ISMRM 2015 Syllabus
Educational Course: Osteoarthritis: who, when and why?
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Highlights

- Rotator cuff arthropathy is a subtype of glenohumeral osteoarthritis with a large rotator cuff tear and high-riding humeral head, and intraarticular carbonate-substituted HAD crystals
- The etiology is controversial
- It is uncertain if the osteoarthritis results from mechanical wear or from activated enzymes

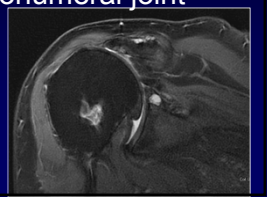
Title: Rotator Cuff Arthropathy

- Target audience: radiologists, cartilage researchers
- Objectives: Better understand, and be able to accurately diagnosis on imaging, this specific disease
- Purpose: To review the etiology and imaging of rotator cuff arthropathy

- References
    - Nam D, Maak TG, Raphael BS, et al. Rotator cuff tear arthropathy: evaluation, diagnosis, and treatment. J Bone Joint Surg Am. 2012; 94(6): e34(1-11).
    - Ecklund KJ, Lee TQ, Tibone J, Gupta R. Rotator cuff tear arthropathy. J Am Acad Orthop Surg. 2007; 15(6):340-9
    - Khan WS, Longo UG, Ahrens PM, et al. A systematic review of the reverse shoulder replacement in rotator cuff arthropathy, rotator cuff tears, and rheumatoid arthritis. Sports Med Arthrosc. 2011; 19(4):366-79.

RC arthropathy:
A specific disease, includes

1. Large rotator cuff tear
2. Osteoarthritis of glenohumeral joint

RC arthropathy:
A specific disease, includes

1. Large rotator cuff tear
2. GH OA
3. HH 'articulates' w/ acromion
4. Ca++ crystals in joint

RC arthropathy

1. Large rotator cuff tear
2. GH OA
3. HH 'articulates' w/ acromion
4. Ca++ crystals in joint
5. Also: mechanical erosion of HH, glenoid & acromion, HH collapse, 'acetabulization' of acromion, LHBT tear

RC arthropathy:
Specific disease of

- Elderly
- F>M
- Dominant arm
- Chronic pain, worse @ night & w/ activity

Not RC arthropathy

FT RCT

Not RC arthropathy

GH osteoarthritis

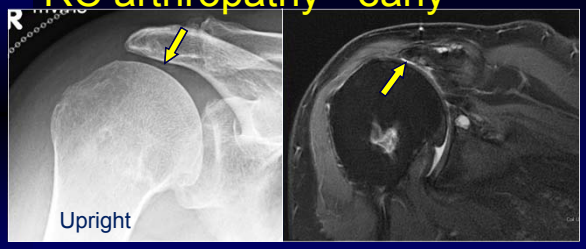
Not RC arthropathy

FT RCT & GH OA, but no intraarticular Ca

Not RC arthropathy

HADD calcific tendinitis

RC arthropathy - early



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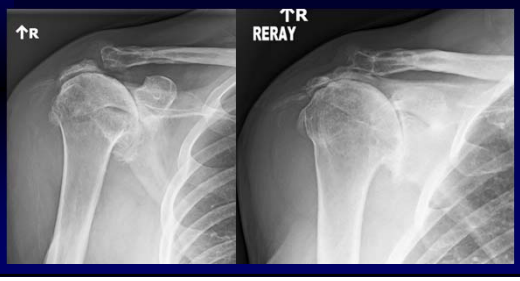
RC arthropathy



RC arthropathy

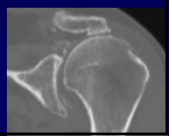
- Why do only some patients with FT RCT get RC arthropathy?

RC arthropathy etiology: 3 Theories

1. 'Milwaukee shoulder' crystalline arthritis
2. Neer: impingement FT RCT
3. Cuff degenerative tear → Ca^{++} debris

'Milwaukee shoulder' theory

- Intraartic 'Basic Ca^{++} hydroxyapatite' crystals → synovial inflammation
- Activated collagenase & protease → jt fluid
- RC tear, chondral damage



Neer RC impingement theory

- Coracoacromial arch impngmnt → FT RCT
- Weakness → superior migration HH
- Mechanical wear & repetitive trauma
- Disuse osteoporosis, HH collapse, debris

Cuff degeneration theory

- Cuff degeneration → FT RCT, superior HH, mechanical wear
- Debris w/ 'Basic' HA crystals
- Synovial inflamm, enzyme response → further destruction

RC arthropathy

- Etiology controversial
- Treatment difficult; based on severity

Visotsky classification

- 1A: Mild sup migration
  - 'Rounded' HH & min. wear acrom only
- 1B: +glenoid rim wear

Visotsky classification

- 1A: Mild sup migration
  - 'Rounded' HH & min. wear acrom only
- 1B: +glenoid rim wear
- 2A: severe sup migration
- 2B: anterosuperior "escape" dislocation

Treatment

- NSAIDS & PT
  - Intraarticular steroids not effective

Treatment

- NSAIDS & PT
  - Intraarticular steroids not effective
- Hemiarthroplasty
  - 'CTA' type with extended metallic ball over gr tub
- Reverse TSA

'RCT Arthropathy' hemiarthroplasty

Reverse total shoulder replcmnt

RC arthropathy

- ? Similar disease in hips

Rapidly destructive arthropathy of the hip

Summary

1. RC arthropathy: specific disease
2. Uncertain etiology
3. Often → joint replacement surgery