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Sex-specific Outcomes of Arthroscopic Anatomic Glenoid Reconstruction for Anterior Shoulder Instability

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Disclosures

Bander Alrashedan, Mackenzie Hancock, & Noah Karabanow have nothing to disclose.

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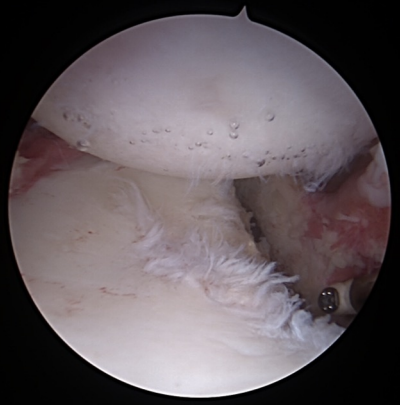
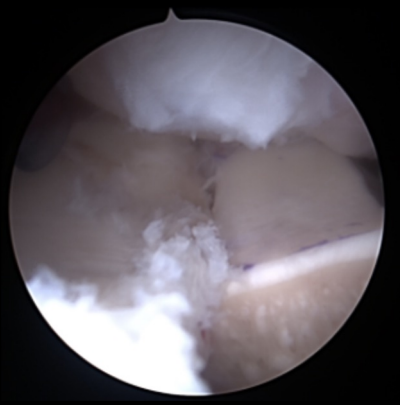
Shoulder Instability Treatment

- Anterior shoulder instability is the most common type of glenohumeral instability (>90%), with younger age, contact sports, and male sex being risk factors.[1,2,3]
- Arthroscopic Anatomic Glenoid Reconstruction (AAGR) with distal tibia allograft (DTA) is a safe and reliable alternative to the Latarjet procedure.[4,5]
- During AAGR, the graft is deployed through the rotator interval, preserving the subscapularis.[6]



Native glenoid with bone loss



Distal tibia allograft in place

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Sex Differences in Shoulder Instability

- Sex differences have been found in post-operative outcomes following arthroscopic Bankart repair and the open Latarjet procedure.[7]
- Post-operative differences are thought to be due to sex differences in coracoid and glenoid dimensions, muscle mass, strength, and joint laxity.[8,9,10]
- No studies have uniquely investigated the effect of sex on AAGR outcomes.

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Purpose

To compare patient-reported and functional outcomes between male and female patients who underwent Arthroscopic Anatomic Glenoid Reconstruction for anterior shoulder instability to determine if there are sex-related differences post-operatively.

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Methods

- **Study Design:** Single surgeon, single center, retrospective chart review
- **Participants:** Patients who underwent AAGR with DTA between 2013 and 2022
  - **Exclusion criteria:** glenoid fracture, posterior or multidirectional instability, rotator cuff pathology
- **Outcomes:**
  - Patient-reported outcomes (PROs), including WOSI, DASH, and EQ-5D-5L scores, were collected pre-operatively, and at 6 months, 1-year, and 2-years post-operatively
  - Range of motion (ROM) and strength were collected from physiotherapy reports in flexion, abduction, internal rotation, and external rotation until 2-years post-operatively
- **Analysis:** Demographics, PROs, ROM, and strength were compared between male and female groups and over time using repeated measures ANOVAs in R© Studios

ANOVA = Analysis of Variance
DASH = Disabilities of the Arm, Shoulder, and Hand Outcome Measure
EQ-5D-5L = EuroQol-5 Dimensions-5 Levels; measures health-related quality of life
WOSI = Western Ontario Shoulder Instability Index

No sex differences in recurrence rate or baseline demographics, except for age

	Female (n=34)		Male (n=84)		P value
Age	34.8 ±11.7		29.6±10.2		0.010
Body Mass Index	26.8 ± 6.5		26.4 ±4.6		0.684
Operative Side	Left	Right	Left	Right	0.192
	13	21	45	39	
Revision	Yes	No	Yes	No	0.742
	8	26	24	60	
Recurrence	Yes	No	Yes	No	1.00
	1	30	2	74	

- Females were significantly older than males at surgery
- Low recurrence rate (2.5%) across entire population

