Rotator cuff Full-Thickness Tear

- Tear does not need to involve complete tendon or lead to retraction of entire tendon
- If also full-width (anterior to posterior) tendon tear: Complete cuff tear.
- 95% of rotator cuff tears involve supraspinatus tendon
- Usually in lateral 1.5 cm of supraspinatus tendon
- Indicates chronic full-thickness tear
- Most infraspinatus full-thickness tears also have supraspinatus tendon tear

Etiology

- Most occur in patients with preexisting cuff degeneration or partial-thickness tear
- Intrinsic cuff failure
  - Overuse and age-related degeneration from mechanical damage, inflammatory mediators, altered expression of degradative enzymes
  - Decreased vascularity with age
- Extrinsic cuff impingement: Can be 1° impingement or 2° to abnormal glenohumeral motion
  - Primary impingement
  - Osseous impingement: Type III acromion, inferior AC joint osteophytes, ± os acromiale
  - Thickened coracoacromial ligament\
  - Secondary impingement
  - Weak humeral head depressors allow elevation of humeral head, causing impingement
- Instability: Multidirectional or microinstability
- Acute cuff trauma
  - Older patients secondary to anterior dislocation
  - Occurs rarely following trauma in younger patients with otherwise healthy rotator cuff

Associated abnormalities

- Type III acromial morphology
- Os acromiale
- Microinstability of glenohumeral joint

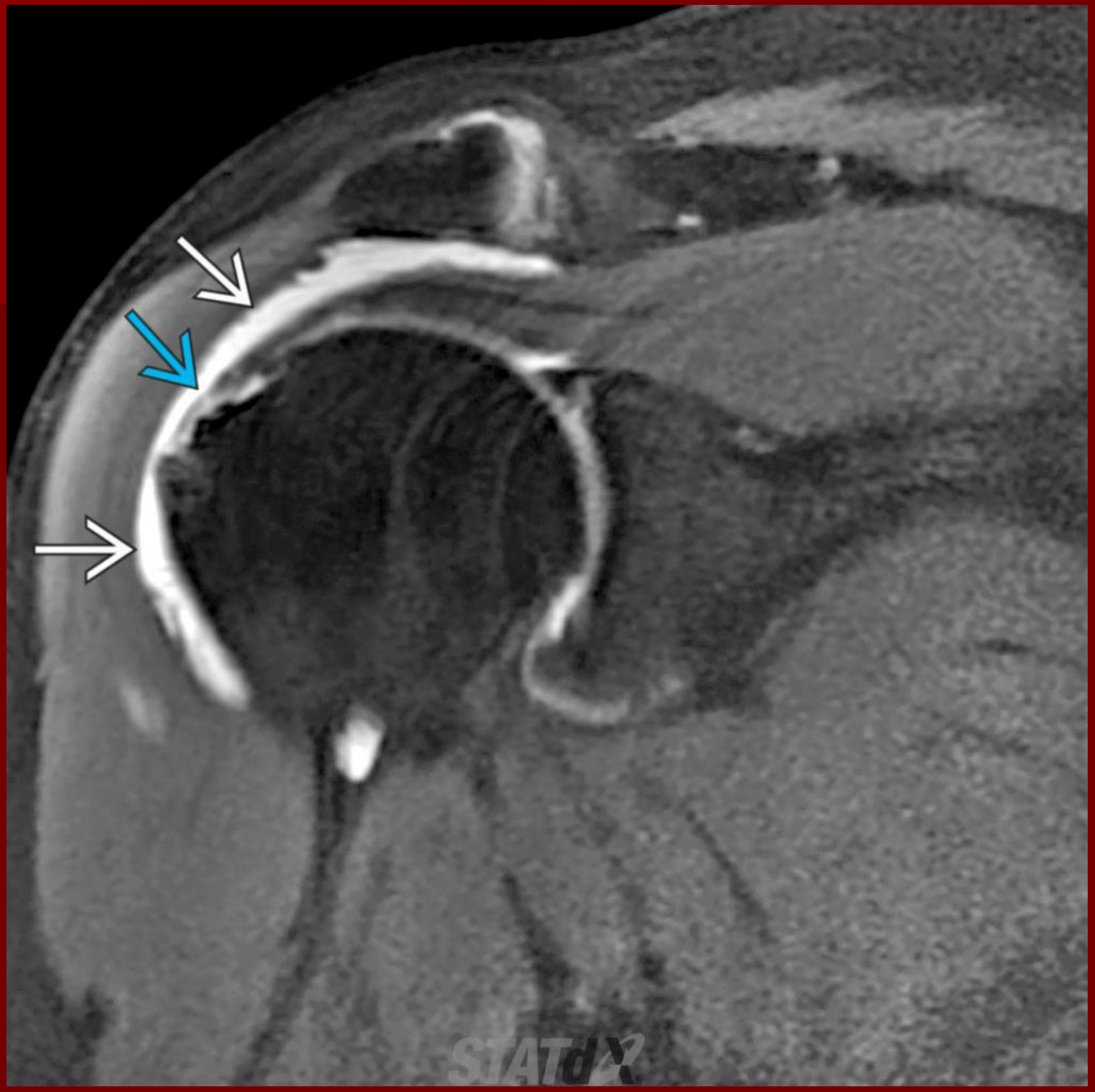
Grading

- Maximum diameter of full-thickness defect (involves 1 or more tendons of RCT)
  - Small: < 1 cm
  - Medium: 1-3 cm
  - Large: > 3 cm but not complete
  - Complete or massive: Entire tendon complex torn
- Measure in 2 dimensions (use coronal for medial-lateral measurement of retraction and sagittal for anterior-posterior tear dimension)

Tips

- Give diameter of FTRCT in 2 dimensions
- Comment on retraction of tendon edge medial to glenoid
- Describe severity of fatty atrophy of muscle
- Can overlook FTRCT on MR if no fluid in cuff defect

Oblique sagittal T2WI FS MR in the same patient shows the high signal extending from the articular (white curved arrow) to the bursal surface (white solid arrow) of the cuff. Note that the more posterior portion of the supraspinatus tendon is intact (white open arrow), making this a full-thickness, but not a complete or full-width, tear.



Coronal oblique T1WI FS MR arthrogram in the same patient shows that the SA/SD bursal fluid is high-signal gadolinium contrast (white solid arrow), indicating an FTRCT. Contrast extending across the entire cuff at the small tear (cyan solid arrow) is more easily seen on the T1WI.

Coronal oblique T2WI FS MR shows an FTRCT at the myotendinous junction of the supraspinatus tendon (white solid arrow). These tears are less common than more lateral tears.