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Subscapularis Tears

Todd Gothelf

Foot, Ankle, Shoulder



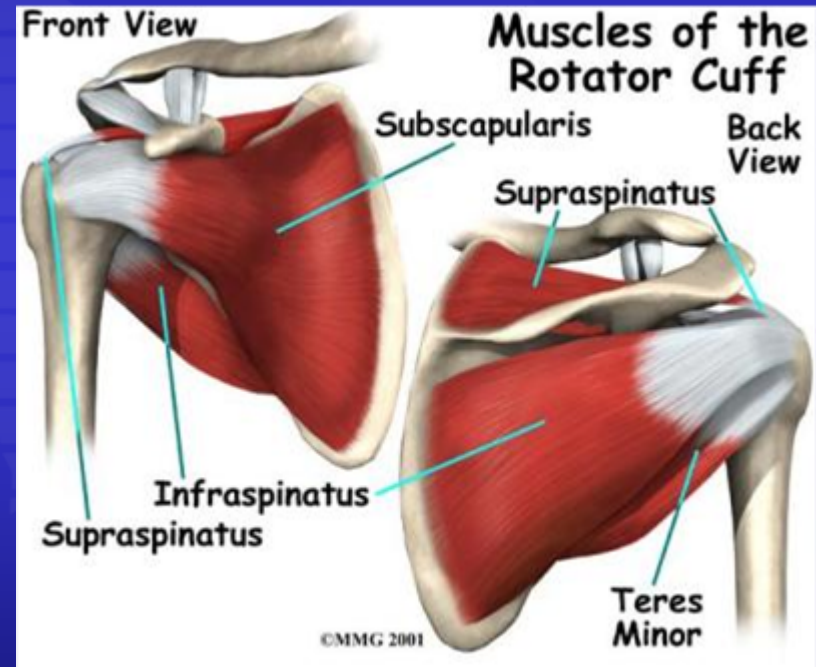
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Anatomy of the Rotator Cuff

- Posterior
 - External Rotators
 - Supraspinatus
 - Infraspinatus
 - Teres Minor
 - Internal Rotator
 - Subscapularis



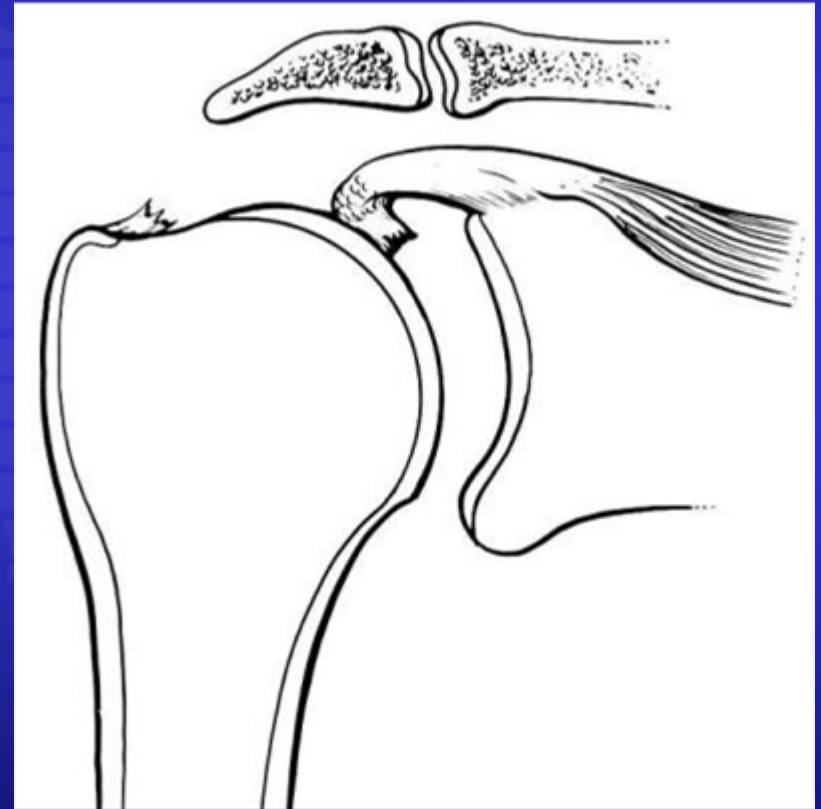
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Rotator Cuff Tears

