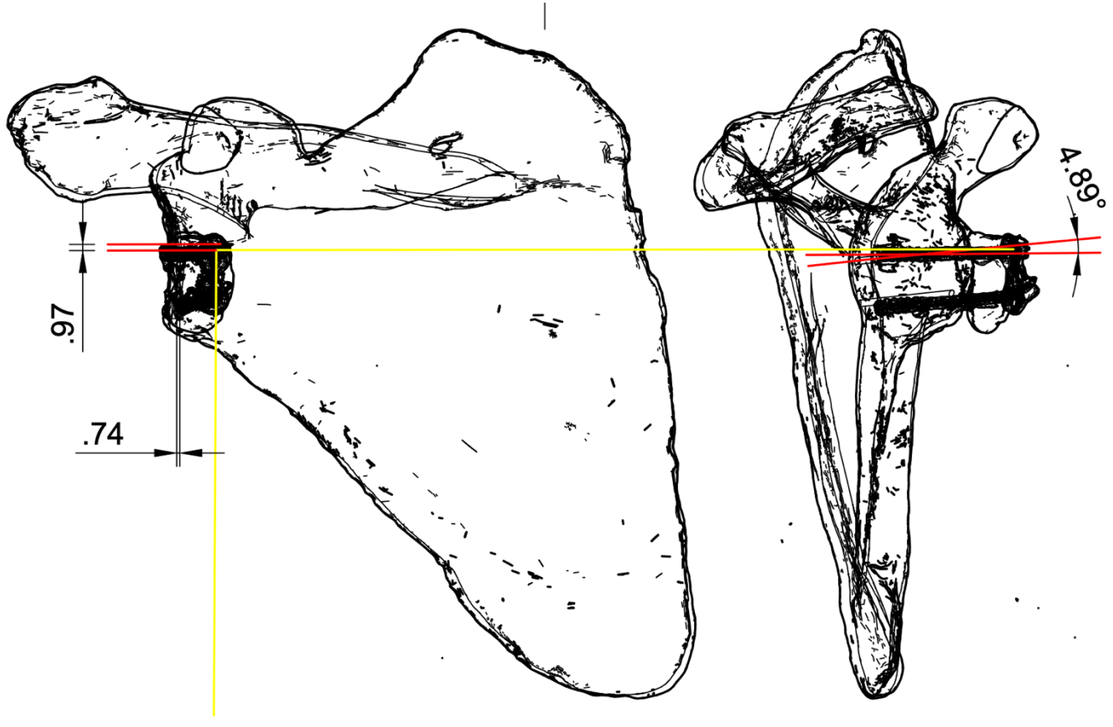
Methods

Outcomes of interest

- To compare pre-operative planning with the surgical procedure
  - Graft positioning Medial <> Lateral, Cranial <> Caudal through overlaying pre-op and post-op CT scans
- Evaluate early evidence of graft healing through 6-wk postop CT
- Document PSI Guide Modifications after every procedure

Statistical analysis

Descriptive statistics



Results

Surgical Details and Recovery

- No postop infection, nerve or vascular injury.
- Mispositioning of the superior screw in one case.

Parameter	Value
Age, Yr, (median +/- range)	23 (21-33)
Gender, male/female, n	5/0
BMI, kg^2 (median +/- range)	23.46 (19.39-28.91)
Shoulder side, left/right, n	2/3
Smoking, n	3
Contactsport, n[a]	3
Glenoid bone loss (percentage, median +/- range)	5 (2-17)
Hill Sachs, n	5
Cuff lesion, n	0
SLAP lesion, n	0

BMI, Body Mass Index; SLAP, superior labrum anterior to posterior
[a]At time of first luxation.

