

ASES Closed Meeting
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Evaluation of Total Shoulder Arthroplasty for Primary Glenohumeral Osteoarthritis: A Prospective Multicenter Study

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Zimmer Multicenter TSA

Introduction

- TSA – treatment of choice for 1° DJD
- Few large, prospective multicenter studies

Torchia ME, et al. JSES 1997

Norris TR, et al. JSES 2002

Edwards TB, et al. JSES 2003

Iannotti JP, et al. JBJS 2003

Materials and Methods

- Zimmer BF prosthesis
- Inclusion
 - 1° GH DJD
- Exclusion
 - Prior surgery, RCT, AVN, inflammatory arthritis, Fx
- Enrollment
 - 880 patients screened



Materials and Methods

- 207 pts (**213** shoulders)
prosp. enrolled 2001- 2004
 - 118 Male, 95 Female
 - Age: Avg. **68** (47 – 88)
- **14** centers (21 surgeons)
 - 13 domestic
 - 1 international



Materials and Methods

- Follow-up
 - 3 mo; 6 mo; yearly until 5 yrs post-op
- Outcome Measures
 - Exam (ROM)
 - SST, ASES, Constant
 - SF-36, Euroquol



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Intra-op

- Glenoids
 - All poly
 - Cemented
 - 83% pegged
- Humerus
 - 51% cemented
 - 82% offset head



Statistics

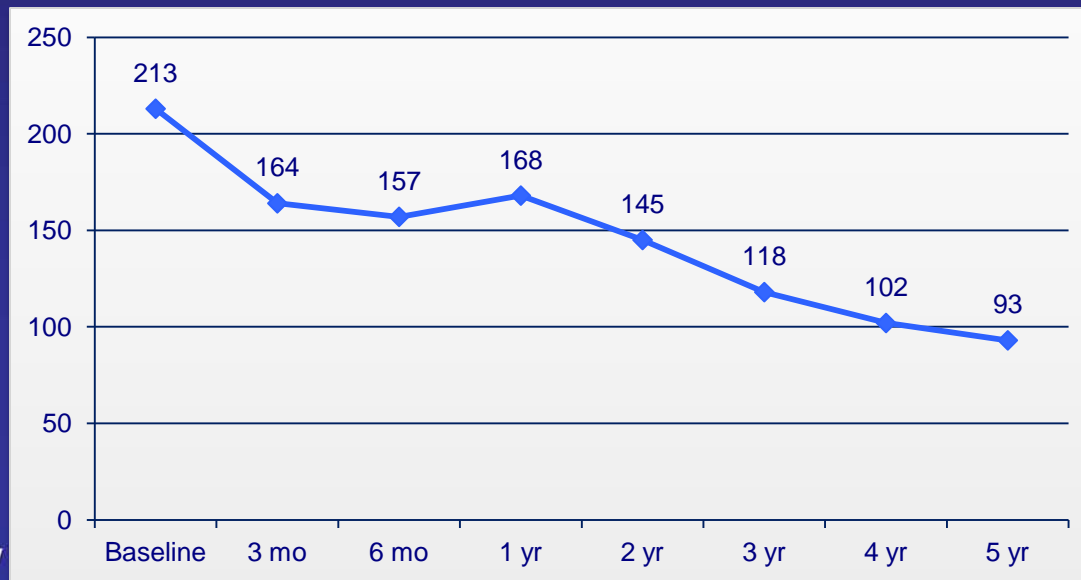
- Missing data imputed using 10 multiple imputations through SPSS software. Linear mixed models (continuous outcomes) or generalized estimating equations (ordinal outcomes)

