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Shoulder Degenerative Joint Disease and Rotator Cuff Arthropathy: What Can We Do Now

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Disclosure Information

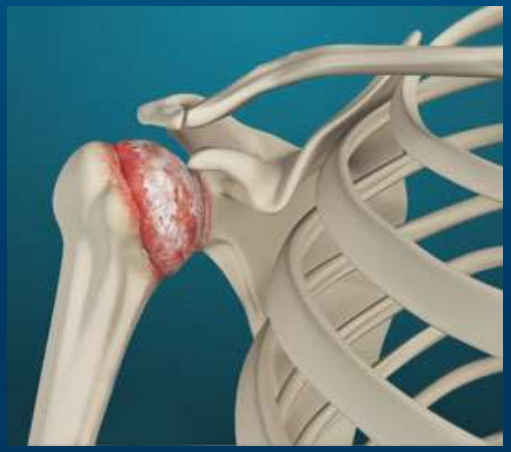
- No disclosures pertaining to this subject.

Epidemiology

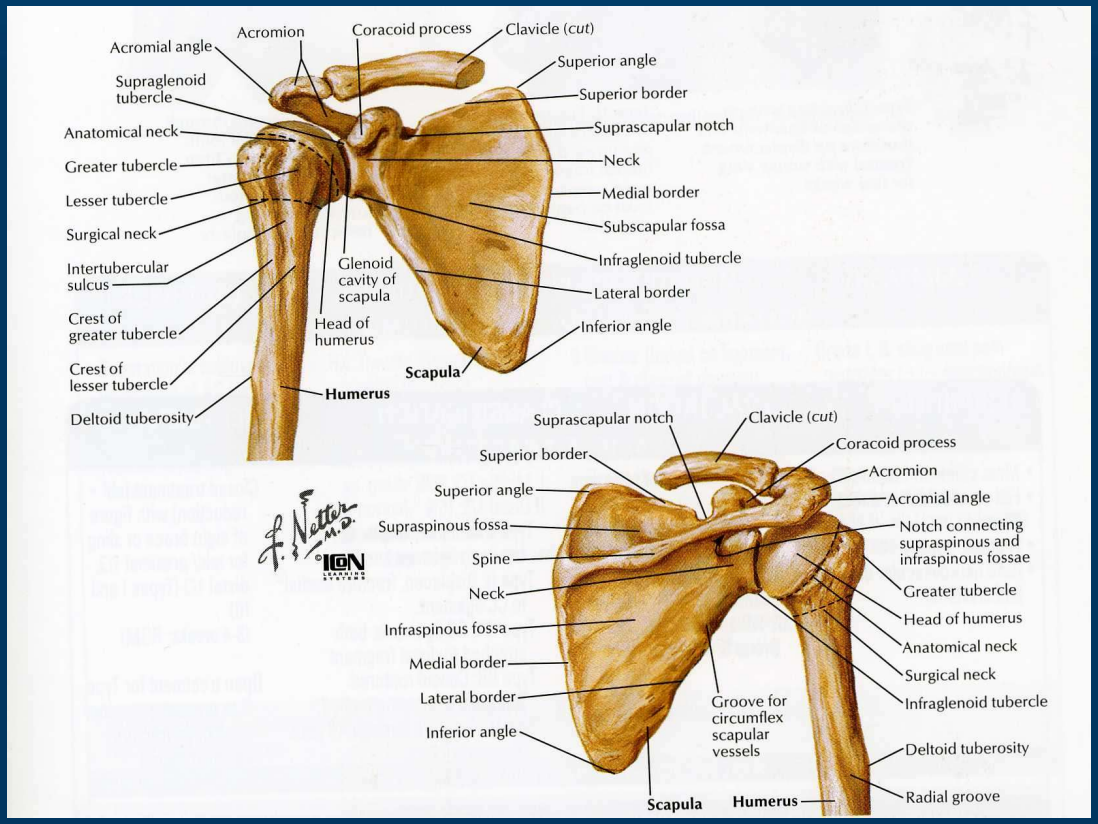
- Shoulder OA been shown to affect up to 32.8% >60 y/o
  - Prevalence ↑ w/ age & more common in women
- 3rd most common type OA
- In the US, from 2007 to 2015
  - Procedures for Shoulder OA ↑ 322%
  - 66,185 pts were d/c from hospital w/ diagnosis of Shoulder OA

Types of Shoulder Arthritis

- Primary (“wear & tear”)
- Secondary
  - Rotator Cuff Arthropathy
  - Inflammatory Arthritis (RA)
  - Inflammatory/Crystalline Arthritis
  - AVN
  - Post-traumatic
  - Neuropathic (Charcot Arthropathy)

