Rotator Cuff Postoperative Repair

- Variable tendon appearance during 1st year
  - Most disorganized at 3 months
  - No correlation with clinical symptoms
- Metal artifact
- Polymer or bioabsorbable tacks and anchors
- Only 10% of postop tendons appear normal
- Residual cuff defect < 1 cm common
  - Does not correlate with clinical symptoms
- Glenohumeral effusion in 90%
- Subacromial/subdeltoid bursa effusion common in asymptomatic patients

Recurrent tear

- Absence of tendon
- Fluid signal in > 1-cm defect
- Can be difficult to accurately diagnose re-tear with conventional MR, especially partial tear.
- Direct MR arthrography
  - Best evaluation of postop tendon
  - 90% accuracy for full-thickness tears
  - Specificity for recurrent partial tear = 25%

Other Complications

- Loose suture anchor or tack
- Deltoid dehiscence
- Inadequate decompression
- Acromion fracture
- Teres minor and deltoid atrophy if injury to anterior branch of axillary nerve
- Adhesions from scar/fibrosis
- Infection, hematoma

MR

- Only 10% of postop tendons appear normalIncreased T2 signal in normal postop tendon in > 50%
  - Tendon appears most disorganized 3 months postop
  - Intratendinous high signal persists for 1 year postop, mimics residual/recurrent tear
  - High-signal granulation tissue around sutures
- Residual cuff defect < 1 cm common
- Cuff defects in 20% of asymptomatic and 50% of symptomatic patients
- SA/SD effusion common in asymptomatic patients (67%)
- GH joint effusion in 90%
- Loss of peribursal fat
- Low signal intensity marrow in remaining anterior acromion from marrow fibrosis

Re-Tear

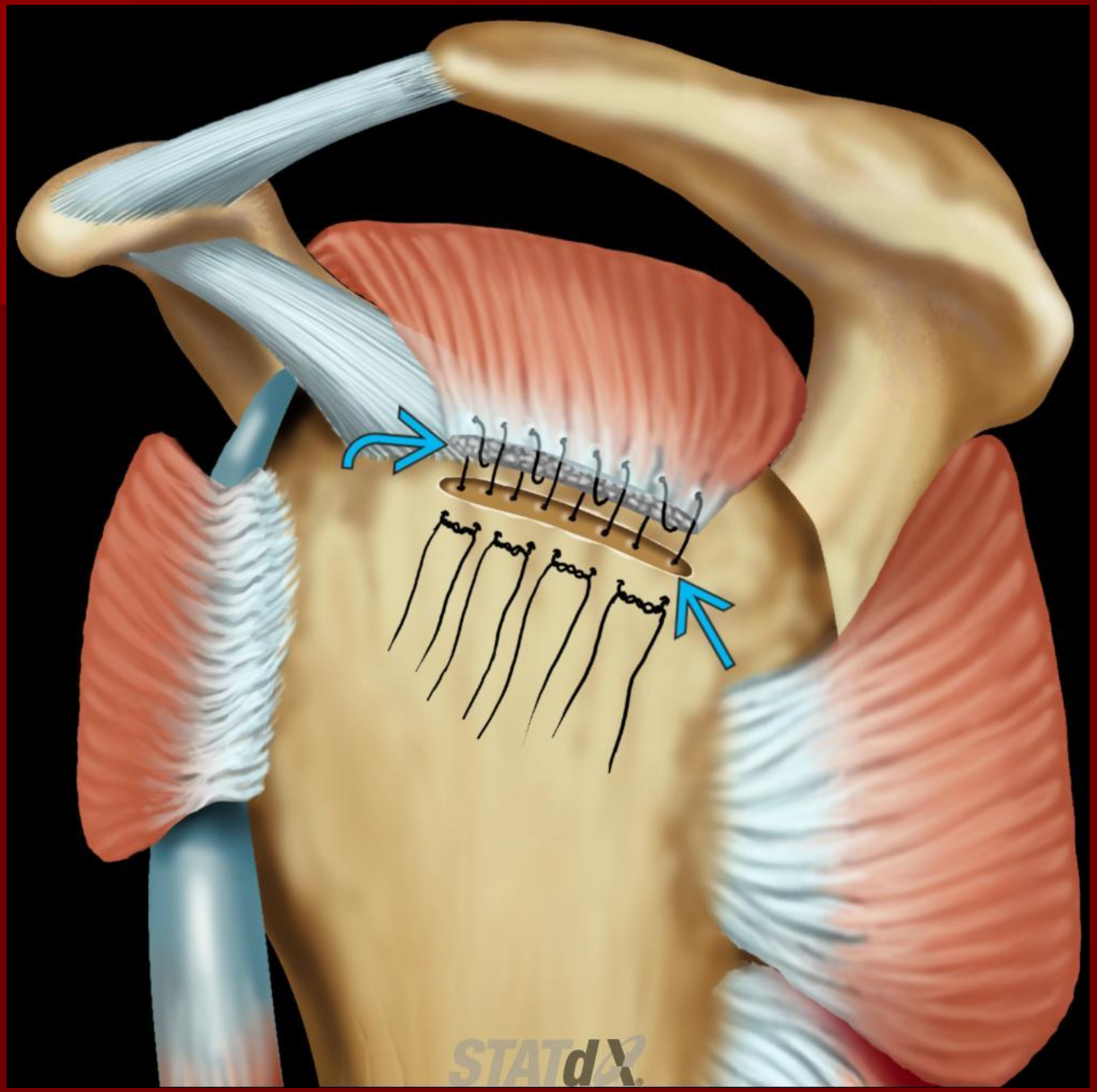
- Can be difficult to accurately diagnose retear with MR, especially partial tear
- Cardinal signs
  - Absence of tendon
  - Fluid signal in > 1-cm defect
- 80-90% accuracy for recurrent FTRCT
- Low specificity for recurrent partial-thickness tears (25%)
  - Normal postop cuff thinning can mimic partial tear
- Poor accuracy for correctly determining size of recurrent tears
  - MR underestimates retear size
- Helpful to know size of original tear and what type of surgery performed
- After 1 year, new tears often occur away from repair site