- Most commonly involve the supraspinatus



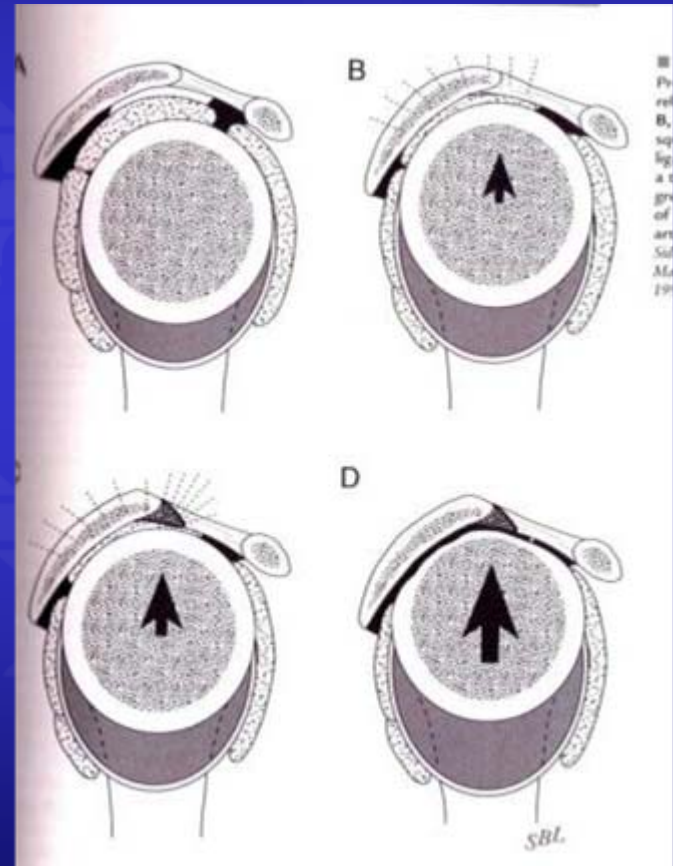
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Supraspinatus Tears More Common

- Start from impingement
- Wear against acromion and CA ligament



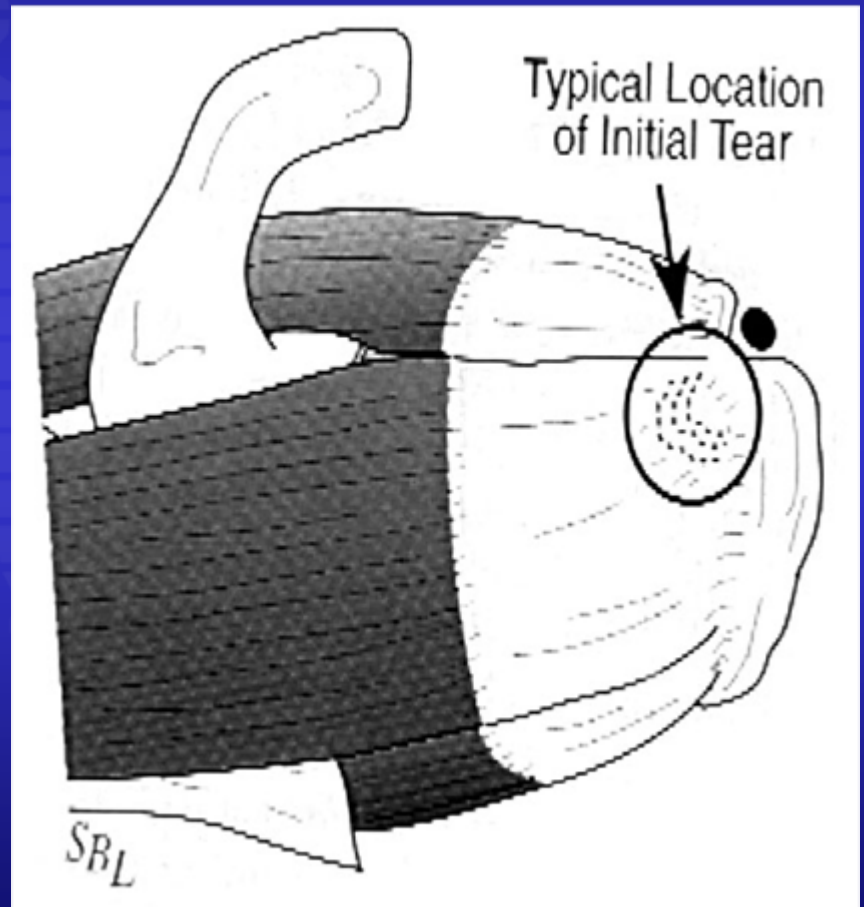
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Rotator Cuff Tears

- Most tears start from the anterior supraspinatus.