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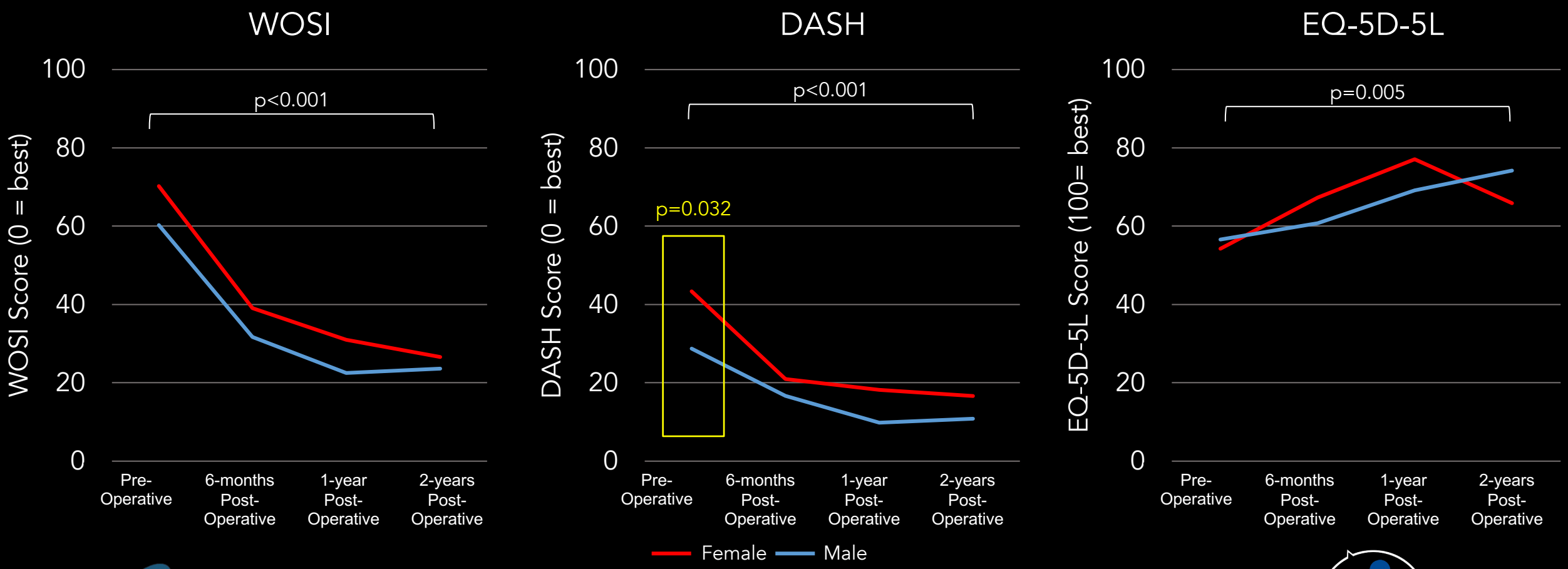
Both sexes improved all PRO scores over time; Females had higher (worse) DASH scores at baseline



Males generally reported better outcomes, but few sex differences reached statistical significance