Check list

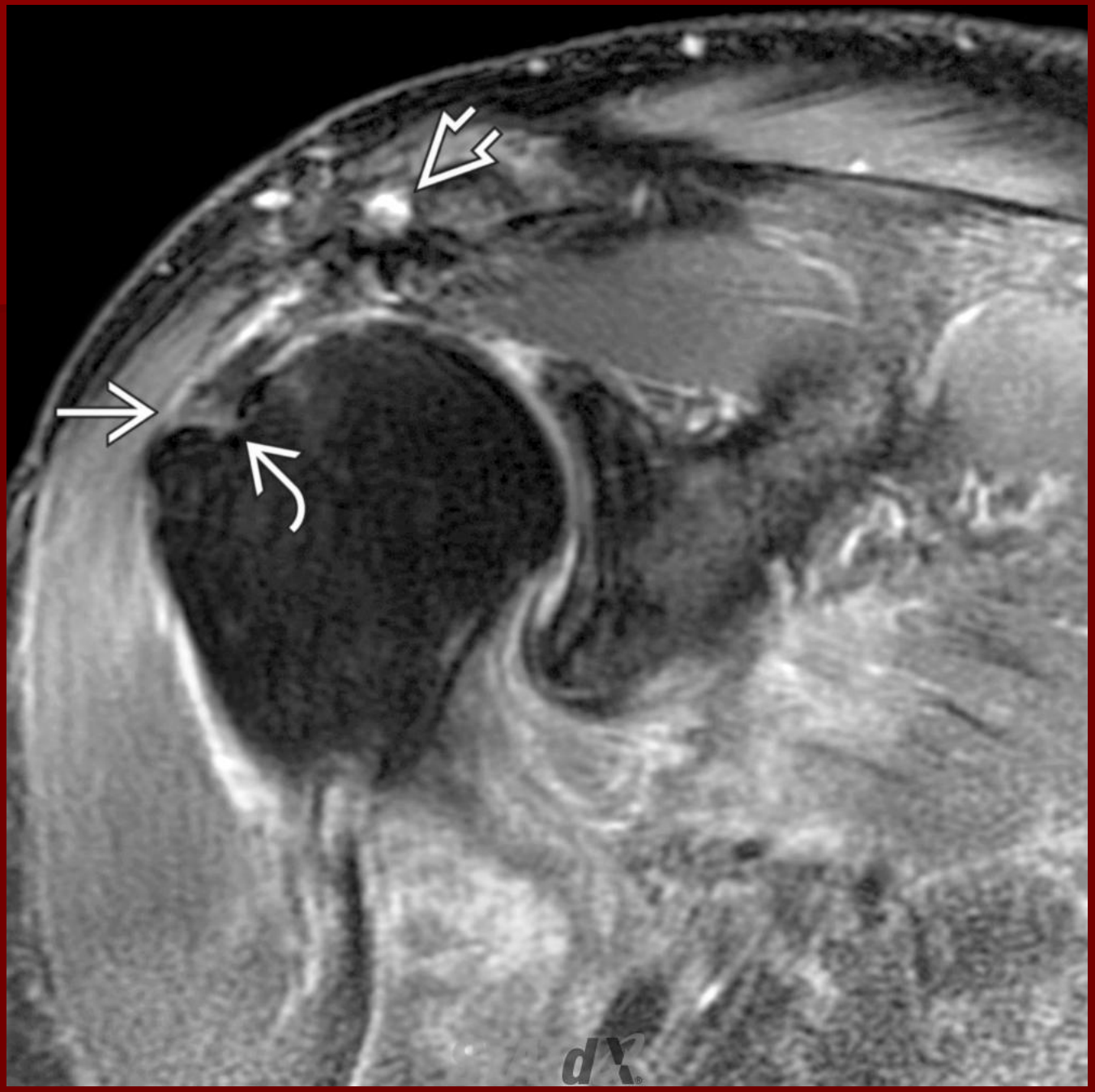
- Clinical Issues
  - 25% of patients are symptomatic after rotator cuff surgery
  - Causes of pain other than cuff retear: Hematoma, adhesions, arthritis, infections
- Diagnostic Checklist
  - Use "defect" rather than "recurrent cuff tear" if tendon discontinuity measures < 1-cm diamete

