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Long-term Follow-up after Inlay Total Shoulder Arthroplasty

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Faculty Disclosure Information

None of the authors have any financial conflicts to disclose in conjunction with the content of this study.

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Introduction

- Current literature demonstrates improvement in short and mid-term patient reported outcomes (PROs) following inlay total shoulder arthroplasty (iTSA)[1-3]

- We previously demonstrated that iTSA resulted in significantly improved shoulder function, pain relief, and range of motions (ROM) at short-term follow-up[4]

- Long-term follow-up regarding its use as a primary procedure for advanced shoulder osteoarthritis (OA) is limited

Study Objectives

Purpose

Evaluate long-term clinical benefits following iTSA

Hypothesis

We hypothesized that PROs demonstrate significant improvement at long-term follow-up

Methods

Study Design

- Longitudinal cohort (2011-2018)

Inclusion Criteria

- Glenohumeral arthritis treated with iTSA
- Minimum follow-up of 6 years

Exclusion Criteria

- Less than 6-year follow-up

Radiographic Assessments

- Walch: Glenoid Morphology
- Samilson-Prieto: OA Grade

Data Collection

- Intraoperative: Blood loss, complication rate
- PROs: WOOS%, ASES, VAS-Pain, Activities of Daily Living (ADLs), patient satisfaction
- Range of motion
- Post-operative complications

Statistics: SPSS (Version 29.0.2.0)

- Descriptive and PRO improvement analyses: Paired Samples T-tests, Levene's Test for Equality of Variances
- Independent t-tests: gender and age stratification (Group I: <65, Group II: ≥65)

Study Population

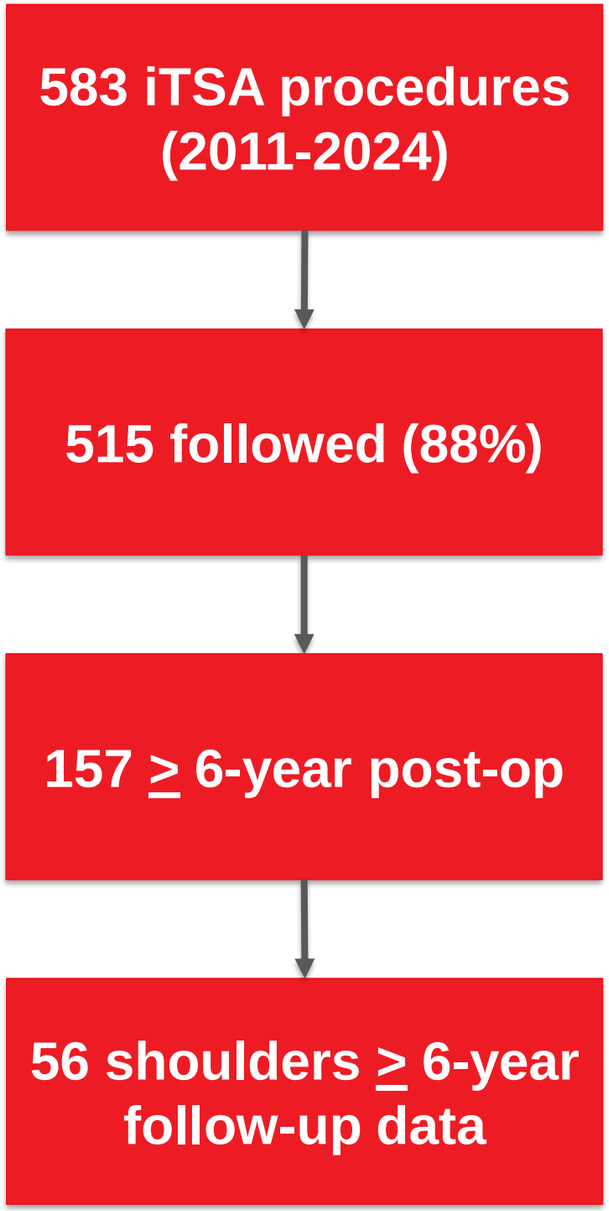
- 56 shoulders, 43 pts (13 bilateral) met inclusion criteria
- Age Distribution:
  - Group I (<65): 20
  - Group II (≥65): 23