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Posterosuperior Tears

- More common extension
- Extend into the infraspinatus
- We are more “familiar” with these
- Well described



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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.



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How does the Subscap Tear?

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



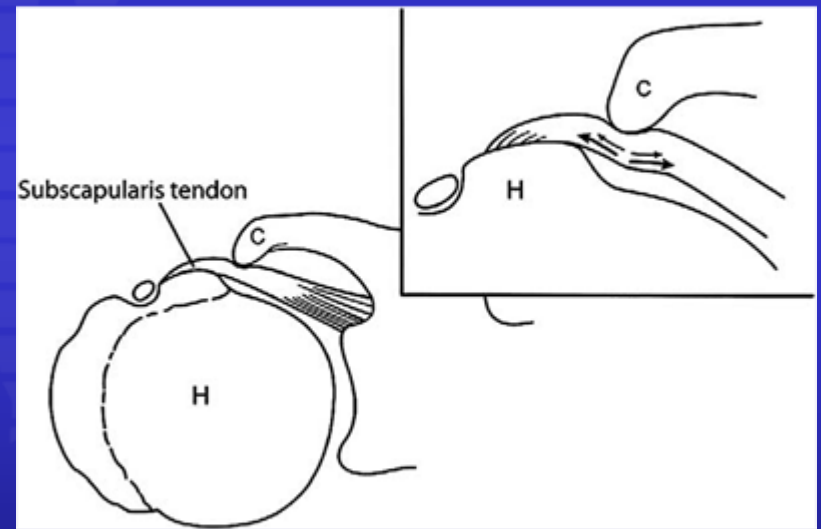
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Coracoid Impingement

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



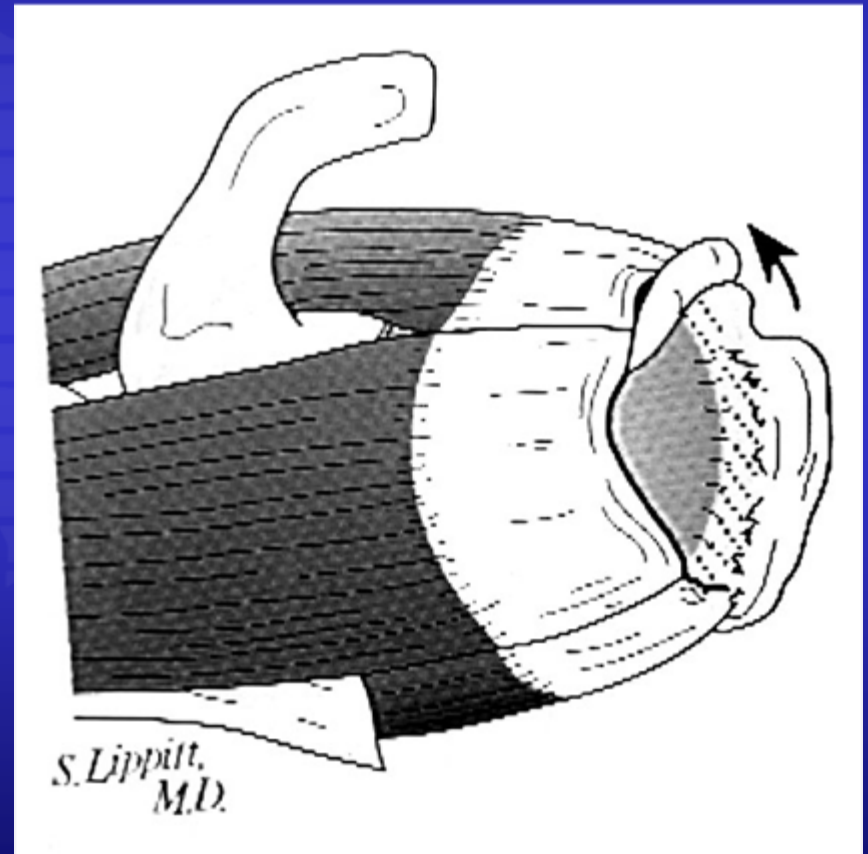
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Anterosuperior Cuff Tears