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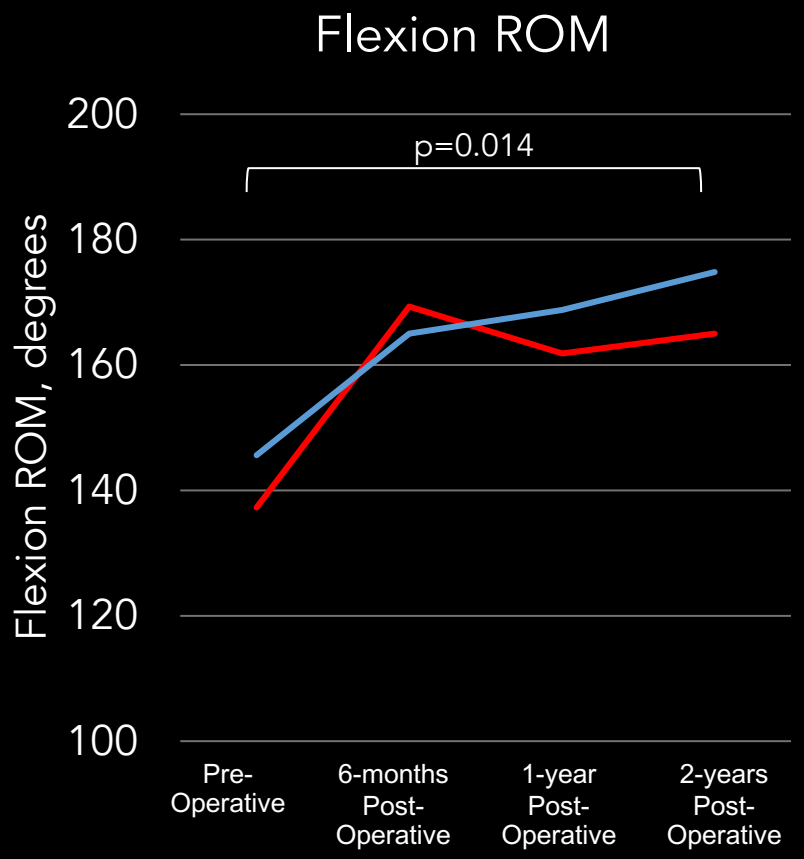
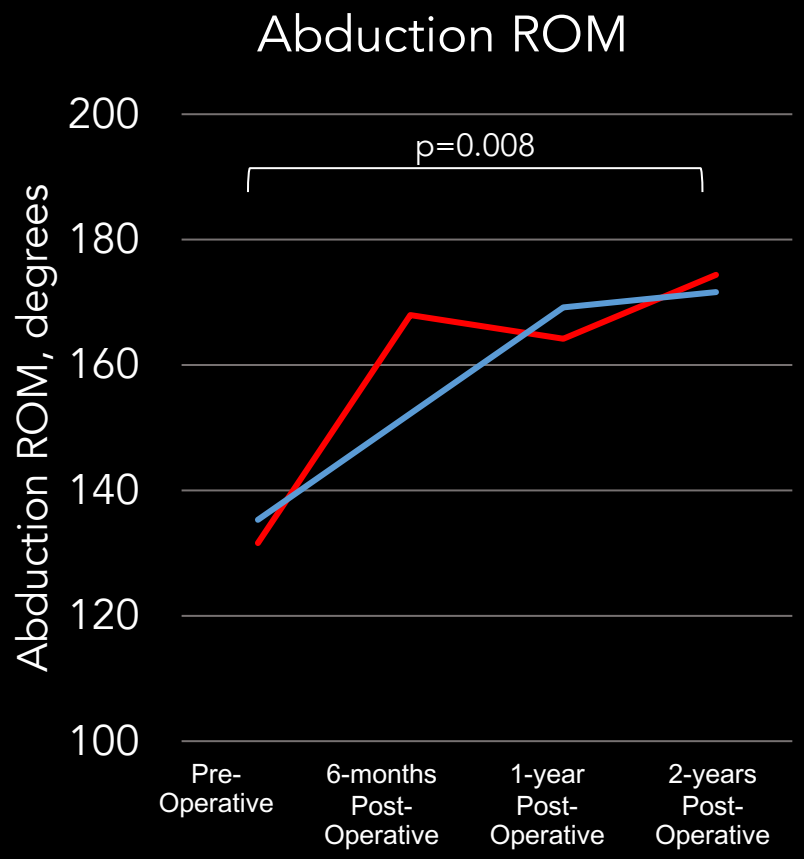
Flexion and abduction ROM improved over time; No sex differences in ROM or strength in any direction





Female Male

- No sex differences were found in flexion, abduction, internal rotation, or external rotation ROM
- Females had lower absolute strength in all directions, but no significant sex differences were observed

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All patients improved pre-to-post surgery; Few sex differences exist in AAGR outcomes

No sex differences in recurrence rates

- Sex difference in Latarjet recurrence due to coracoid inability to compensate for bone loss in females.[8]
- Appropriately sized DTA may compensate for sex-based anatomical differences.

Trends indicated males generally had better PROs and higher strength

- Subjectivity of PROs and increased pre-op shoulder pain perception in females.[11]
- Males may be more adherent to post-op protocols/at-home exercise regimens.[12]

Similar ROM and strength improvements in both sexes

- Comparable to findings following Bankart repair.[13]

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Strengths:

- Single-center, single-surgeon study design
- Inclusion of many follow-up timepoints, allowing recovery patterns to be compared

Limitations:

- Retrospective study design using a convenience sampling approach
- High ratio of male to female participants (statistical bias towards male sample)

Future Directions

- Trends need to be confirmed using larger sample sizes as the use of AAGR expands
- Longer term follow-up may be necessary for other sex differences to become evident[14]
- Inclusion of radiographic outcomes to determine contribution of psycho-social factors

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