Other Complications

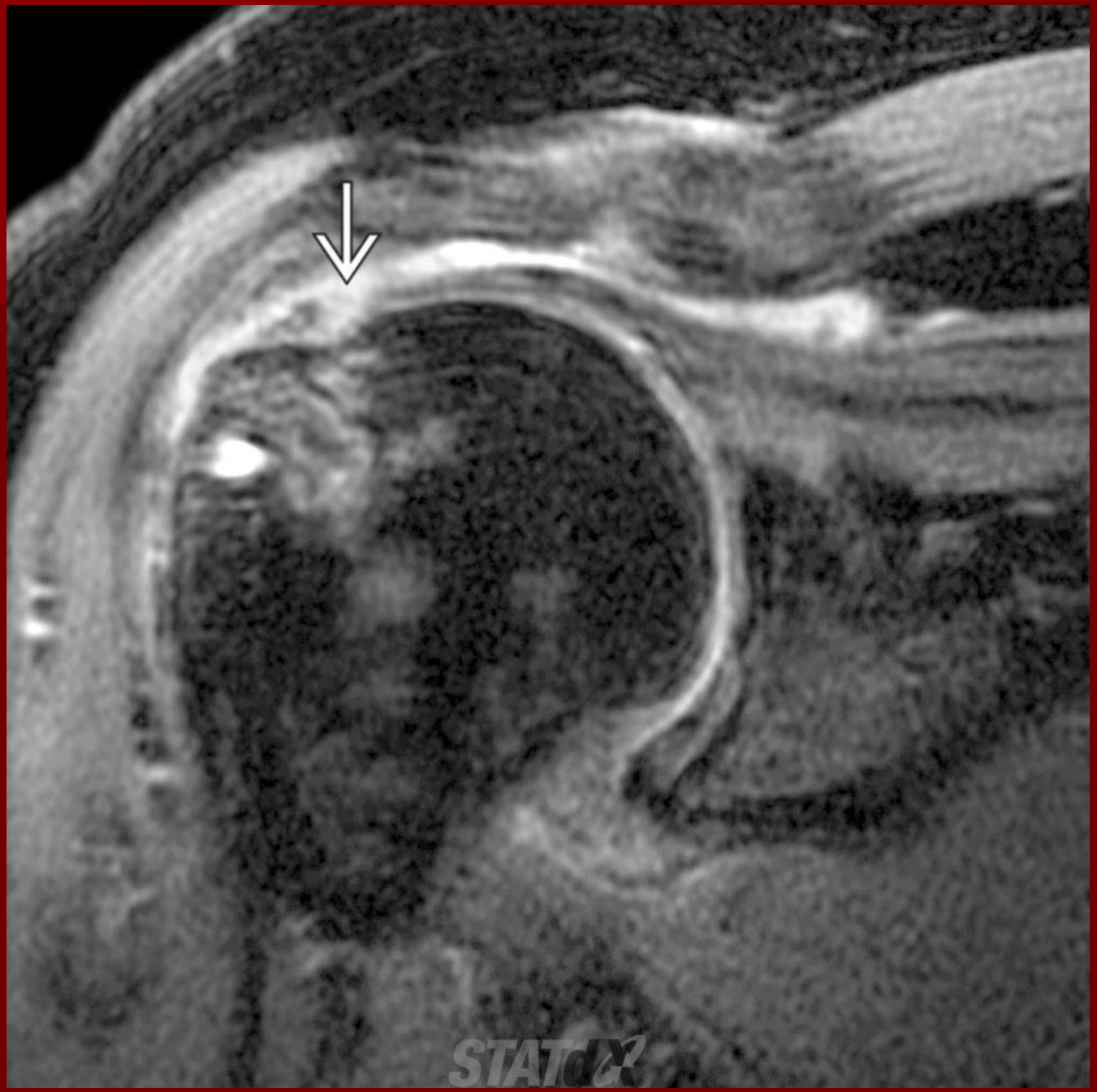
- Loose suture anchor or tack
  - Loose hardware can cause pain, retear
- Deltoid dehiscence
  - Can occur after open repair
  - Deltoid reattachment site becomes detached from lateral acromion
- Inadequate decompression
  - Continued "hooked" anterior acromion, inferior osteophytes
- Acromion fracture
- Teres minor and deltoid atrophy if injury to anterior branch of axillary nerve
- Infection, hematoma
- Adhesions from scar/fibrosis



Lateral graphic shows an open repair of a full thickness supraspinatus tendon tear. A trough is made in the lateral greater tuberosity (cyan solid arrow), and the torn edge of the cuff (cyan curved arrow) is sutured into the trough.