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



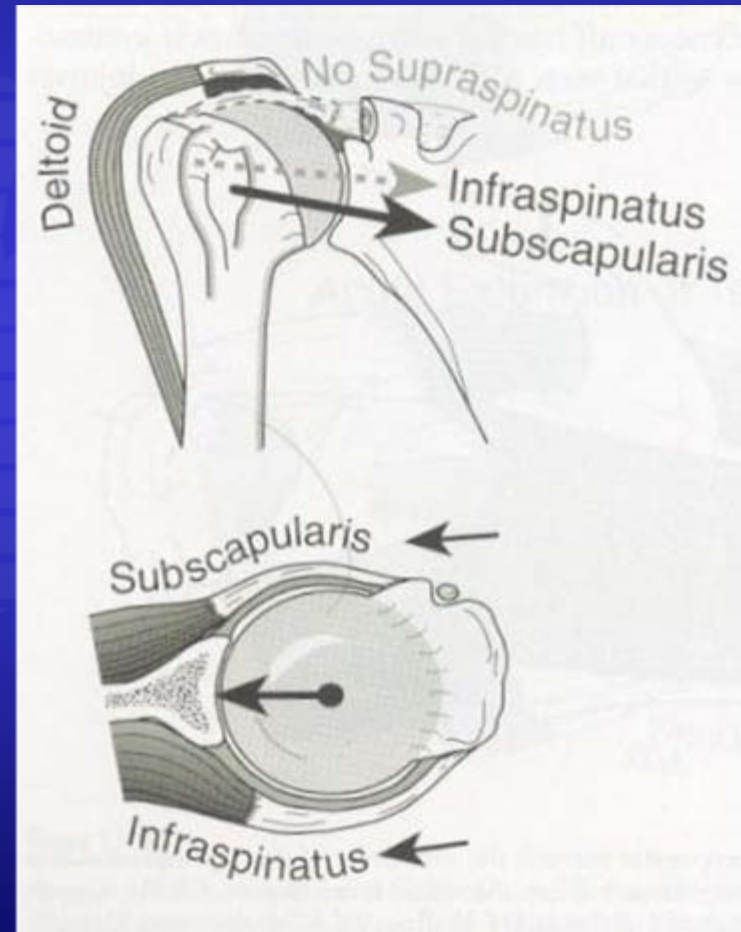
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Subscapularis Function

- Internal Rotation
- Force couple with infraspinatus
- Fulcrum for deltoid to allow overhead function



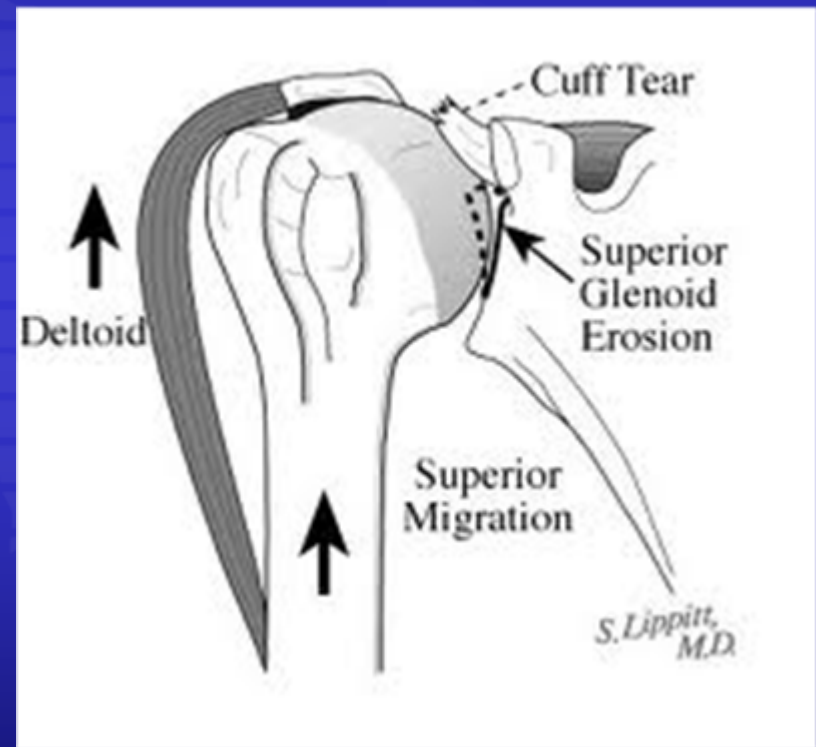
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Subscap Prevents Superior Migration