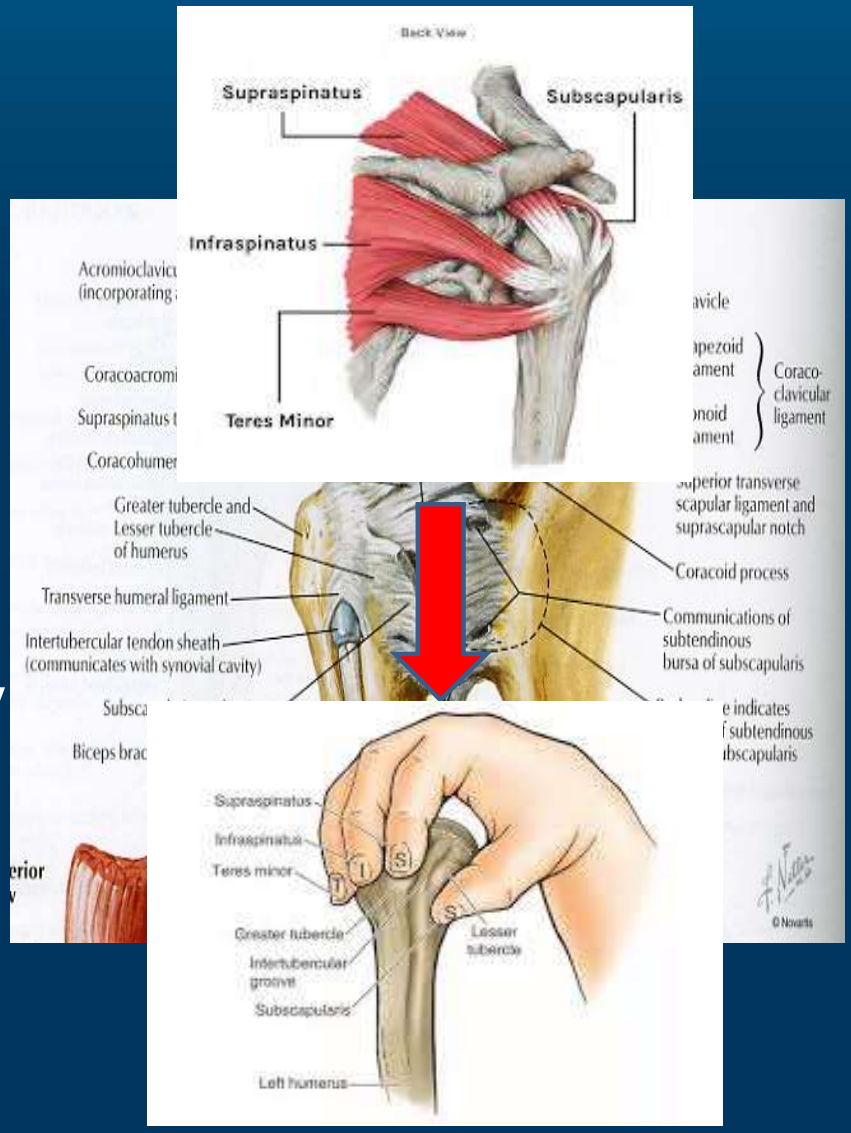


Shoulder Anatomy



Glenohumeral Stability

- Static Restraints
  - Glenohumeral Ligaments
  - Glenoid Labrum
  - Articular congruity & version
  - Negative intraarticular pressure
    - If released head will sublux inferiorly
- Dynamic Restraints
  - RC muscles
  - Biceps Long tendon
  - Periscapular Muscles



Primary Osteoarthritis ("wear & tear")

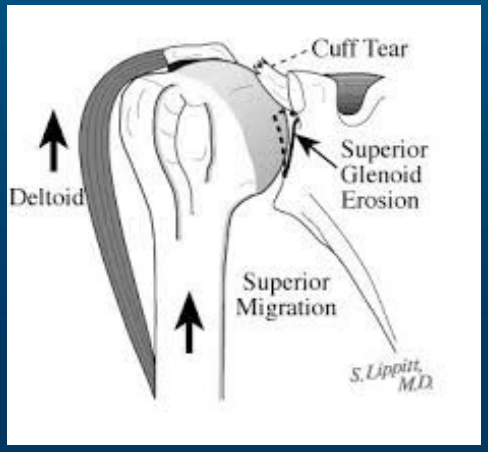
- Cause
  - Unknown
  - Genetic?
- Pathophysiology
  - Irreversible progression loss of articular cartilage w/ hypertrophic reaction of subchondral bone
- Presentation
  - Chronic (atraumatic?)
  - Shoulder pain → worse w/ activities & pain at night
  - ↓ ROM