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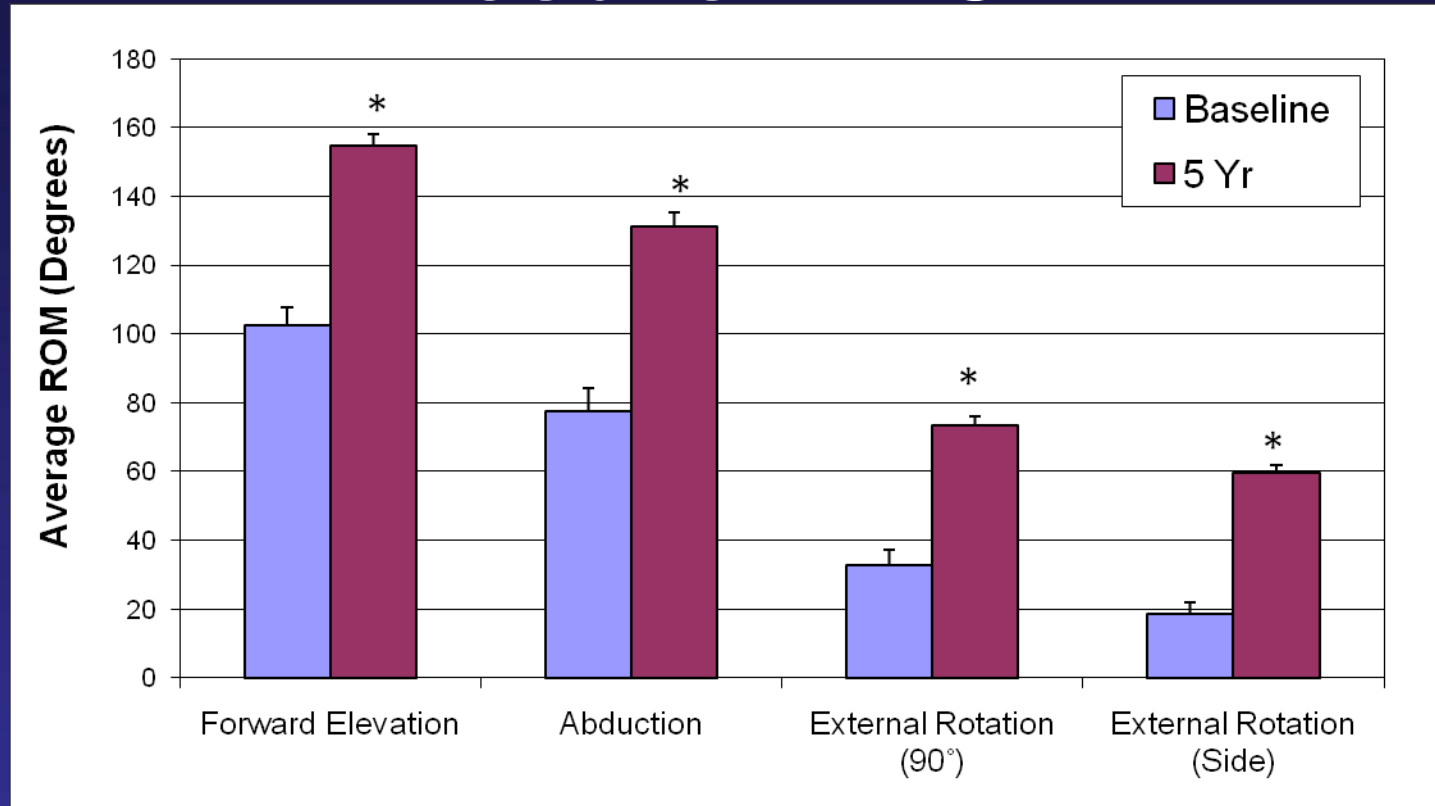
Results

- Clinical data for ALL F/U visits (3 mo – 5 yr)
– Average F/U: 39 months (3.2 yrs)

	Baseline	3 mo	6 mo	1 yr	2yr	3 yr	4 yr	5 yr
N	213	164	157	168	145	118	102	93
% F/U		77.0%	73.7%	78.9%	68.1%	55.4%	47.9%	43.7 %