- 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



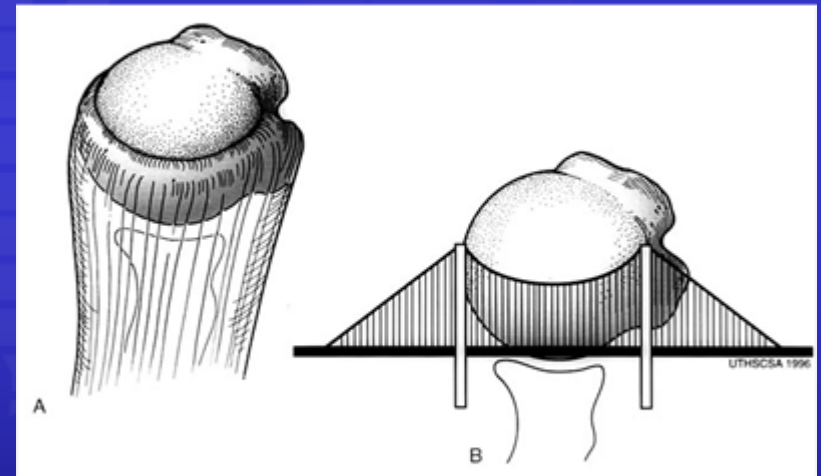
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Rotator Cable and Crescent

- 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



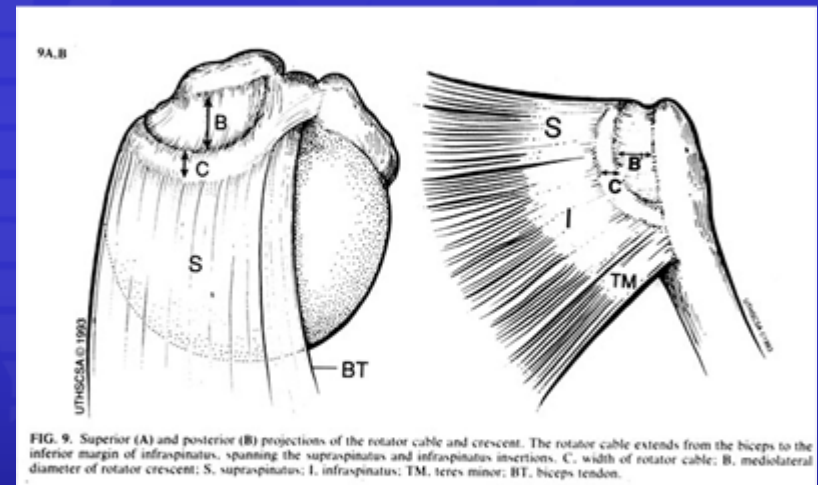
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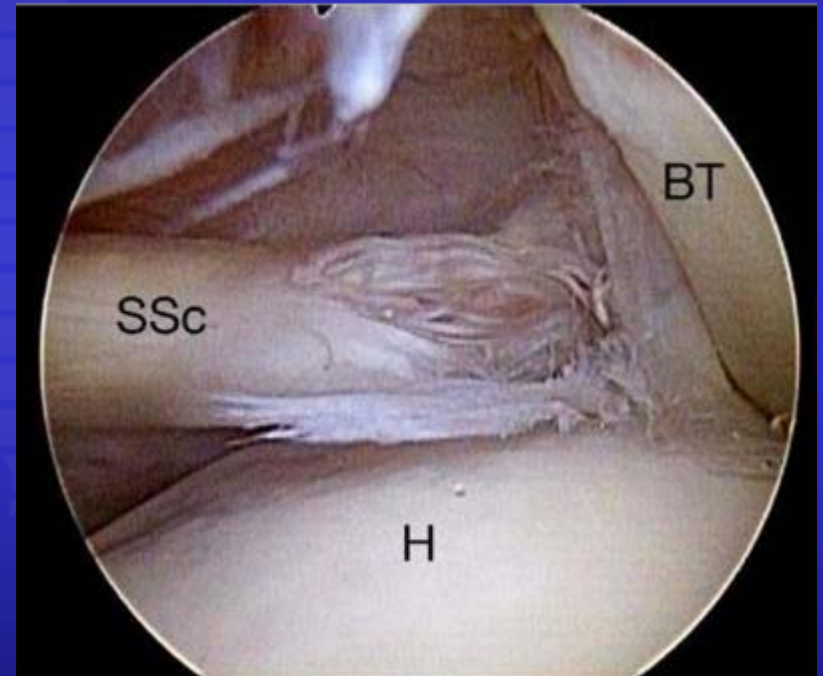
Rotator Cable and Crescent

- 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



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Physical Examination

- Lift-off Test
 - Lower Subscapularis
 - Gerber, JBJS, 1991



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Physical Examination

- Belly-press Test
 - Gerber, JBJS, 1996



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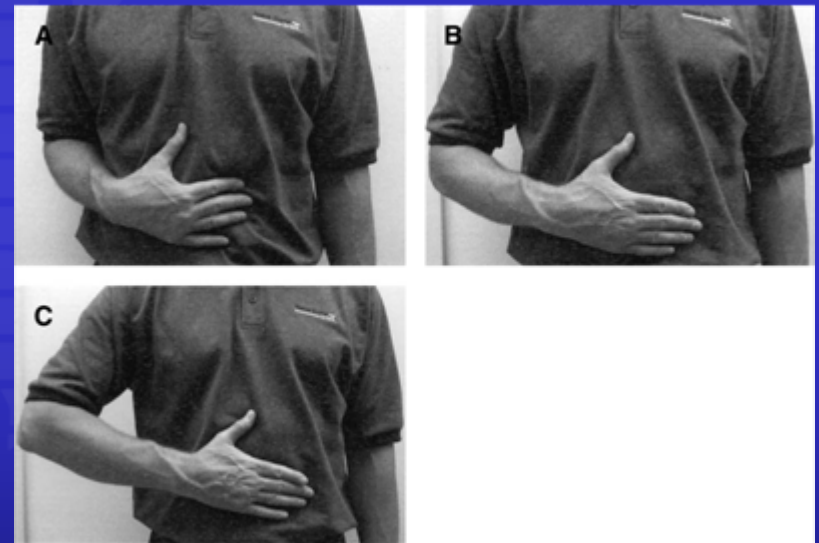


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Physical Examination

- Napoleon Sign
 - Imhoff, 1999



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Physical Examination

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



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Investigations

- MR Arthrogram
- Great for complete subscapularis tear
- Not so great for upper subscapularis tear
 - Adams, Schoofield, Arthroscopy, 2010.



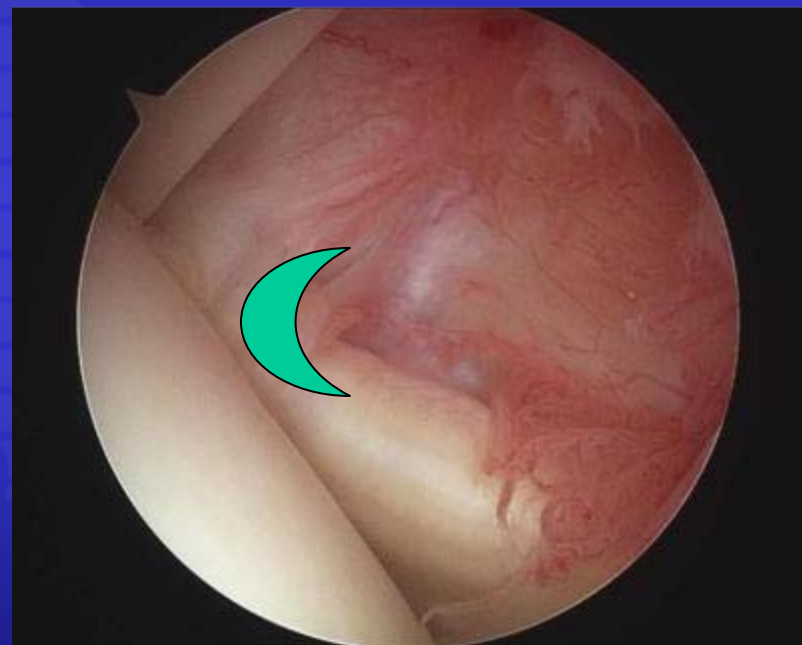
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Arthroscopic Diagnosis

