



CSSES 2018 • Tampa, FL • Complications: How to Stay & Get Out of Trouble

# Instability after TSA

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JOURNAL OF SHOULDER & ELBOW SURGERY

J Shoulder Elbow Surg. 2017 Aug;26(8):e243-e251. doi: 10.1016/j.jse.2017.01.019. Epub 2017 Feb 27.

**The main cause of instability after unconstrained shoulder prosthesis is soft tissue deficiency.**  
Kenny J<sup>1</sup>, Josse J<sup>2</sup>, Kibitz D<sup>3</sup>, Wirthel JD<sup>4</sup>, Sekeran P<sup>5</sup>, Amaraavathi RS<sup>6</sup>, Valenti J<sup>7</sup>.

- 27/532 patients (5.07%) had instability

Early Instability (<6 months)		Late Instability (>6 months)	
Subscap Rupture	8 patients	MCT	5 patients
Component Malposition	8 patients	Subscap Rupture	2 patients
Component Failure	2 patients		
MCT	1 patient		
Humeral Shortening	1 patient		

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## Our Experience

- 830 arthroplasties performed for OA 2007-2016
- 21 (2.5%) required revision surgery
- 9/21 (42.8%) were for instability

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## Anterior Instability

- Due to subscap failure, so it occurs early in postop course
  - Often by 6 weeks
- Severity of patients' symptoms vary, so time from revision may as well

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## Anterior Instability: Early Revision

- 62-year-old female presents to clinic complaining of increased pain and dysfunction in her left shoulder
- Physical Exam:
  - FF: 100°
  - ABD: 60°
  - ER: 10°
  - IR: GT

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## Index Procedure: Pre-Op X-rays



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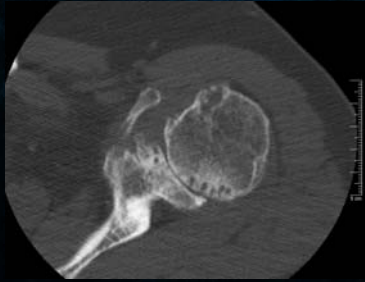
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Index Procedure: Pre-Op CT



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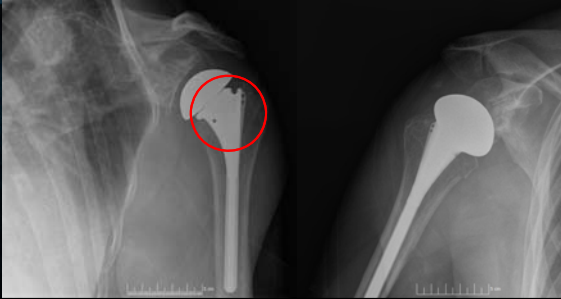
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Index Procedure: 11 Days Post-Op



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Index Procedure: 2 Months Post-Op



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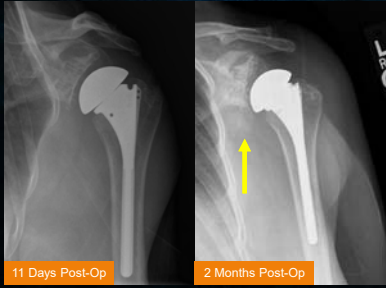
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### Index Procedure: Post-Op X-rays



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### Anterior Instability: Early Revision

Patient received revision RSA 3 months after her index procedure

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### Anterior Instability: Late Revision

• 71-year-old female presents to clinic with severe left shoulder pain

• Physical Exam:

- FF: 105°
- ABD: 120°
- ER: 45°
- IR: L5

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Index Procedure: Pre-Op X-rays



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Index Procedure: Pre-Op CT



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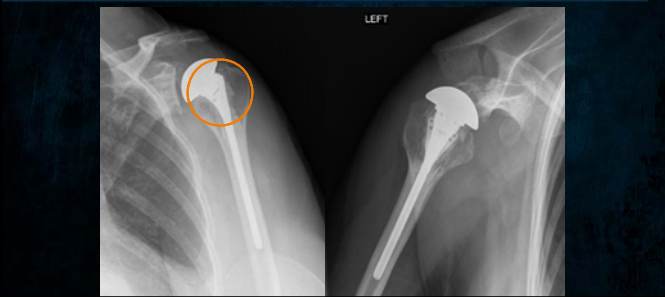
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Index Procedure: 11 Days Post-Op



