Rotator Cuff Tears: State of the Art

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Case 1 JM

- **HPI**
  - 65 yo M c/o R shoulder pain x 3 months. No specific injury. Shoulder pain wakes him up at night. Feels weak in the shoulder

- **PE**
  - forward flexion
    - 130 (160 passively) vs 160
  - 4/5 Jobe’s empty can test
Case 1 JM

- What is the differential diagnosis?
- How would you treat it in your office?
Rotator Cuff Anatomy

- **SITS**
  - Supraspinatus
  - Infraspinatus
  - Teres Minor
  - Subscapularis
Rotator Cuff Tendinitis/Bursitis

- Inflammation the bursa and tendon under the shoulder blade
Rotator Cuff Tendinitis/Bursitis - Treatment

- Activity modification
- Symptomatic management of flare ups
- Oral medications
  - Pain relievers (acetaminophen, Tylenol)
  - Anti-inflammatories (Ibuprofen, Motrin, Advil, Aleve)
- Physical Therapy
- Steroid subacromial injection
- Surgery - arthroscopic decompression
Rotator Cuff Tear

- Shoulder pain (night time)
- Shoulder weakness
- Normal Xrays
- MRI confirms tear
Physical Exam

• Palpation
  – AC joint, biceps groove

• Range of Motion
  – Forward flexion
  – External rotation
  – Internal rotation
Physical Exam

- Strength Testing
  - Jobe’s empty can test
  - External rotation strength
Incidence

- >17 million patients/year
- Tears associated with aging
  - 50% of asymptomatic patients > 70 yo have a tear by ultrasound (Milgrom, JBJS 1995)
  - 28% pts > 60 yo (Sher et al., JBJS 1995)
  - 50% pts > 66 yo with unilateral shoulder pain have bilateral rotator cuff tears (Yamaguchi, JBJS 2006)
Natural History of Tears

• Yamaguchi, JSES 2001
  – Symptoms
    • 51% asymptomatic tears developed pain at 2.8 years
  – Tears Progression
    • 50% symptomatic tears larger
    • 39% asymptomatic tears larger
  – Tears never healed or decreased in size
Rotator Cuff Tear- Treatment

- Activity modification
- Symptomatic management of flare ups
- Oral Anti-inflammatory (Ibuprofen)
- Physical Therapy
- Subacromial injection
- Surgery- arthroscopic repair
Arthroscopic repair with suture anchors
Single vs Double Row Repair

• Biomechanically
  – DR superior to SR (Meier, Ahmad, Millet)
• clinical outcomes
  – No difference in meta-analysis of Level 1 RCT (Millet, JSES 2014)
• Increased cost with double row
Outcomes

• Gerber et al, JBJS 2000
  – 85% pain relief
  – Variable function/strength recovery dependent on tendon healing

• Huijsmans et al, JBJS 2007
  – 90% good to excellent functional outcomes
  – 82% had intact repair on ultrasound

• Numerous other studies show good pain relief with outcomes associated with tear size and healing of tendon
Questions?
The purpose of this study was to examine longitudinally the natural history of asymptomatic rotator cuff tears over a 5-year period and to assess the risk for development of symptoms and tear progression. Since 1985 through the present, bilateral sonograms were done on all patients. A review of consecutive sonograms done from 1989 to 1994 revealed 58 potential patients with unilateral symptoms who had contralateral asymptomatic rotator cuff tears. Of these 58 patients, 45 (22 men, 23 women) responded to a comprehensive questionnaire and 23 additionally returned for examination and repeat sonographic evaluation. The questionnaire was based on the American Shoulder and Elbow Surgeons score and included several outcome-based questions. A physical examination was performed in a standardized fashion along American Shoulder and Elbow Surgeons guidelines. Repeat high-resolution sonograms were performed by a single experienced radiologist. Primary and repeat sonograms were then reassessed for tear size and location by two independent experienced radiologists blinded to the clinical data results. Twenty-three (51%) of the previously asymptomatic patients became symptomatic over a mean of 2.8 years. The average Activities of Daily Living score for those remaining asymptomatic was 28.5 of 30 and for those becoming newly symptomatic, 22.9 of 30 (P < .5). The mean visual analog pain score (1 = no pain) for those remaining asymptomatic was 1.1 and for the newly symptomatic patients, 4.0. Of the 23 patients who returned for ultrasound, 9 were asymptomatic and 14 symptomatic. Only 2 of the 9 patients remaining asymptomatic had progression of their tears. Overall, 9 of 23 patients had tear progression. No patient had a decrease in the size of the tear. Our results demonstrate that symptoms can develop in patients with previously asymptomatic rotator cuff tears when seen in the context of a contralateral symptomatic tear. Development of symptoms was associated with a significant increase in pain and decrease in the ability to perform activities of daily living (P < .05). There appears to be a risk for tear size progression over time. (J Shoulder Elbow Surg 2001;10:199-203.)
Rehab

• Variables
  – Size of tear
  – Age of patient
  – Tendon quality
  – Repair quality
  – