1 Subscapularis Tears

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2 History

- Smith 1834 – first reported case
- Codman 1934 – described subscapularis tears
- Gerber 1991 – re-introduced the concept of isolated subscapularis tears
- Burkhart 2002 – described arthroscopic appearance, repair techniques

3 Subscapularis Anatomy

- Largest, strongest rotator cuff muscle
- Contributes 50% total rotator cuff force
- Strong internal rotator
- Dynamic anterior stabilizer
- Dual innervation – upper & lower subscapularis nerves, branches of posterior cord

4 Bony Anatomy – Subscapularis Footprint

- Lesser tuberosity insertion
- Large trapezoidal footprint is 16-18 mm medial-lateral, 25 mm superior-inferior
- 60% tendon attaches to wide superior one-third

5 Prevalence & Pathology

- Most subscapularis tears – superior one-third, partial-thickness, articular-side, degenerative
- 27% to 49% of all RCTs involve subscapularis
- Prevalence same as for infraspinatus tears
- Most subscapularis tears are part of massive tear
- Isolated subscapularis tears are traumatic

6 Mechanism of Injury for Traumatic Tears

- Forced abduction – external rotation
- Fall onto outstretched upper extremity
- Severe, sudden traction force
- Direct blow
- Heavy lifting

7 Associated LHB Pathology

- Prevalence of LHB lesions with subscapularis tears is 63% to 85%
- Anterior instability of LHB nearly universal
- Upper subscapularis tear disrupts medial sling LHB by destabilizing SGHL & coracohumeral ligament
- LHB subluxation implies subscapularis tear

8 Clinical Evaluation for Internal Rotation Weakness

- Lift-off test
- Internal rotation lag sign
- Belly-press test (88% sensitive)
- Belly-off sign (91% specific)
- Bear hug test

9 Imaging

- Plain radiographs – nonspecific, head centered
- CT-arthrogram – when MRI contraindicated
- MRI – standard in US, excellent specificity
- Ultrasound – dynamic evaluation in office, depends on expertise of sonographer

10 Lafosse Classification

- Type 1 – Partial tear, superior one-third
- Type 2 – Partial tear, superior two-thirds
- Type 3 – Complete tear, superior two-thirds
- Type 4 – Full tear, head centered, mild fatty change
- Type 5 – Full tear, head eccentric, moderate or severe fatty change

11 Intraoperative Decisions

- Arthroscopic vs open deltopectoral
- If scope, intra-articular vs extra-articular
- LHB tenotomy vs tenodesis
- Coracoplasty or not
- Number of suture anchors
- Single-row vs double-row fixation

12 Arthroscopic Subscapularis Repair – Technique Sequence

- Subscapularis tear inspection (scope vs open)
- Biceps management (tenotomy vs tenodesis)
- Rotator cuff interval extirpation, coracoplasty
- Subscapularis mobilization, traction sutures
- Lesser tuberoplasty, anchor placement
- Suture passage, management & knot tying

13 Repair Outcomes

- Systematic review 6 open repair studies and 3 arthroscopic repair studies
- Pain scores improved significantly w/repair
- 55% had concomitant LHB tenodesis
- Satisfactory healing in 90% to 95% cases
- Review of Therapeutic Level IV studies

14 Dr. Burkhart – Teaching Points

- Subscapularis tears are relatively common
- Comma sign leads to medially-retracted tendon
- Posterior lever push improves visualization
- 70-degree scope improves visualization
- Coracoplasty (1.5 burr widths) in 90% cases
- Subscapularis may be medialized w/impunity & still function as anterior restraint