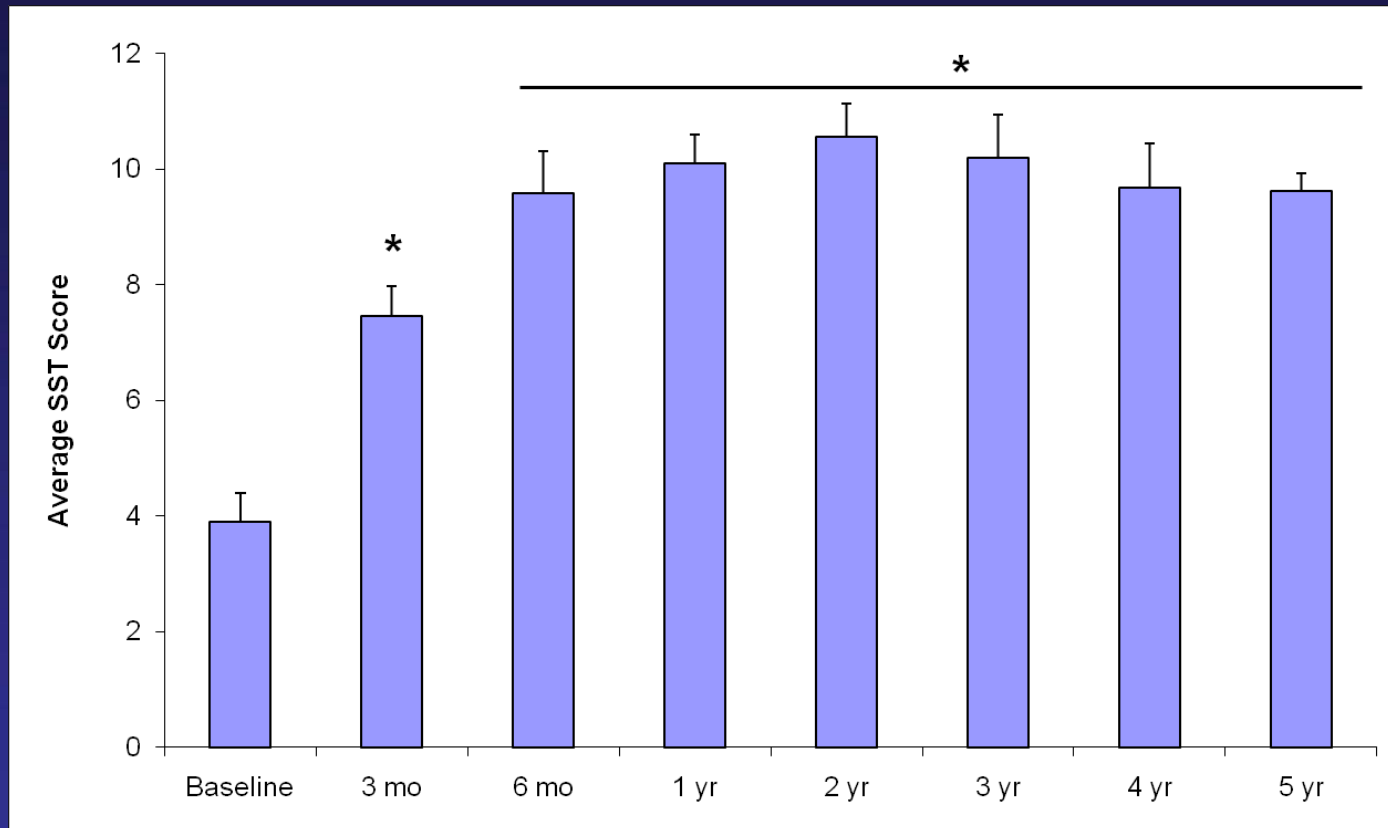


Zimmer Multicenter TSA Results – ROM



- Sig. ↑ in all ROM from baseline at every time point post-op ($p < 0.001$)
- After 6 mo. post-op imp. in ROM plateau