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



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Arthroscopic Repair

- Biceps tenotomy/tenodesis
- Identify rolled edge of subscap
- Comma sign
- Footprint of lesser tuberosity



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Treatment of isolated complete tears

- Surgery
- Arthroscopic
- As soon as possible
- Avoid retraction
- Avoid fatty atrophy



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Treatment of Upper Subscapularis Tears

- Usually discovered at the time of arthroscopy
- Difficult to identify
- My preference is to repair



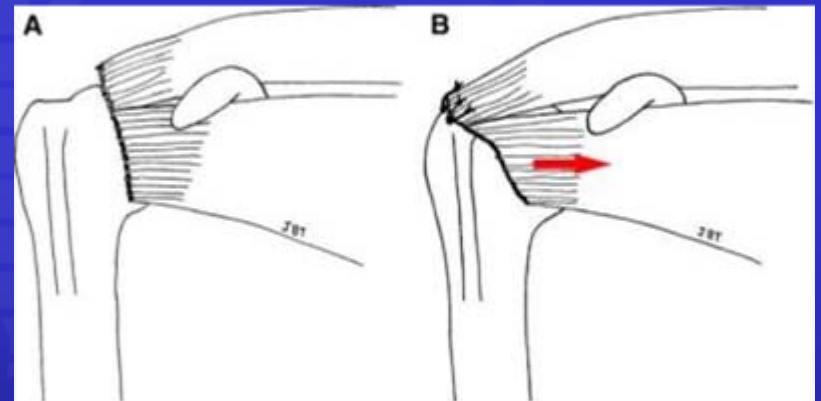
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Why repair the upper subscapularis?

- It is the anterior part of a larger anterosuperior tear.
- Not repairing places tension on the supraspinatus tear.



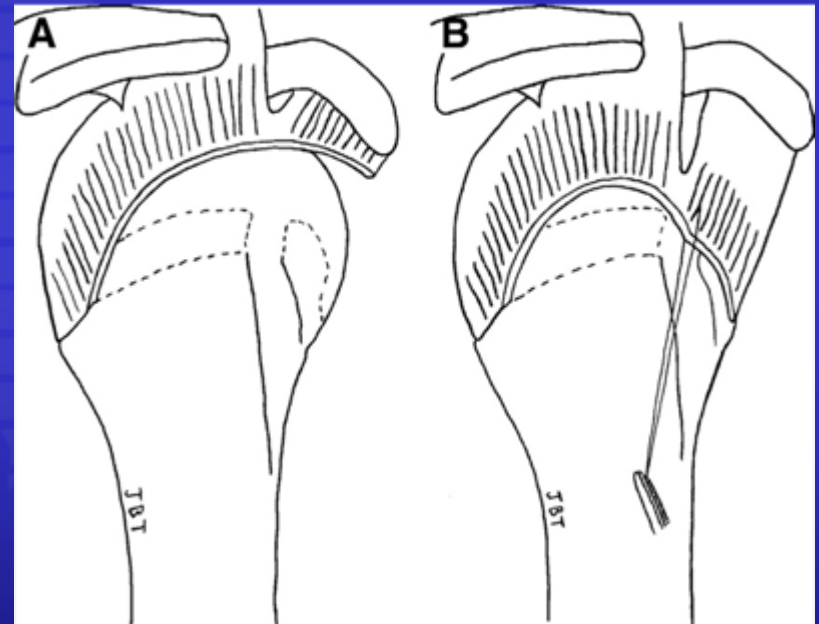
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Why repair the upper subscapularis tear?

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



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Physio protocol

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



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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.



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Thank you for listening



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