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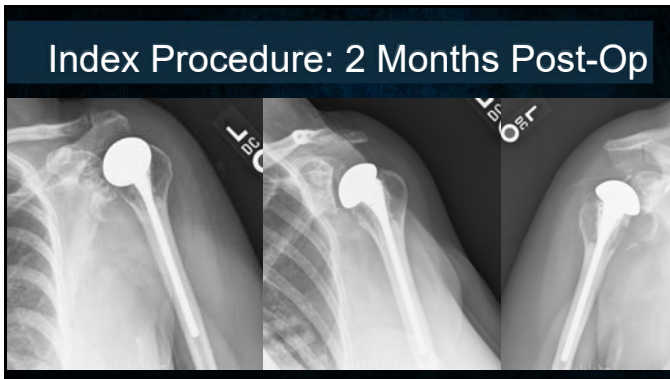
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### Anterior Instability: Late Revision

Despite early failure at 2 months post-index procedure, this patient was largely asymptomatic for 6 years, at which point she returned & was revised to RSA

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JOURNAL OF SHOULDER AND ELBOW SURGERY  
J Shoulder Elbow Surg. 2010 Oct;19(7):1085-90. doi: 10.1016/j.jse.2010.04.001. Epub 2010 May 26.

#### Integrity and function of the subscapularis after total shoulder arthroplasty.

Jackson JD<sup>1</sup>, Cifra A, Smith J, Steinmann SP.

- Subscap tenotomy for TSA
- At avg 31.6 months, 7/15 had complete subscap tear on ultrasound exam
- No difference in
  - Satisfaction
  - Pain
- Decreased DASH scores
- None had radiographic instability

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## Anterior Instability

**JBJS** Instability of the shoulder after arthroplasty.  
Specialist: Blot<sup>1</sup>, Adachi<sup>2</sup>, DuV<sup>3</sup>, Warren<sup>4</sup>, Wickiewicz<sup>5</sup>, Ts<sup>6</sup>, Omer<sup>7</sup>

- 7 patients with anterior dislocation → all subscap failure
- 5/7 occurred within 7 weeks

**JOURNAL OF SHOULDER & ELBOW SURGERY** Rupture of the subscapularis tendon after shoulder arthroplasty: diagnosis, treatment, and outcome.  
Waller<sup>1</sup>, Goss<sup>2</sup>, Neuman<sup>3</sup>, et al.

- Inappropriate physical therapy/activity
- Oversized components
- Poor tissue quality (prior operations)

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## Posterior Instability

- Due to rotator cuff dysfunction or alteration of glenoid version
- Typically occurs late in post-op course

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## Excessive Retroversion of the Glenoid & Late Revision

- 62-year-old male presents to clinic with bilateral shoulder OA, right > left
- Physical Exam:
  - FF: 70°
  - ABD: 50°
  - ER: 10°
  - IR: Back pocket

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### Index Procedure: Pre-Op X-rays



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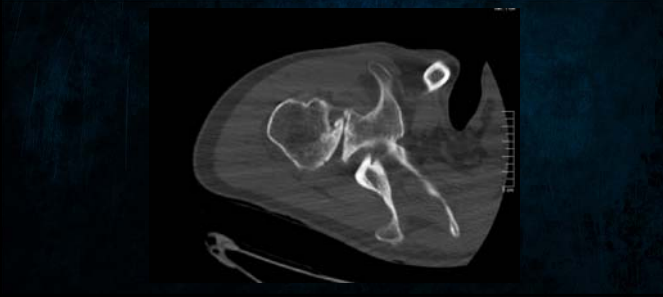
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### Index Procedure: Pre-Op CT



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### Index Procedure: 5 Months Post-Op



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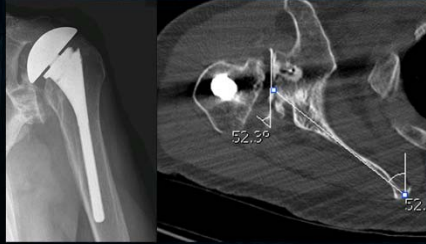
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### 5 Years Post-Index Procedure



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### Excessive Retroversion of the Glenoid & Late Revision

5 years after the index procedure, patient's pain and dysfunction necessitated a revision to RSA.

