Rotator Cuff Anatomy

Dr. XXXXX
Hospital XXXXX
Date XXXXX
Rotator Cuff

- Muscles/Tendons
- Individual Tendon Components
- Supraspinatus Anomalies
- Anterior Fibers of Supraspinatus
- Infraspinatus
- Greater Tuberosity Anatomy
- Bare Area of GT
- Interdigitation Artifact
- 4-5 Histologic Layers
- Cable Crescent Component
- Teres Minor
- Subscapularis
- Rotator Intervals
Rotator Cuff Muscles

- Supraspinatus
- Infraspinatus
- Teres Minor
- Subscapularis
Supraspinatus

- Muscular origin
  Supraspinatus Fossa
- Inserts on Greater Tuberosity
- Innervation from Suprascapular Nerve
- Triple Blood Supply
- Two and Perhaps three main tendinous components
Supraspinatus Anomalies

- Separate Muscular origins from the Supraspinatus fossa, anterior component intramuscular tendon and posterior component lateral tendon
- Accessory Slip extends to Lesser Tuberosity
- ????
Accessory Anterior Slip of Supra

- 10/37 cadaveric specimens, 1 with FT RCT

A note on the anatomy of the supraspinatus muscle

I. Kolts

Zonal Anatomy of Supraspinatus Tendon

- Insertional fibers-Rim Rent Tears
- Critical Zone-Hypovascular
- Intramuscular/Musculotendinous
Anterior Insertional Fibers
Anterior Insertional Fibers/Rim Rent
Rim Rent Tears

- Younger Patents anterior insertional SS tears, frequently with adjacent bone changes
Anomalous Supraspinatus Tendon 1
Anomalous Supraspinatus with Prominent RI Slip
Intraspinatus

- Muscular Origin
  Infraspinatus Fossa
- Multicircumpennate
- Innervated
  Suprascapular Nerve
- Inserts on Oblique Facet Greater Tuberosity
Greater Tuberosity Anatomy

• Superior/Horizontal Facet—Anterior and Mid Fibers of Supraspinatus

• Middle/Oblique Facet---Upper ½ receives overlapping fibers of Supra and Infraspinatus, Lower ½ Infraspinatus

• Posterior/Vertical Facet---Teres Minor
Greater Tuberosity Anatomy
Interdigation Artifact

Shoulder MRI refinements: differentiation of rotator cuff tear from artifacts and tendonosis, and reassessment of normal findings.
Wright T; Yoon C; Schmit BP Seminars in US, CT, MRI

August 1, 2001 - Volume 22, Issue 4
Greater Tuberosity Anatomy

Anatomy and dimensions of rotator cuff insertions

Jeffrey R. Dugas, MD, Deirdre A. Campbell, MEng, Russell F. Warren, MD, Bruce H. Robie, PhD, and Peter J. Millett, MD, New York, NY
Supra, Infra, Bare Area
Cystic Lesions in the Posterosuperior Portion of the Humeral Head on MR Arthrography: Correlations with Gross and Histologic Findings in Cadavers

Wook Jin1, Kyung Nam Ryu2, Yong Koo Park3, Weon Kyu Lee4, Sung Hye Ko2 and Dal Mo Yang1

AJR 2005; 184:1211-1215

Cystic Changes at Bare Area
4-5 Layers of the Rotator Cuff

- Clark-5 layers
- CHL&Rotator Cable 1,4
- Capsule 5
- 3 and 2 differ in orientation

- Fallon’s-4 layers
  - Capsule
  - CHL
  - Tendons
  - Attachment Fibrocartilage

Rotator Cuff Cable/Crescent

Suspension bridge

Red = compression

Blue = tension
Cable/Crescent

- Cable component of the CHL (layer 4), thick fibrous tissue visible arthroscopically bounds thinner Crescent shaped portion of the distal cuff
- Extends from anterior Supra to Infra
- Functions as “Suspension Bridge”
- Shields the thinner crescent from undue stress
- Limits the degree of retraction of RCT
- Cable dominant/non dominant shoulders
Rotator Cuff Cable/Crescent
Rotator Cuff Cable/Crescent
Rotator Cuff Cable/Crescent
Rotator Cuff Cable/Crescent
“Cable Dominant”
Cable Dominant PT RCT
Cable Dominant with FT RCT
Teres Minor

- Originates lower inferior edge of scapula
- Inserts on Vertical Facet of Greater Tub
- Innervated by Axillary Nerve
- May show atrophy/denervation changes “Quadrilateral Space Syndrome”/Fibrous Bands
- Isolated Teres Minor abnormality typical---Nonspecific, d/t prior Trauma, Posterior Dislocation, Instability
45 y/o female with Adh Capsulitis, SS PT RCT, Teres Minor Atrophy

3% of Routine Shoulder MRs
Subscapularis

- Broad origin on the ventral surface of the scapula
- Multicircumpennate similar to infraspinatus
- Inserts on lesser tuberosity
- Contributes to “transverse humeral” ligament
- Inferior muscular portion that inserts near surgical neck of humerus
Subscapularis
History of Dislocation
History of Dislocation
Rotator Interval(s)

- Anterior Rotator Interval Medial and Lateral Portions
- Medially-Fat, RI Capsule, CHL, SGHL
- Lateral Apex-more complex anatomy, above components plus fibers from Supraspin and Subscapularis
- Focal RI tears, Site of Fibrosis in Adhesive Capsulitis
Anatomy of the Posterior Rotator Interval: Implications for Cuff Mobilization. Miller et al.
PRI Abnormal
Posterior Rotator Interval Findings

- Site for Arthroscopic Port Placement
- Normal Joint Recess
- Potential Space for Perilabral Cysts
- Adhesive Capsulitis
- Vessels
Biceps Pulley Impingement

25 y/o surfer with pain during paddling and findings of bicipital tendonitis on physical exam