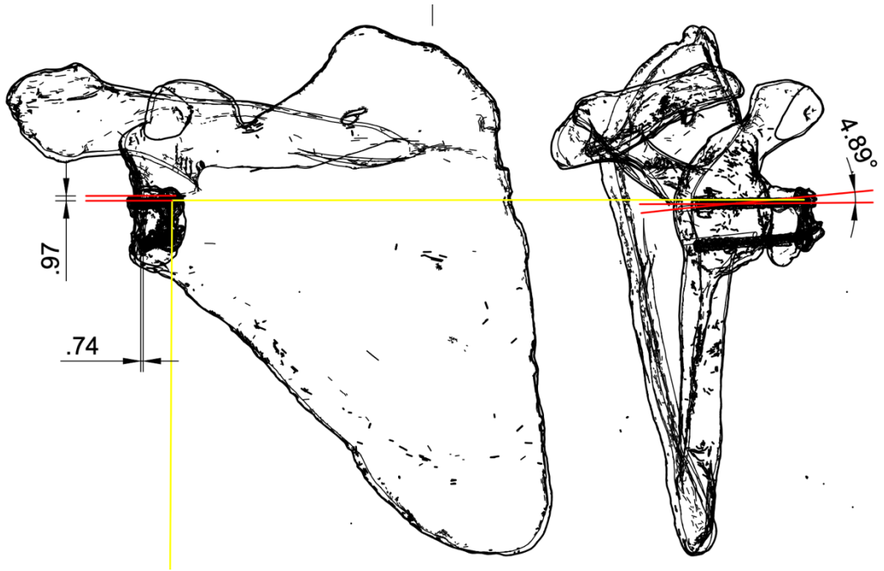
Results

Coracoid Graft Positioning and Healing

- The median graft position was 0.01 mm medial and 0.97 mm caudal to the glenoid surface.

- Craniocaudal deviations: 4.89º–16.95º
- Mediolateral deviations: 2.56º–20.75º.

- All grafts achieved trabecular continuity within six weeks.



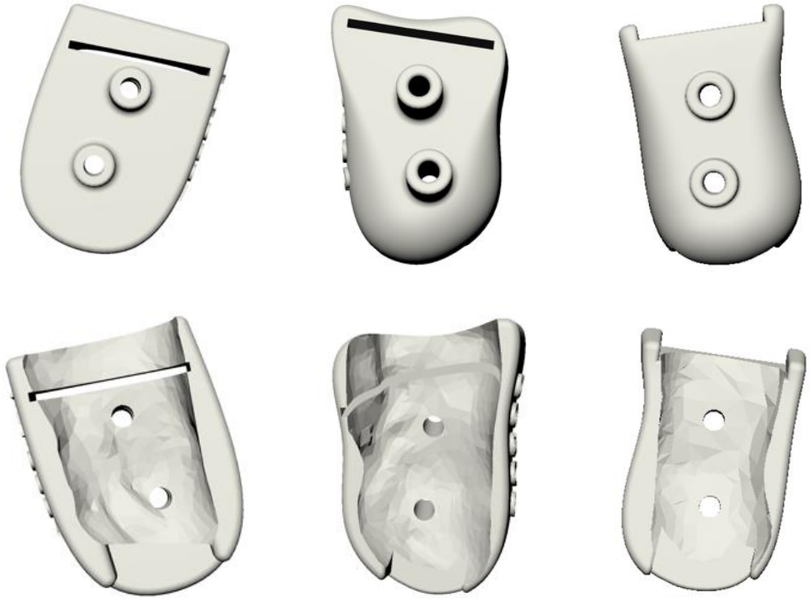
Patient	Shoulder side	Angular deviation sagittal plane (º)	Cranial/Caudal (mm)	Angular deviation transversal plane (º)	Lateral/Medial (mm)[a]
Case 1	R	16.95	+ 1.04	14.03	+ 1.13
Case 2	L	11.36	+ 5.58	8.20	- 0.01
Case 3	L	6.25	- 3.17	2.56	- 1.8
Case 4	R	4.89	- 0.97	20.75	- 1.66
Case 5	R	8.01	- 5.16	20.14	+ 1.70

[a]Corrected for 2.4mm cartilage on glenoid surface

Results

PSI Guide Modifications

Case 2. Case 3. Case 5.



Case 1. Case 5.

Conclusion

Patient-specific instrumentation enabled accurate graft positioning and early evidence of graft healing in all five cases. Screw malposition occurred in one case. Further studies are needed to assess long-term clinical outcomes, particularly regarding graft positioning and implant-related complications.

References

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Contact information

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