Table 1. Patient Characteristics

Age	64.3 ± 9.5
Gender	26 Males, 18 Females
BMI	28.1 ± 5.0
Mean Follow Up	8.4 ± 1.6 years

Intraoperative data

- No intraoperative complications
- Mean blood loss: 84.9 ± 49.9 mL
  - 1 autologous blood transfusion (cellsaver)



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Radiographic Imaging

Table 2. Radiographic Staging

Classification	Category	Percentage
Walch Classification	A1	32%
	A2	11%
	B1	4%
	B2	43%
	B3	8%
Samilson-Prieto	Grade 0	0%
	Grade 1	0%
	Grade 2	7%
	Grade 3	93%

Figure 1,2. B2 Glenoid PreOp

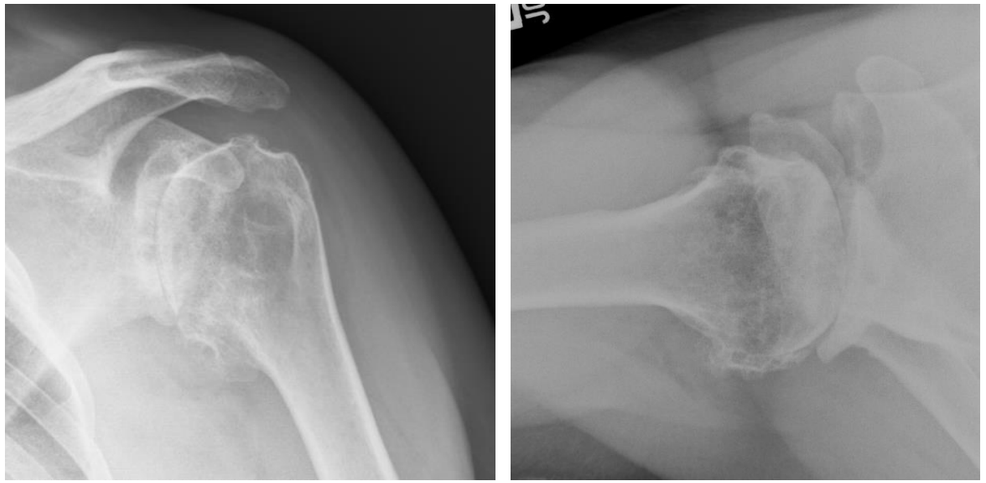
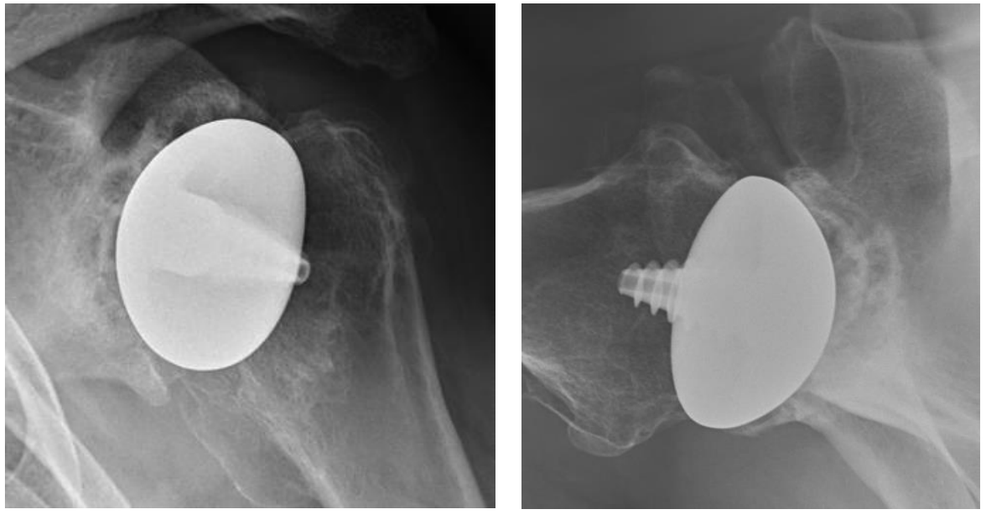