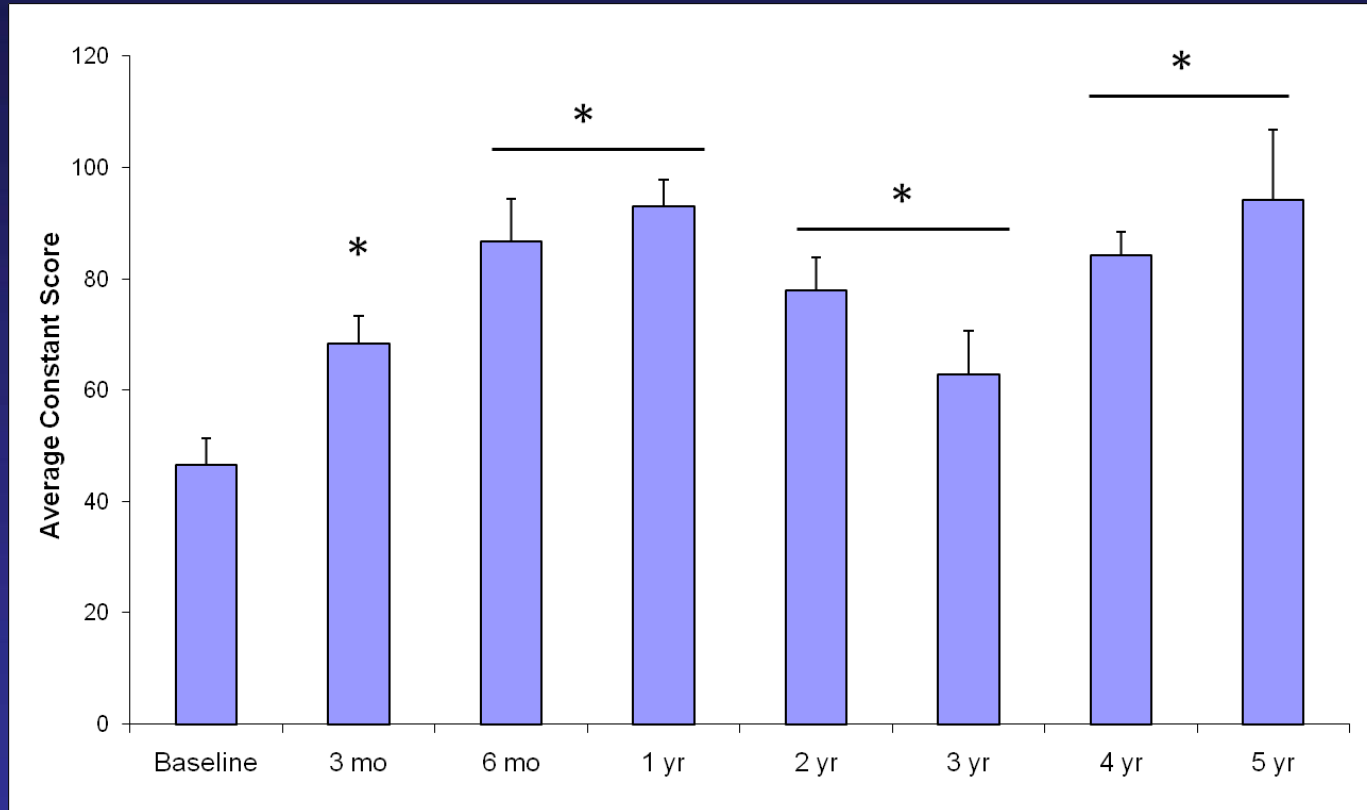
Zimmer Multicenter TSA Results – SST



- Sig. ↑ in avg SST from baseline **at every time point** post-op ($p < 0.001$)
- After **6 mo.** post-op ↑ in avg SST plateau

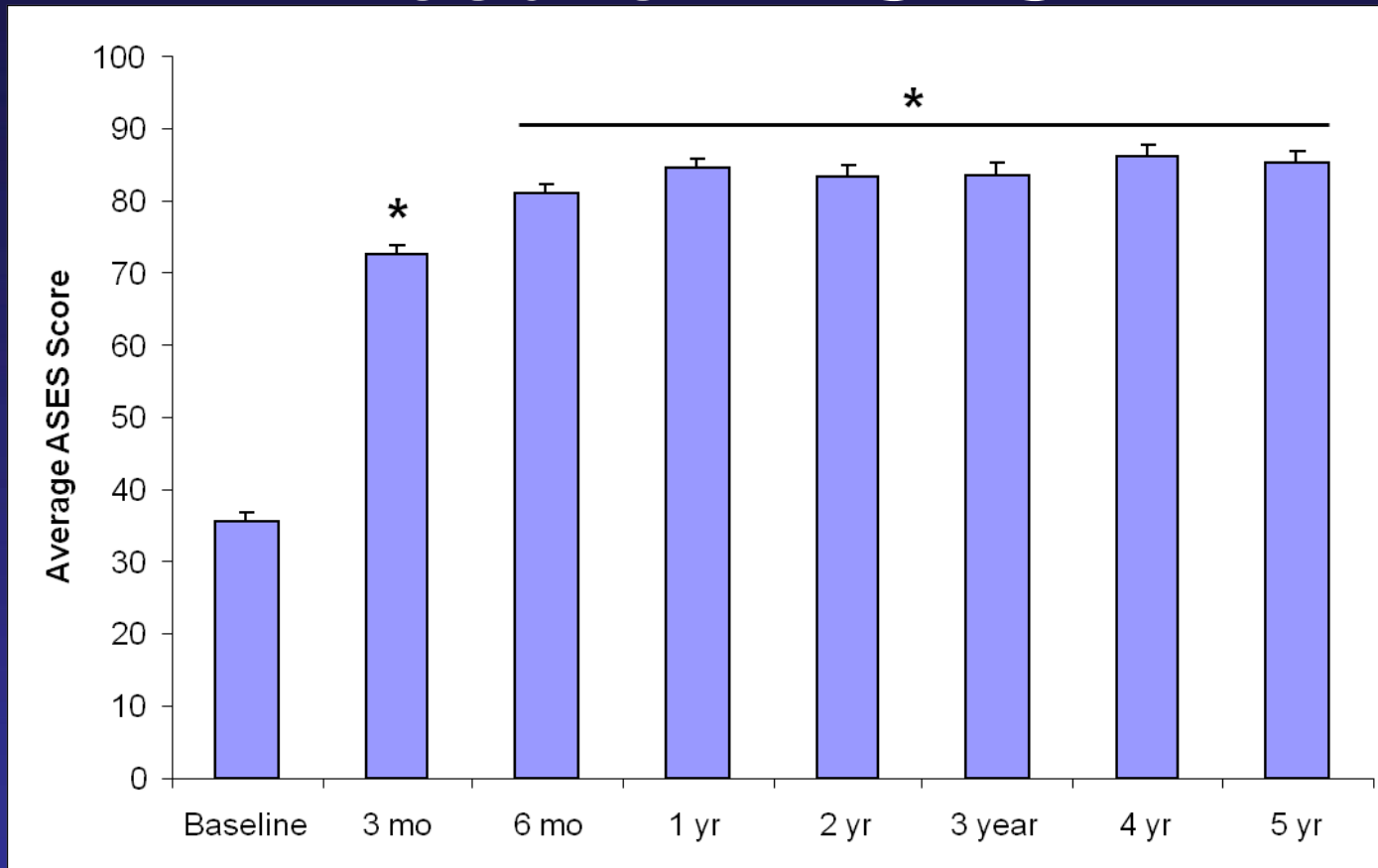
Zimmer Multicenter TSA

Results – Constant



- Sig. ↑ in Constant from baseline **at every time point** post-op ($p < 0.001$)
- After **2 yrs** post-op ↑ in avg Constant plateau

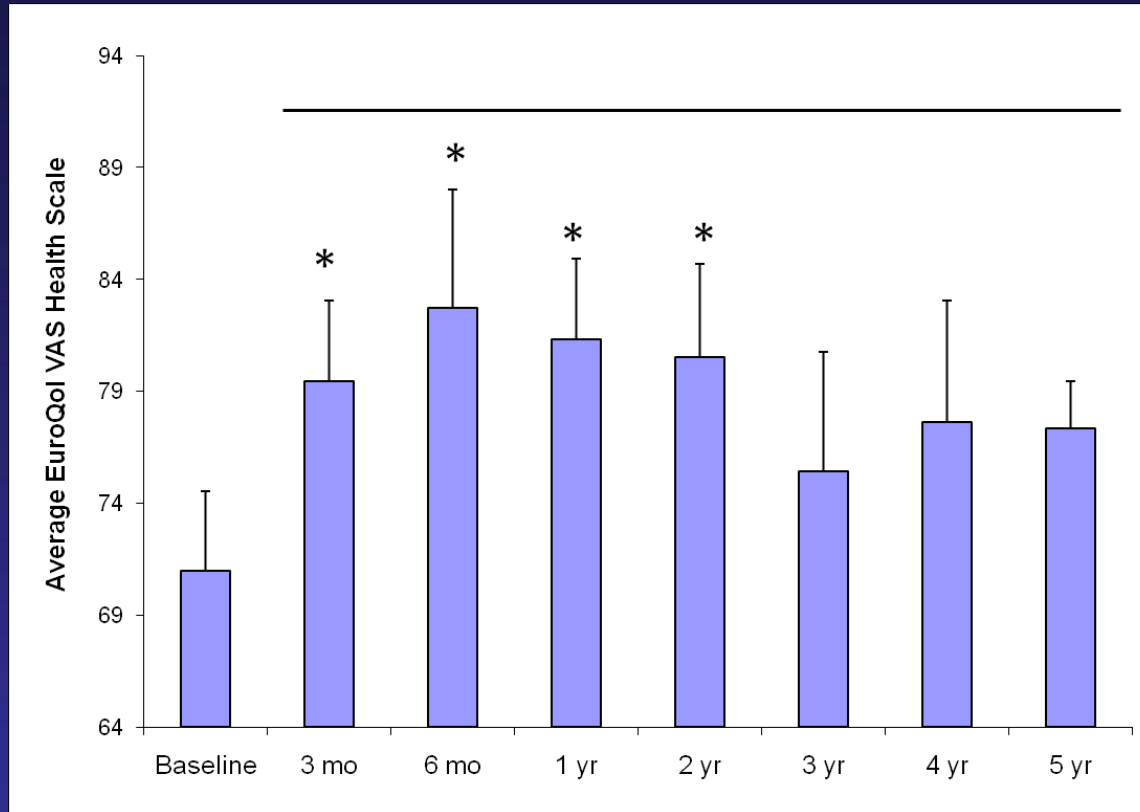
Zimmer Multicenter TSA Results – ASES



- Sig. ↑ in avg ASES from baseline **at every time point** post-op ($p < 0.001$)
- After **6 mo.** the ↑ in avg ASES plateau

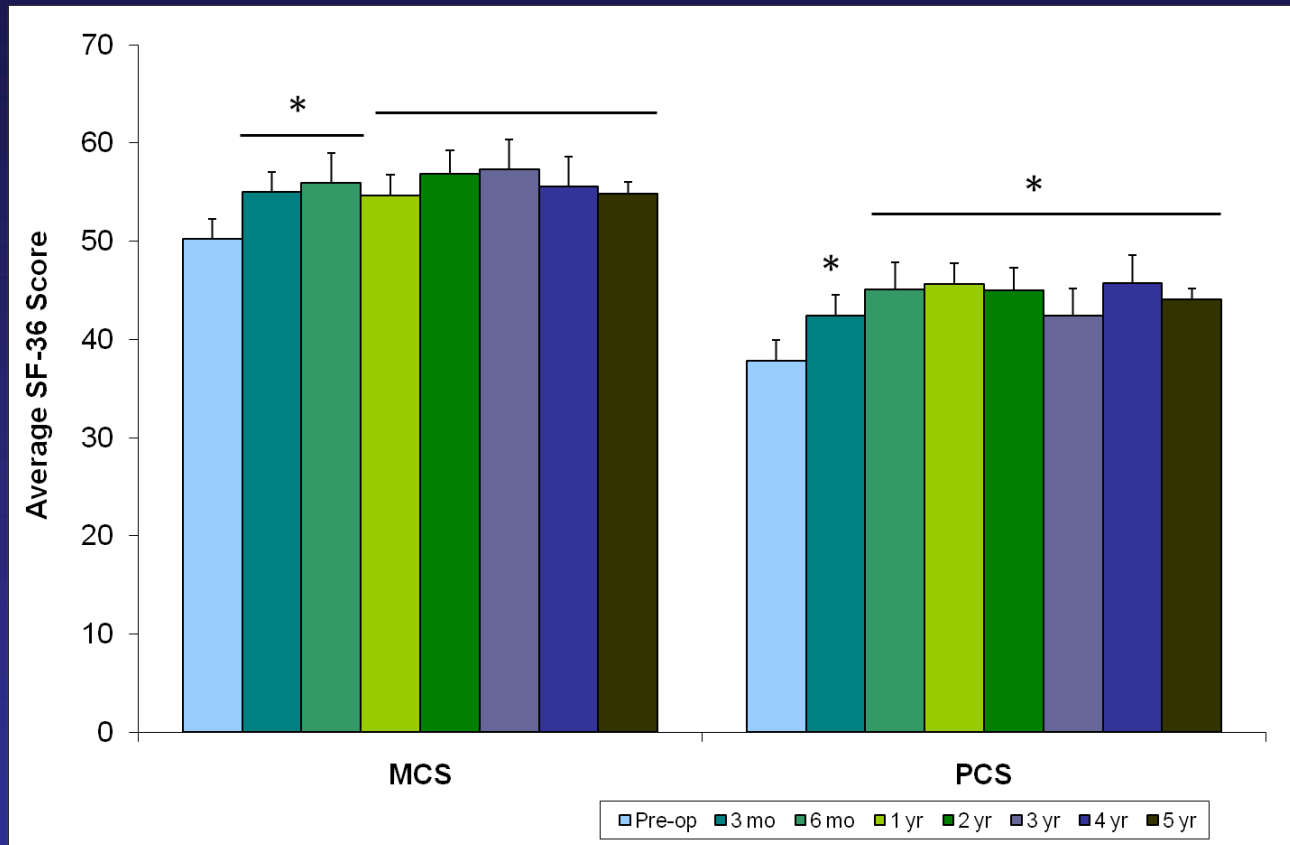
Zimmer Multicenter TSA

Results – EuroQol



- Sig. ↑ from baseline at 3 mo, 6 mo, 1 yr, and 2 yr post-op (p<0.025)
 - Majority of improvements by 3 months