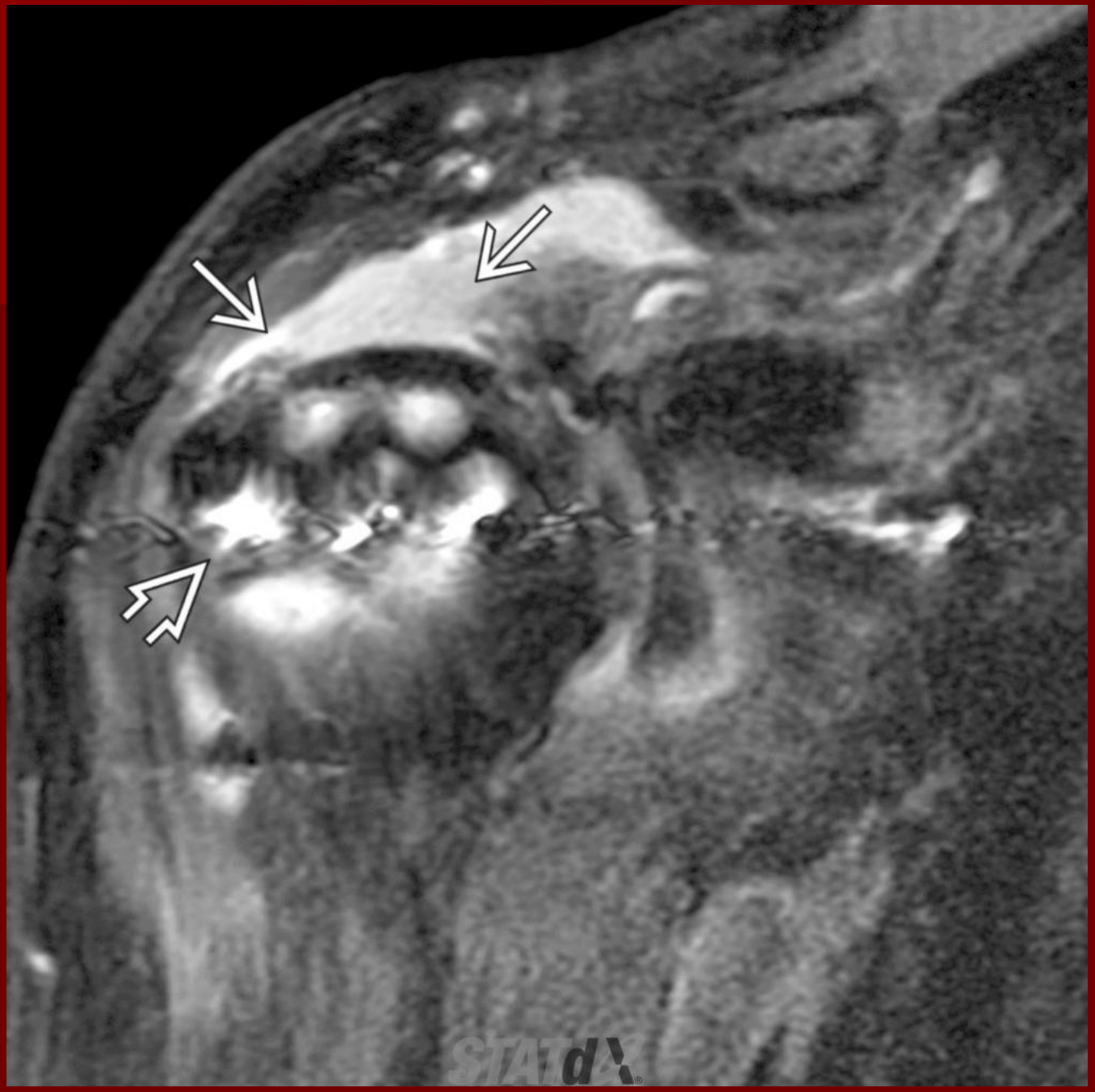


Coronal oblique T2WI FS MR in the same patient shows normal postop appearance of the repaired cuff, with minimal increased signal (white solid arrow) at the repair site. Also seen is signal elevation in the trough (white curved arrow) and micrometallic artifact (white open arrow).



Coronal oblique T2WI FS MR shows normal healing tendon proven at 2nd look arthroscopy. There is high, but not fluid, signal in the supraspinatus tendon (white solid arrow). T2 high signal in the tendon can represent normal healing fibrous/granulation tissue.

AP graphic shows coracoacromial arch decompression, often done at the same time as cuff debridement/repair. There is an anterior acromioplasty (white solid arrow), acromioclavicular (AC) joint resection (white open arrow), and excision of the coracoacromial ligament (white curved arrow).



Coronal oblique T2WI FS MR of cuff retear shows fluid defect > 1 cm (white solid arrow) in the supraspinatus tendon. There is artifact (white open arrow) from 3 metal suture anchors in the humeral head.

Oblique coronal MR arthrogram T1WI FS after cuff repair shows a subcentimeter full-thickness defect (white solid arrow) in supraspinatus tendon, with small amount of contrast in subacromial (SA) bursa (white open arrow). Such small defects are often present after surgery and do not necessarily warrant surgical repair.