Primary Osteoarthritis ("wear & tear")

- Physical Exam
  - ↓ both PROM & AROM
    - Especially w/ ER
  - Crepitus & tenderness w/ ROM
  - Usually Good strength when accessing RC
    - Jobes
    - ER
    - Bear hug
    - Lift off test
    - Belly press test
  - Often times have associated biceps tendonitis symptoms
    - Tenderness over BG
    - +Speeds
    - +Yergason's

Rotator Cuff Arthropathy

- Pathophysiology
  - Loss of Dynamic Compression from RC insufficiency
    - → abnormal GH wear & Superior Migration of the Humeral Head
- Risk factors
  - RC tear
  - Inflammatory Arthritis (RA)
  - Cystalline-induced Arthropathy
  - Hemorrhagic Shoulder
- Presentation
  - Usually older patients (7th decade, but not always…)
  - Shoulder Pain
  - Subjective Weakness & Stiffness

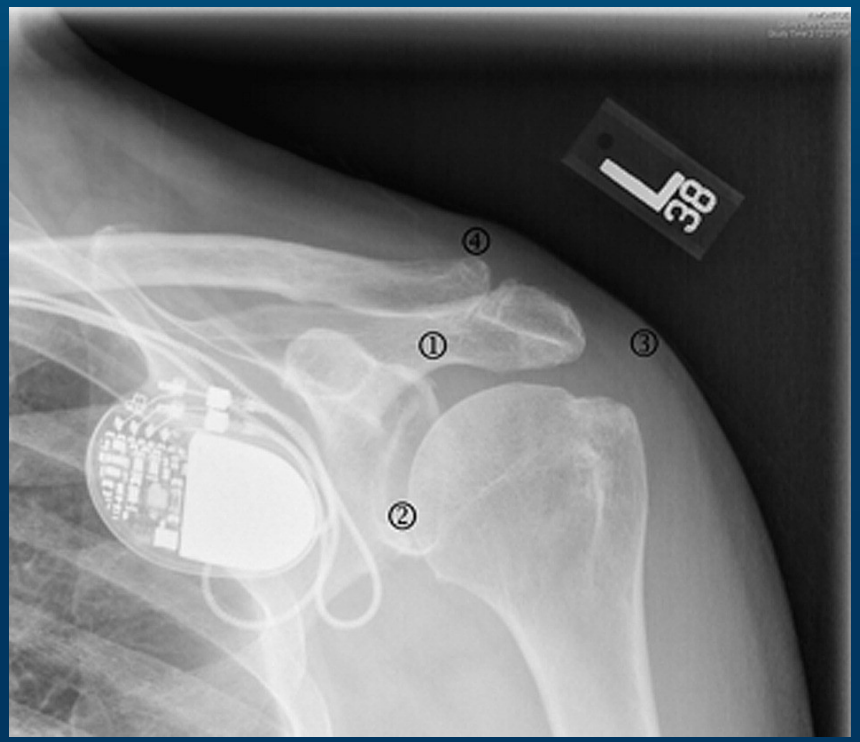


Rotator Cuff Arthropathy

- Physical Exam
  - Inspection
    - supraspinatus/infraspinatus atrophy
  - Limited AROM/PROM
  - Crepitus w/ ROM
  - Pseudoparalysis
  - RC insufficiency Test
    - ER Lag Sign
    - Hornblower Sign

Imaging

- XRs
  - AP
  - Grashey
  - Scapular Y
  - Axillary (& Grashey are the most important)
- MRI
  - Pacemaker?
    - CTA vs. Ultrasound
- CT
  - Evaluate significant boney deformity for pre-operative planning



Imaging Findings for Primary OA

- XRs
  - Joint space narrowing
  - Subchondral Cysts
  - Osteophytes
    - “Goats beard deformity”
  - Posterior Wear of Glenoid (axillary view)
- MRI
  - 5-10% RC Tear

Imaging Findings for Rotator Cuff Arthopathy

- XRs
  - Humeral Head Migration
  - Acromial Acetabularization
  - Asymmetric superior glenoid wear
- MRI
  - Irreparable RC tear w/
    - Severe retraction
    - Massive fatty infiltration

First Line of Treatment → Non-op

- Activity Modification
- NSAIDs & Acetaminophen
- PT
- "Is there supplementations that can help?"
  - Turmeric?

Review > BMJ Open Sport Exerc Med. 2021 Jan 13;7(1):e000935.
doi: 10.1136/bmjsem-2020-000935. eCollection 2021.