Figure 3,4. B2 Glenoid 13-year Post-Op



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Results

- High patient satisfaction at last follow-up: 9.5 ± 1.0
- Implant removals (n = 2): 1 trauma (47 mo after iTSA), 1 infection (17 mo after iTSA)

Table 3. Patient Reported Outcomes

Outcome Score	Preop	Last Follow-up	Improvement (p)
WOOS%	28.3 ± 16.9	82.6 ± 22.0	< 0.001
ASES	29.3 ± 14.7	78.3 ± 22.3	< 0.001
VAS- Pain	7.4 ± 1.9	0.8 ± 1.7	< 0.001
ADLs	3.9 ± 2.3	8.1 ± 2.0	< 0.001

Table 4. Range of Motion

Range of Motion	Preop	Last Follow-up	Improvement (p)
Forward Elevation	107.1° ± 32.8	151.9° ± 23.2	< 0.001
External Rotation	22.4° ± 17.3	49.1° ± 15.0	< 0.001

Results – Subgroup Analysis

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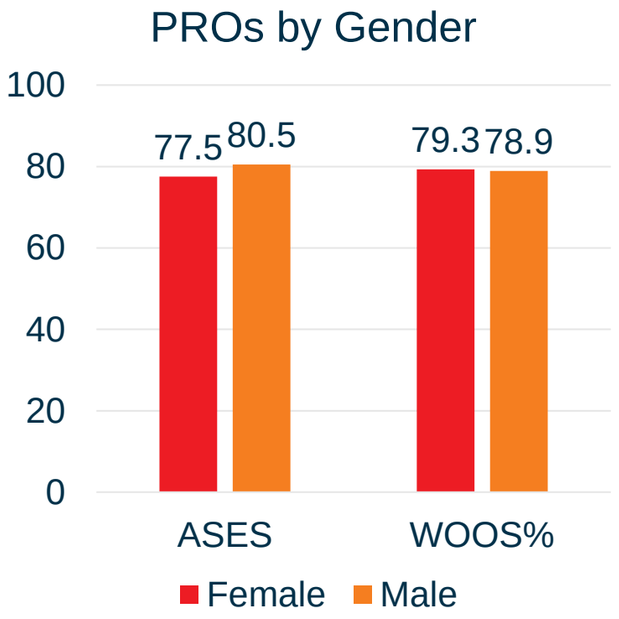
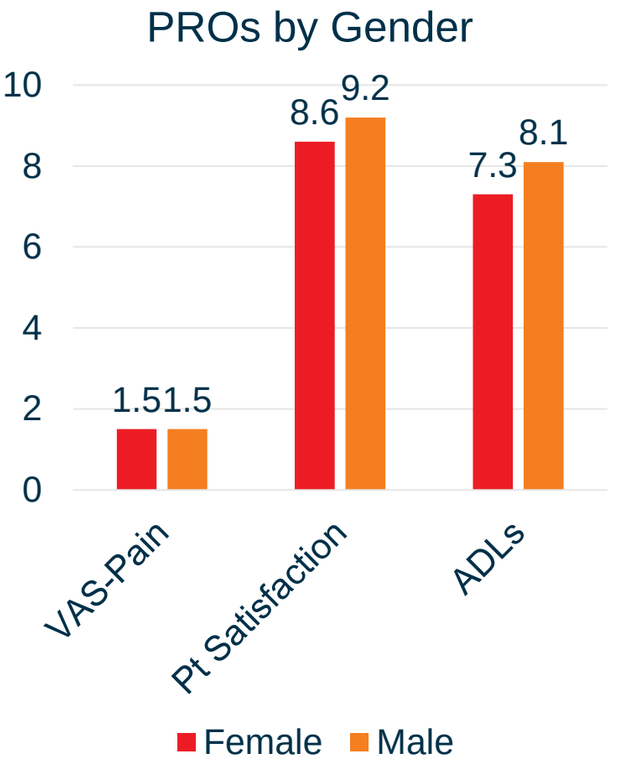
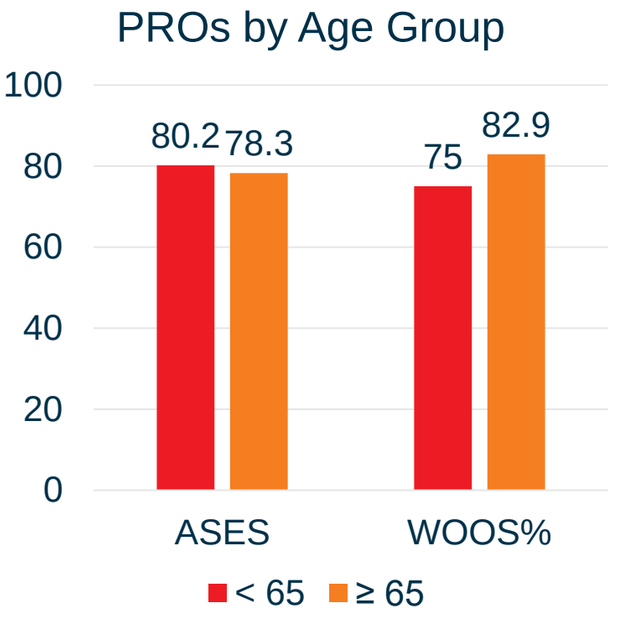
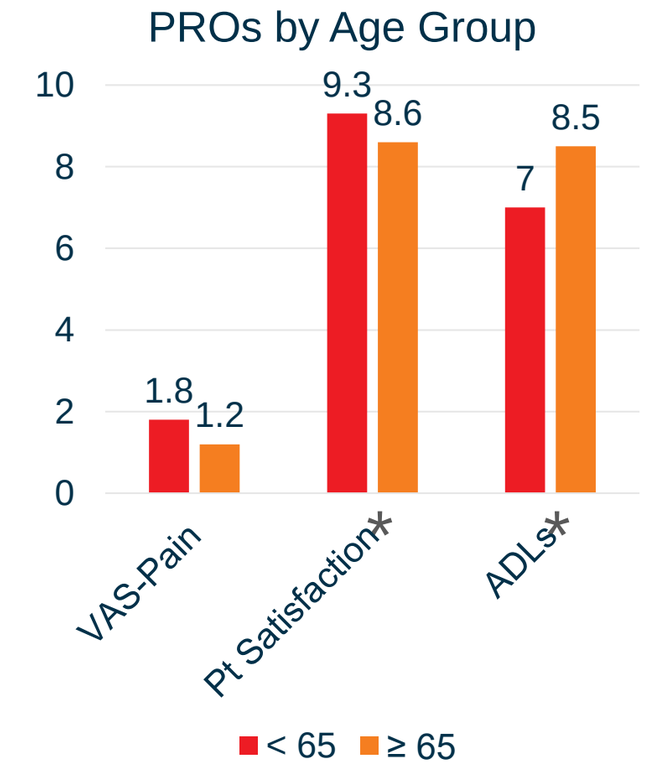
- No significant differences in ASES, VAS-Pain, Pt Satisfaction, ADLs, and WOOS% between genders (p > 0.05)
- No significant differences in ASES, VAS-Pain, and WOOS% between age groups (p > 0.05)
- Patients over 65 had significantly higher ADL scores (p=0.04): 7.0 (<65), 8.5 (≥65)
- Patients under 65 had significantly higher Pt Satisfaction (p=0.01): 9.3 (<65), 8.6 (≥65)









*Significant Difference

Conclusion

- At a mean follow-up of 8.4 years, patients treated with inlay total shoulder arthroplasty experienced significant improvements in pain, function, shoulder range of motion and reported high levels of satisfaction
- Clinical outcomes were consistent for male and female patients and younger and older age groups
- Long-term results support our previous short-term data and reconfirm the use of iTSA as an effective primary arthroplasty option for advanced shoulder osteoarthritis

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