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### Rotator Cuff Dysfunction: Early Failure

• 67-year-old female presents with left shoulder PT arthritis & malunion of tuberosities after failing conservative treatment of a fracture dislocation 17 months prior

• Physical Exam:

- FF: 70°
- ABD: 70°
- ER: -10°
- IR to sacrum

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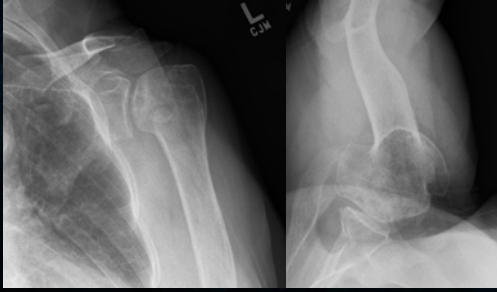
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Index Procedure: Pre-Op X-rays



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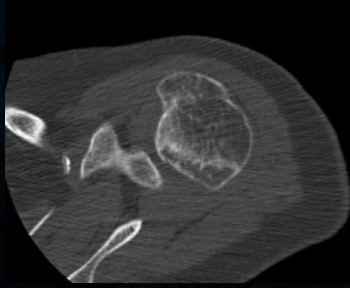
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Index Procedure: Pre-Op CT



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Index Procedure: 1.5 Months Post-Op



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### Index Procedure: 8 Months Post-Op



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### Posterior Instability: Late Revision

- 63-year-old female presents with a long history of left shoulder pain
- Physical Exam:
  - FF: 70°
  - ABD: 70°
  - ER: 30°
  - IR to back pocket

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### Index Procedure: Pre-Op X-rays



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Index Procedure: Intra-Op Video



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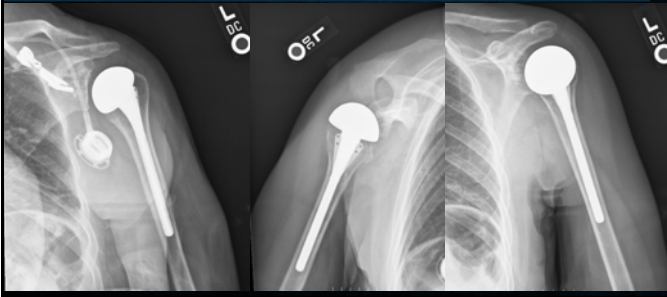
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Index Procedure: 11 Days Post-Op



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6 Years Post-Index Procedure



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## Revision Procedure: Intra-Op Video



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## Importance of Intraoperative Trialing



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## Posterior Instability: Etiology

JOURNAL OF  
SHOULDER  
ELBOW  
SURGERY

J Shoulder Elbow Surg. 2017 Aug;26(8):e243-e251. doi: 10.1016/j.jse.2017.01.019. Epub 2017 Feb 27.

The main cause of instability after unconstrained shoulder prosthesis is soft tissue deficiency.

Kenny J<sup>1</sup>, Joshi J<sup>2</sup>, Kozl D<sup>3</sup>, Werthel JC<sup>4</sup>, Sekharan P<sup>5</sup>, Amaravathi RS<sup>6</sup>, Valenti M<sup>7</sup>.

- Incorrect version humerus, glenoid, or both (4)
  - Walch B1, B2 (3)
- Massive rotator cuff tear (1)
  - Walch A2
- Subscap tear (2)
  - Walch B2, C

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## Posterior Instability: Etiology



J Bone Joint Surg Am. 1996 Apr;78(4):603-16.

Complications of total shoulder-replacement arthroplasty.

With MA<sup>1</sup>, Rockwood, CA, Jr.