Therapeutic effects of turmeric or curcumin extract on pain and function for individuals with knee osteoarthritis: a systematic review

Kristopher Paultre [1 2], William Cade [2], Daniel Hernandez [3], John Reynolds [4], Dylan Greif [2],

Injections

- Ultrasound guidance?
  - Primary OA → Intraarticular
  - RC Arthropathy → Subacromial
- Steroid
  - VAS Pain → can improve up to 12 months
  - Function Improve → 4 months
  - Severity of OA did not affect duration of relief
- Hyaluronic acid
  - Mixed results
  - Not FDA approved for shoulder
- PRP Leu Poor
  - PRP vs. HA
    - No difference in pain & functional outcomes
    - Both illustrated significant improvements in both pain & functional outcomes

Randomized Controlled Trial > Clin J Sport Med. 2022 Nov 1;32(6):558-566.
doi: 10.1097/JSM.0000000000001029. Epub 2022 Mar 17.

Efficacy of Ultrasound-Guided Glenohumeral Joint Injections of Leukocyte-Poor Platelet-Rich Plasma Versus Hyaluronic Acid in the Treatment of Glenohumeral Osteoarthritis: A Randomized, Double-Blind Controlled Trial

Jonathan S Kirschner [1], Jennifer Cheng [1], Andrew Creighton [1], Kristen Santiago [1], Nicole Hurwitz [1], Mark Dundas [2], Nicholas Beatty [3 4], Dallas Kingsbury [5], Gabrielle Konin [6], Zafir Abutalib [7], Richard Chang [3]

Affiliations + expand

PMID: 35316820 PMCID: PMC9481749 DOI: 10.1097/JSM.0000000000001029

Failed Non-Op Treatment? What now?

Considerations for Operative Treatment

- Age
  - Really what we mean → physiological age
- Quality of Soft tissues
  - MRI to evaluate RC
  - Severity of the Arthritis

Joint Preserving Techniques

- Younger patients (<50-65 yrs of age) w/ Good RC Tissue
  - Comprehensive Arthroscopic Management (CAM Procedure)
    - Ultimate goal → improve ROM & Pain
      - Key word "improve"
    - At 10 years
      - Mean age 53 y/o at time of surgery
      - Functional Outcomes (ASES scores)
        - » Significant improved at 5 & 10 years
      - Survivorship from arthroplasty
        - » 5 yrs → 75.3%
        - » 10 yrs → 63.2%
      - Pre-op ↑ of Significance of Arthritis
        - » Was associated w/ future arthroplasty

CAM - Procedure

Am J Sports Med. 2021 Jan;49(1):130-136. doi: 10.1177/0363546520962756. Epub 2020 Nov 11.

Survivorship and Patient-Reported Outcomes After Comprehensive Arthroscopic Management of Glenohumeral Osteoarthritis: Minimum 10-Year Follow-up

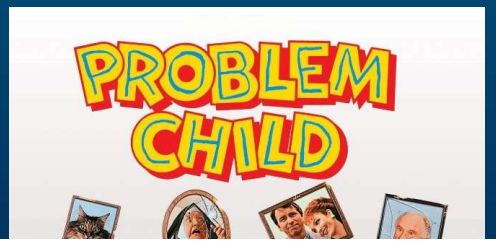
Justin W Arner [1,2], Bryant P Elrick [2], Philip-C Nolte [2], Daniel B Haber [1,2], Marilee P Horan [2], Peter J Millett [1,2]

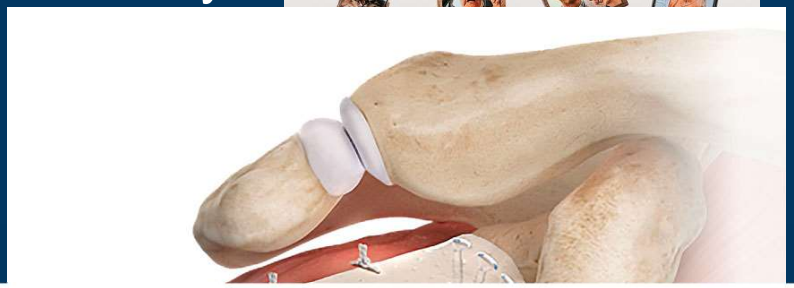
a large humeral head inferior osteophyte

shoulder following arthroscopic excision of the osteophyte

Joint Preserving Techniques

- Younger patients (<50-65 yrs of age) w/ RC insufficiency
  - Superior Capsule Reconstruction (SCR)
    - Indications:
      - Young laborer failed non-operative treatment
      - Massive Irreparable Superior RC Tear (Supra/Infra)
      - Minimal to no arthritis
      - Intact Subscap
    - Goal → improve ROM & pain
      - Significant Improvement in Function & Pain
        - » ASES → 44.2 to 84.8
        - » VAS → 5 to 1.5
      - Forward elevation
        - » 111 degrees to 152 degrees





Review > Curr Rev Musculoskelet Med. 2019 Jun;12(2):173-180.
doi: 10.1007/s12178-019-09551-9.

