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Dr Todd Gothelf
Shoulder, Foot & Ankle Surgery
Subscapularis Tears

Todd Gothelf
Foot, Ankle, Shoulder
Anatomy of the Rotator Cuff

- Posterior
  - External Rotators
    - Suprasinatus
    - Infraspinatus
    - Teres Minor
  - Internal Rotator
    - Subscapularis
Rotator Cuff Tears

- Most commonly involve the suprasinatus
Supraspinatus Tears More Common

- Start from impingement
- Wear against acromion and CA ligament
Rotator Cuff Tears

- Most tears start from the anterior supraspinatus.
**Posterosuperior Tears**

- More common extension
- Extend into the infraspinatus
- We are more “familiar” with these
- Well described
Arthroscopy- Subscapularis Tears More Common Than We Thought

- Previous reports 8% of all tears
- Study using arthroscopy reported 30% incidence of upper subscapularis tears.
- Arthroscopy is a useful tool to identify these tears.
How does the Subscap Tear?

- Traumatic Tear
- In Isolation
- Younger Patient
- Forced External Rotation and abduction
- Best Treated by Acute Repair
Coracoid Impingement

- Subscapularis impinges on coracoid
- Normal Distance 10mm
- Burkhart Study- 5mm in subscap tear group
Anterosuperior Cuff Tears

- Extension of the supraspinatus tear
- Much more common than isolated tear
- Chronic or acute on chronic
- Older patient
Subscapularis Function

- Internal Rotation
- Force couple with infraspinatus
- Fulcrum for deltoid to allow overhead function
Subscap Prevents Superior Migration

- Su et al, Arthroscopy, 2009
- Simulated anterosuperior tear on cadavers
- Increased superior migration with higher loads
- Burkhart and Tehrany, 2002
  - Repair of the subscap can REVERSE superior migration
Rotator Cable and Crescent

- Rotator cuff has a cable
- Like suspension bridge
- Two points of functional pull.
- Tears within this region do not affect strength
- Torn cable causes weakness
Rotator Cable and Crescent

- Anterior cable at upper subscapularis.
- Torn upper subscapularis will result in loss of function of the anterior cable.
- Alters rotator cuff function.
How can We identify these Tears?

- Shoulder Pain
- Special Physical Examination Tests
- MR arthrogram
- Arthroscopy
Physical Examination

• Lift-off Test
  – Lower Subscapularis
  – Gerber, JBJS, 1991
Physical Examination

• Belly-press Test
  – Gerber, JBJS, 1996
Physical Examination

- Napoleon Sign
  - Imhoff, 1999
Physical Examination

- Bear Hug Test
- Upper Subscapularis
- Most Sensitive Test
  - Burkhart, Arthroscopy, 2006
- Where the tear first starts!!
Investigations

- MR Arthrogram
- Great for complete subscapularis tear
- Not so great for upper subscapularis tear
Arthroscopic Diagnosis

- Often Tear discovered at surgery
- Must be able to identify
  - Bare Footprint
  - Comma Sign
  - Subluxed biceps tendon
Arthroscopic Repair

- Biceps tenotomy/tenodesis is
- Identify rolled edge of subscapularis
- Comma sign
- Footprint of lesser tuberosity
Treatment of isolated complete tears

- Surgery
- Arthroscopic
- As soon as possible
- Avoid retraction
- Avoid fatty atrophy
Treatment of Upper Subscapularis Tears

- Usually discovered at the time of arthroscopy
- Difficult to identify
- My preference is to repair
Why repair the upper subscapularis?

- It is the anterior part of a larger anterosuperior tear.
- Not repairing places tension on the supraspinatus tear.
Why repair the upper subscapularis tear?

- Repairing brings the more posterior tear closer to the bone, making repair of supraspinatus easier.
Physio protocol

- Subscapularis repair requires protocol to protect repair
- Avoid external rotation in first six weeks.
- Neutral only
Summary

- Subscapularis Tears are more common than previously thought
- Careful attention to history and examination-Arthroscopy!
- Early repair of complete tears
- Repair upper subscapularis tears when identified to restore anterior cable.
Thank you for listening