MANAGEMENT OF NON-REPAIRABLE ROTATOR CUFF TEARS

Faculty/Presenter Disclosure

- Faculty: none
- Relationships with commercial interests: none

Mitigating Potential Bias

- None.

Non-repairable Cuff Tears

- ‘Stapling jello to a wall’
- Typically acute on chronic/chronic
- Cuff arthropathy
- Significant retraction
- Degree of fatty infiltration

Presentation

- Varies widely
- Clinically – present +/- pain and often, pseudoparalysis
- Traumatic and atraumatic
- Acute on chronic

Options for Conservative Management

- Conservative
  - Avail ROM, deltoid re-ed
  - Injection
- ‘Mix’
  - Biceps tenotomy
  - Decompression
  - Debridement

Rotator Cuff Tear Pattern – Collin et al

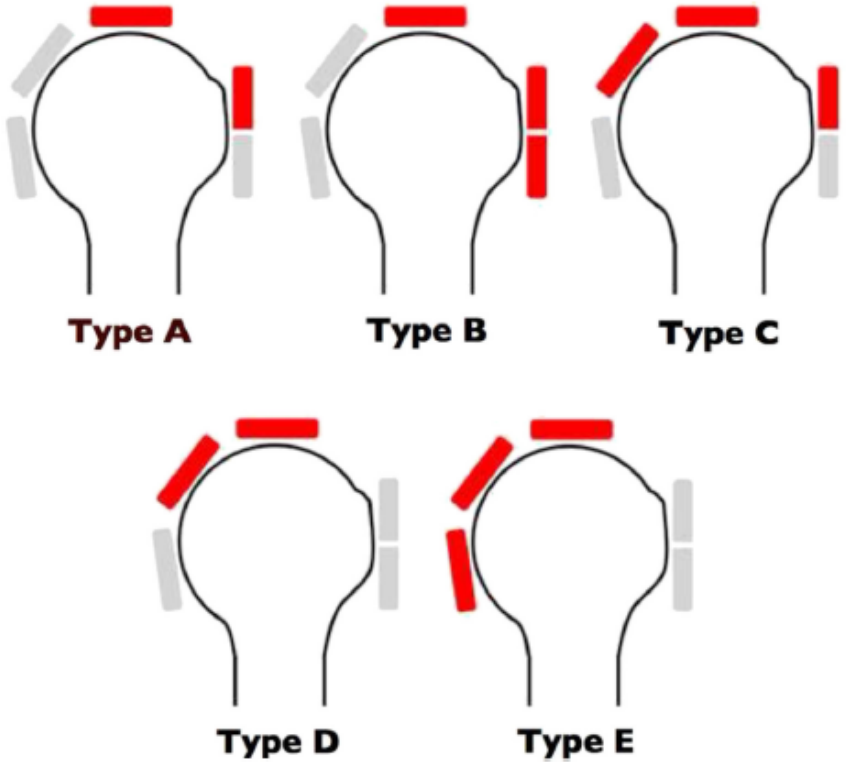


Figure 2 Rotator cuff tears classified by the involved components: type A, supraspinatus and superior subscapularis tears; type B, supraspinatus and entire subscapularis tears; type C, supraspinatus, superior subscapularis, and infraspinatus tears; type D, supraspinatus and infraspinatus tears; and type E, supraspinatus, infraspinatus, and teres minor tears.

