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June 8-11

Data-driven Threshold for Timing of Dislocation Associated with Increased Risk of Revision Following Total Shoulder Arthroplasty

E-Poster: ID# 24650

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Disclosure

- As listed on AAOS website
- None related to this poster



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Introduction

- Utilization of Total Shoulder Arthroplasty (TSA) incidence has significantly increased over the past decade with projections indicating a 333.3% rise among patients under 55 years old by 2030
- **Dislocation** in both Reverse and Anatomic Total Shoulder Arthroplasty is a controversial topic
- Previous studies investigated the effectiveness of closed reduction for dislocations occurring within the first 90 days post-surgery
- The impact of dislocation timing on the risk of revision surgery remains unclear



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Purpose

- Therefore, this study aims to evaluate and compare the risk of revision surgery for early versus late dislocation, using a 90-day threshold

Hypothesis

- We hypothesized that dislocation after 90 days has a higher risk of revision and recurrent dislocation.

Methods

- **Using the TriNetX Research Network database**
- 2013-2022
- Age \geq 18 years old
- International Classification of Diseases (ICD-9 and ICD-10) Codes
- Current Procedural Terminology (CPT) Codes

Methods

- Two cohorts were determined based on timing of dislocation **within 90 days** and **after 90 days** following TSA
- **Baseline demographics**
- Age, gender, race, BMI, diabetes mellitus, hypertension, COPD etc.
- **Outcomes**
- Revision total shoulder arthroplasty
- Propensity score matching, 1:1 nearest matching based on age, gender and comorbidities

Results

- Baseline Demographics
- **Total of 27,932 patients** who underwent Total Shoulder Arthroplasty, with a mean age of 69.4 ± 9.3 years
- **Before matching,**
- 21,544 patients for within 90 days cohort
- 6,388 patients for after 90 days cohort
- **After matching,** there was no significant difference between the two cohorts
- Following the matching process each cohort consisted of 6,248 patients

Results: Unmatched Analysis

TSA patients within 90 days dislocation compared to after 90 days dislocation

Lower risk of revision

Lower risk of recurrent dislocation

Timing of Dislocation	0-90 Days Dislocation	>90 Days Dislocation	P value
Risk of Revision	4.317%	6.397%	p = < 0.0001
95 % CI	0.586	0.744	
Risk of recurrent dislocation	0.788%	1.168%	p = 0.0048
95 % CI	0.513	0.889	

Variable	0-90 Days Dislocation, n (%)	>90 Days Dislocation, n (%)	Total
Total patients	21,544 patients	6,388 patients	27,932 patients
Demographics			
Average age, yr	69.1	70.2	69.4
Female	11060 patients, 51%	3558 patients, 56%	14,618, 52%
Male	8925 patients, 41%	2487 patients, 39%	11,412, 40%
Average BMI	30.6	30.7	
Comorbidities			
Diabetes	5083, 23%	1719, 27%	6802, 24%
Hypertension	14186, 66%	4725, 74%	18911, 68%
Chronic Obstructive Pulmonary Disease (COPD)	2545, 12%	923, 14%	3468, 12%

Results: 1:1 Matched Analysis

- Compared to **after 90 days** dislocation
- Within 90 days dislocation after TSA patients were
- **Lower risk of revision**
- **Lower risk of recurrent dislocation**

Timing of Dislocation	0-90 Days Dislocation	>90 Days Dislocation	P value
Threshold			
Risk of Revision			
Risk ratio	4.613%	6.341%	p = < 0.0001
95 % CI	0.628	0.843	
Risk of recurrent dislocation			
Risk ratio	0.682%	1.141%	p = 0.0066
95 % CI	0.41	0.87	

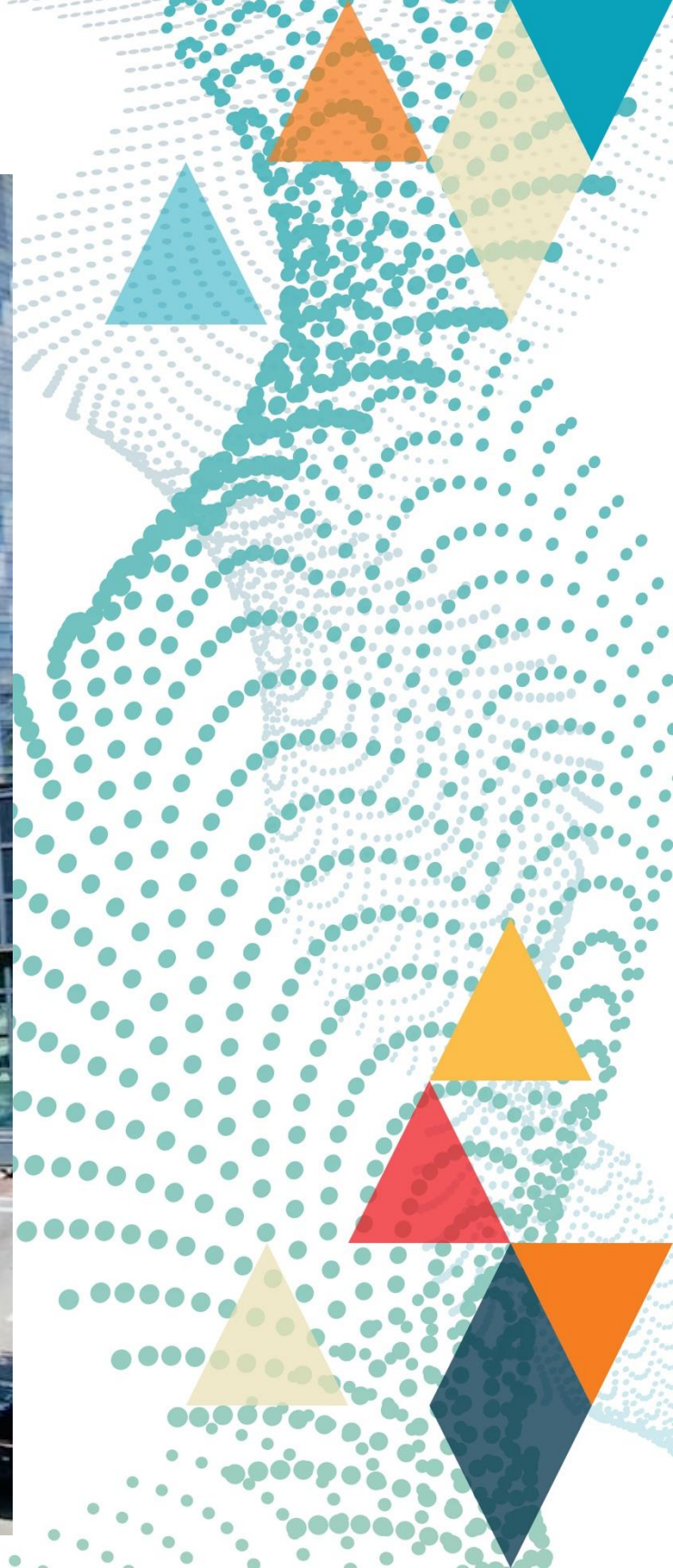
Limitations

- Common limitations of the TriNetX database
- Study relies on administrative data, assumes accurate coding but is subject to misclassifications and coding errors.
- Reverse and anatomic TSA coded with same CPT code
- **The database lacks information on**
- implant characteristics
- Surgeon experience
- Tension of soft tissues
- Rotator cuff integrity

Conclusions

- Dislocation occurring more than 90 days after TSA is associated with a higher likelihood of both subsequent revision surgery and recurrent dislocation.
- Shoulder surgeons should take the timing of dislocation into account when managing dislocations after TSA.

Thank You



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