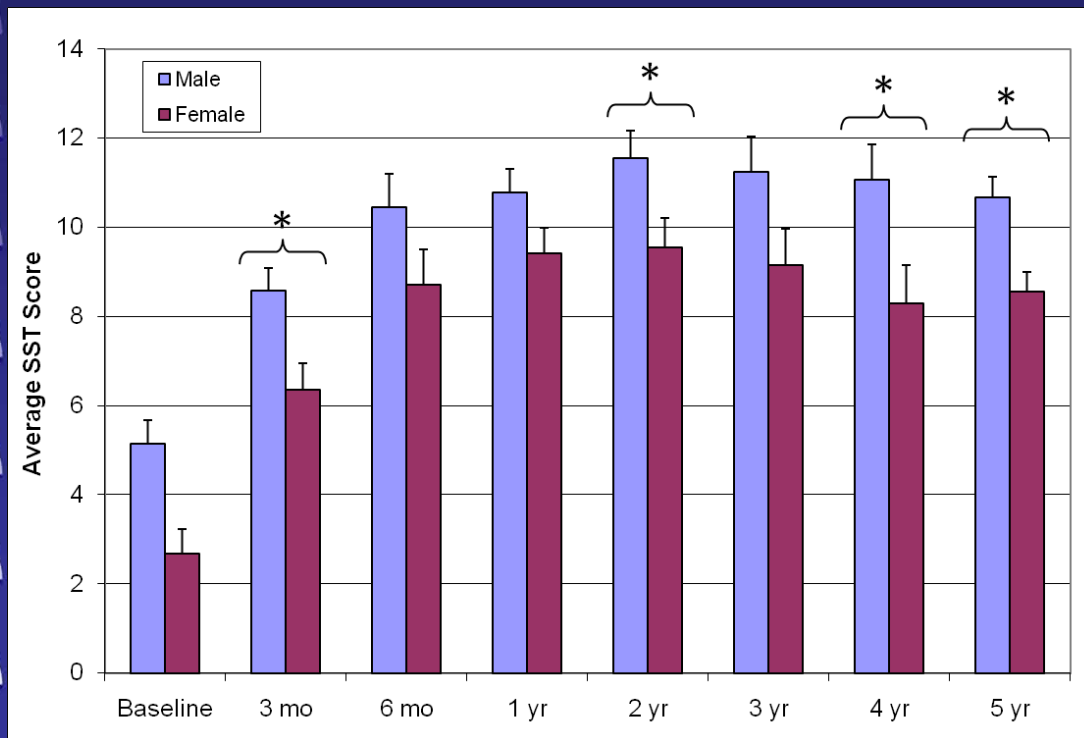
Zimmer Multicenter TSA Results – SF-36



- Sig. ↑ in **SF-36 MCS** from baseline at 3 mo/6 mo post-op (p<0.039)
- Sig. ↑ in **SF-36 PCS** from baseline at every point post-op (p<0.008)

Results – BMI, Age, Gender

- Minor differences between **Male and Female** (M>F) (ex. SST), however no overall trend
- No differences between **older and middle-age pts**
- No differences between **3 BMI groups**



Average SST

- M>F at 3 mo, 2 yr, 4 yr and 5 yr
- Differences impacted by difference between M/F at baseline

Zimmer Multicenter TSA Results

- 73/78 patients (93.6%)
improvements in
shoulder pain at 5 yr
post-op

Zimmer Multicenter TSA Complications

- Of 213 shoulders, 6 (2.8%) subsequent surgery

Adverse Event	Result
(2) Subscapularis tear	Repair of tendon
(1) Prosthetic loosening due to poly wear	Conversion to a hemi with bone-grafting of glenoid
(1) Traumatic event causing fracture	Revision of TSA
(1) Trauma causing acute rotator cuff inflammation	Pain management (anti-inflammatories) and home exercise program
(1) Loose K-Wires	Event resolved

Conclusions

- TSA leads to significant improvement in pain relief, shoulder fxn and subjective global health measures
- Most improvements occurred by **6 months**, while many plateau after just 3 months
- Complication and re-op rates very low

Strengths

- Large cohort with single diagnosis
- Large # of surgeons → generalizability and reproducibility
- Prospective → standardized data acquisition
- Variety of validated outcome scores → quantification of shoulder and overall health improvement

Limitations

- Patient f/u limited due to large-scale, multicenter nature of study
- Single prosthesis did not allow for comparison between prosthetic designs

Thank You!