CONSERVATIVE MANAGEMENT

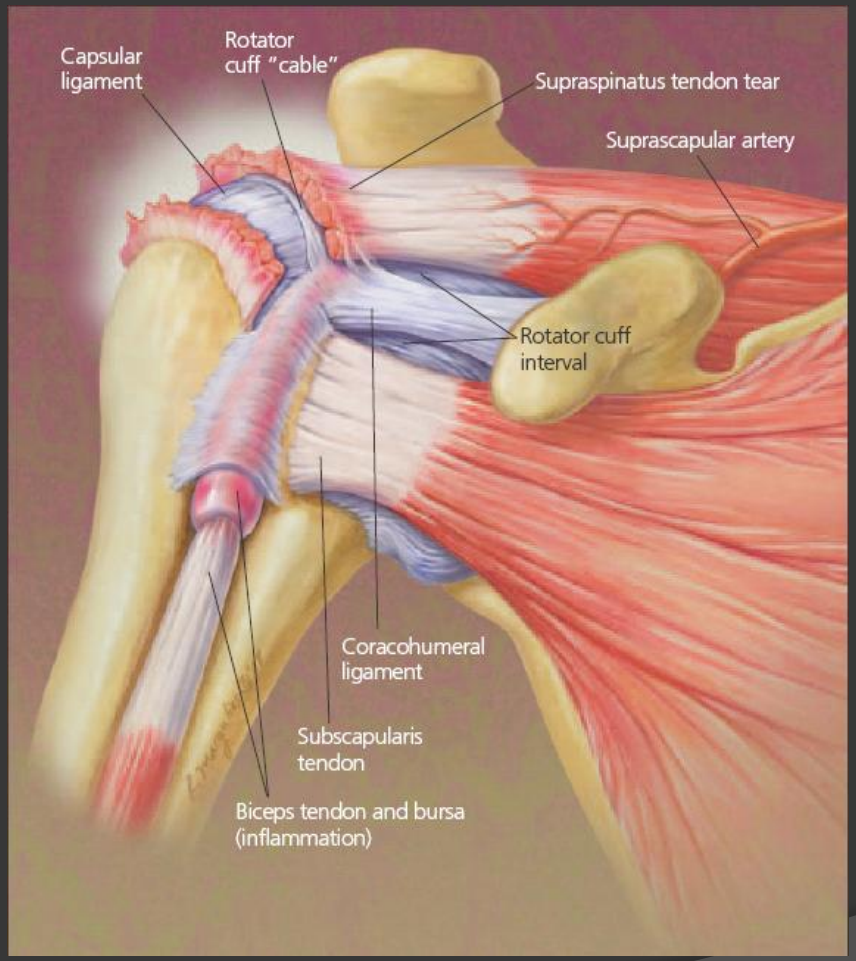
Conservative Management

- DELTOID RE-EDUCATION!!!

But first.....

- Why do some patients with massive cuff tears function so well???

Rotator Cable



Rotator Cable

- allow the forces across the rotator cuff to be dispersed as in a suspension bridge.
- Force distribution explains why some patients can maintain reasonable shoulder function in the setting of a painful full-thickness tear. If the rotator cuff cable is maintained, it can allow for balanced kinematics.

Deltoid Re-education

Role of the Deltoid

- Gagey et al
  - ‘the middle part of the deltoid undergoes a change between the proximal and the distal insertions and surrounds the HH’

Role of the Deltoid

- Gagey et al
  - One of the deltoid's functions is to prevent upward migration of the humeral head and compress it against the glenoid, even in the presence of a large cuff tear.
  - Re-education of the deltoid is imperative in the rehab of irreparable cuff tears.

Deltoid Re-education

- Study by Burkhart describes 3 kinematic patterns
  - Stable – normal motion with stable fulcrum
  - Unstable – anterior and superior translation of the HH with attempted elevation
  - Captured – enough deltoid strength to allow elevation about the fulcrum that the HH develops with the acromion
- Levy et al felt that patients who improved substantially with deltoid re-ed changed from unstable to captured fulcrum kinematics

Deltoid Re-education

- Proper neuromuscular education and home exercise program is important however this often develops independently to a certain degree simply with FUNCTION.

Deltoid Re-education

- Regaining and/or maintaining available ROM is crucial
  - AAROM, 4 corner stretches, and/or manual work

Deltoid Re-education

- Supine punch
- Reverse Codmans
- Supine IR/ER
- Supine flexion
- Sidelying abduction

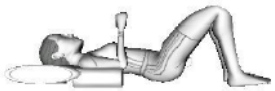
AAROM

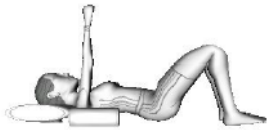
- Supine AA flexion vs wall climb
- Wand abduction vs wall climb abduction
- Wand IR/ext vs countertop
- Wand ER vs doorway → ER/abd

Deltoid Re-education

Supine Punch - 1

- **Frequency: 1 x/day Reps: 10-30**





- Lie on your back with a towel roll under your arm.
- Raise your arm up towards the ceiling in a controlled manner.