Sources, Quality, and Reported Outcomes of Superior Capsular Reconstruction: a Systematic Review

Seper Ekhtiari [1], Anthony F Adili [2], Muzammil Memon [1], Timothy Leroux [3], Patrick Henry [3], Asheesh Bedi [4], Moin Khan [5 6]

Joint Preserving Technique

- Younger patients (<50-65 yrs of age) w/ RC insufficiency
  - Lower Trapezius Tendon Transfer
    - Indications:
      - Young laborer failed non-operative treatment
      - Massive Irreparable Superior RC Tear (Supra/Infra)
        - » Lack ER
      - Minimal to no arthritis
      - Intact Subscap
    - Goal: improve ROM & pain
      - Forward Elevation
        - » 10° to 66°
      - Forward Elevation
        - » 11° to 63°
      - Significant improvement in PROs

Review > Arthroscopy. 2024 Mar;40(3):950-959. doi: 10.1016/j.arthro.2023.06.029. Epub 2023 Jun 30.

Lower Trapezius Transfer Improves Clinical Outcomes With a Rate of Complications and Reoperations Comparable to Other Surgical Alternatives in Patients with Functionally Irreparable Rotator Cuff Tears: A Systematic Review

Rodrigo de Marinis [1], Erick M Marigi [2], Yousif Atwan [2], Ausberto Velasquez Garcia [3], Mark E Morrey [2], Joaquin Sanchez-Sotelo [4]

Joint Preserving Techniques

- Older Patients (FDA approval >65 y/o) w/ irreparable RC tear & minimal arthritis
  - Subacromial balloon spacer
    - Recently been FDA approved in the US
    - Short Term Outcomes
      - Forward Flexion
        - » Mean improvement → 24°
      - ER
        - » Mean improvement → 15°
      - Significant Improvement in PROs & Pain

Review > J Shoulder Elbow Surg. 2023 Oct;32(10):2180-2191. doi: 10.1016/j.jse.2023.04.016. Epub 2023 May 27.

Outcomes of subacromial balloon spacer implantation for irreparable rotator cuff tears: a systematic review and meta-analysis

Alexander N Berk [1], William M Cregar [1], Kennedy K Gachigi [2], David P Trofa [3], Shadley C Schiffern [1], Nady Hamid [1], Allison J Rao [4], Bryan M Saltzman [5]

Affiliations + expand

PMID: 37247776 DOI: 10.1016/j.jse.2023.04.016

Shoulder Arthroplasty

- Older patient (>50-65) & intact RC
  - Anatomic Total Shoulder arthroplasty
    - Main goal → improve pain & function
    - Second goal → ROM
      - FF → 96° to 160°
      - ER → 26° to 64°
    - Survivorship
      - 8 yrs → 96%

J Shoulder Elbow Surg. 2021 Jul;30(7S):S131-S139. doi: 10.1016/j.jse.2020.11.030. Epub 2021 Jan 20.

Anatomic total shoulder arthroplasty for primary glenohumeral osteoarthritis is associated with excellent outcomes and low revision rates in the elderly

Andrew R Jensen [1], Jennifer Tangtiphaiboontana [2], Erick Marigi [3], Katherine E Mallett [3], John W Sperling [3], Joaquin Sanchez-Sotelo [4]

JSES Int. 2020 Jul 27;4(4):923-928. doi: 10.1016/j.jseint.2020.07.001. eCollection 2020 Dec.

Comparison of survivorship and performance of a platform shoulder system in anatomic and reverse total shoulder arthroplasty

Pierre Henri Flurin [1], Carl Tams [2], Ryan W Simovitch [3], Christopher Knudsen [4], Christopher Roche [2], Thomas W Wright [5], Joseph Zuckerman [6], Bradley S Schoch [7]

Shoulder Arthroplasty

- Older patients (>65 years of age) with RC arthropathy or poor tissue
  - Reverse Total Shoulder Arthroplasty
    - Main goal → improve pain & function
    - Second goal → improve ROM
      - FF → ↑ 32°
      - Abd → ↑ 22°
    - Survivorship
      - 8 yrs → 96%

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Questions?

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