- 21 reports of posterior dislocation
- Risk Factors
  - Glenoid retroversion > 20°
  - Humeral retroversion >45°
  - Posterior glenoid erosion
  - Soft tissue imbalance (posterior laxity)

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## Superior Instability

- Due to supraspinatus failure or glenoid loosening
- Can occur early or late
  - If late → associated with glenoid loosening

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## Superior Instability: Early Failure

- 65-year-old male presents to clinic with pain & dysfunction of his right shoulder
- Physical Exam:
  - FF: 100°
  - ABD: 90°
  - Positive Neer's sign
  - Positive Hawkins' sign

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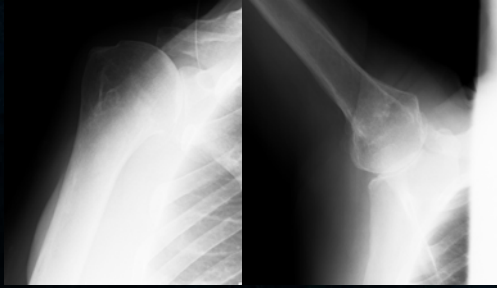
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Index Procedure: Pre-Op X-rays



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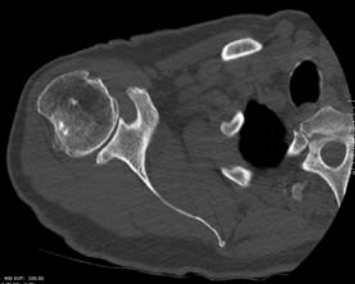
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Index Procedure: Pre-Op CT



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Index Procedure: 11 Days Post-Op



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### Index Procedure: 2 Months Post-Op



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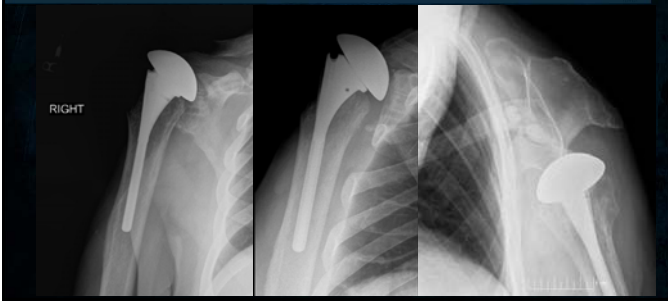
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### Index Procedure: 3 Months Post-Op



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### Superior Instability: Late Failure

- 56-year-old male presents with a history of right shoulder pain > 30 years
- Physical Exam:
  - FF: 150°
  - ABD: 150°
  - ER: 10°
  - IR to GT

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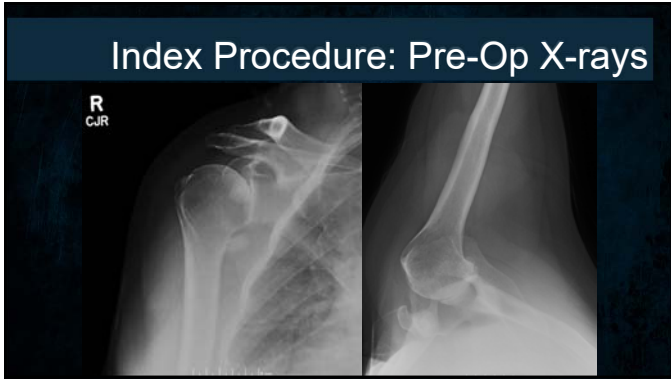
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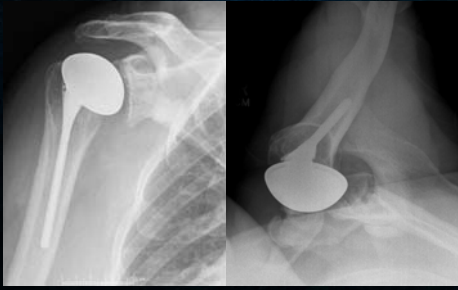
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Index Procedure: 7 Months Post-Op



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Index Procedure: 5 Years Post-Op



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Revision Procedure



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## Conclusion

- Instability after TSA is an uncommon but devastating complication
- Anterior instability is due to failure of the subscapularis, which occurs early
- Posterior instability often occurs late
- Superior instability can occur early or late
- Ideal soft tissue balancing is key to avoiding instability

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# Thank You

FLORIDA  
ORTHOPAEDIC  
INSTITUTE



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