Reverse Codmans - 1

- **Frequency: 1 x/day Duration: 5 circles ea =1 rep Reps: 5**

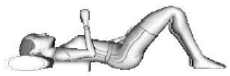
- Start with arm straight up towards ceiling.
- Move arm in small clockwise and counter clockwise circles.

- Do not move arm at the elbow or the wrist.
- Do not move in large ranges of motion.

Deltoid Re-education

Supine Internal Rotation and External Rotation - 1

▸ **Frequency: 1 x/day Reps: 30**



- Bring your forearm out, then back to stomach.
- Keep elbow bent to 90 degrees.

- Do not straighten elbow.

Supine Flexion - 1

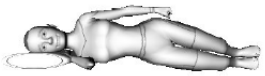
▸ **Frequency: 1 x/day Reps: 10-30**

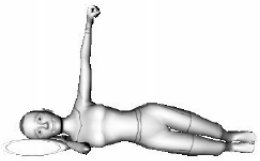
- Bring arm overhead and slowly return.
- Keep elbow straight.

- Do not bring arm past shoulder level.

Deltoid Re-education

Side lie Abduction



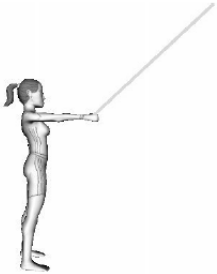


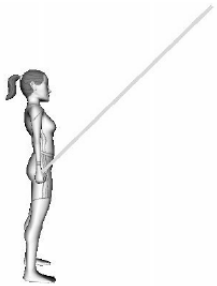
- Lift your arm straight up to 90 degrees only, as shown.

- Do not swing arm.
- Do not move arm beyond 90 degrees.

Exercise Band Extension - 1

Frequency: once/day Reps: 30





- Fix theraband overhead.
- Keep elbow straight.
- Grasp theraband and pull arm straight down to your hip.
- Return slowly to start position.

- Do not 'bounce' the arm, move in a slow controlled manner.

Program Parameters

- Supine to incline - ?necessary
- Antigravity to low weight – soup or pop can
- ?standing program – flex, scap, EC, ER, HA, wall pushup, wings,

Rehab considerations

- Pain?
- Chronicity vs Acuity
  - Acute massive tears are frequently repairable
- Greater time for deltoid to learn pre-incident in the absence of a functional cuff → chronic tears
- What if there is a functional cuff?

What if you have a functional cuff but you require deltoid re-ed for best functional outcomes?

Case Study - RH

- rTSA with Intact Cuff
- Severe OA with posteriorly subluxed humeral head and glenoid retroversion
- Would have posterior escape with traditional TSA
- Reverse with an intact cuff

RH

- Good cuff function
- Pre-op AROM
  - 120/112/5/sacrum
- Constant pain and ache
- ~ 5 tylenol per day

RH

- OR Feb 2, 2015
- Initial Assessment 3/3/2015
  - AAROM 110/85/ext 30
- 3/31 – AROM 25/25/0/lat glut can complete a supine punch

RH

- 4/7 – unable to initiate supine flexion, unable to complete 4 corner, UBE started
  - Isometrics? Deltoid vs cuff, NM conflict?
- 4/14 – increased supine program to 2x/day
  - Wall climb, abduction isometric

RH

- 4/28 – flex 62, abd 41

- 5/12 - min pain, AROM 70/45/42/beltline

- 2 weeks later, very little improvement

RH

- 6/18 – started GTT with Sarah
- 7/2 – AROM 72/52/42/beltline
  - Progressed to standing program, daily
  - Flex, scap, ER, scap pulls and SL abd
- 8/4 – AROM 110/95/40/L2
- 9/23 – AROM 127/125/40/L2
  - D/C with HEP – AAROM x 4
  - Flex, scap, ER, SL abd, scap pulls

RH

- 3 months to get AROM close to 90 degrees
- Another 4 months to break over 90 degrees
- Total of 8 months to get into functional ranges
- Deltoid/cuff conflict

QUESTIONS?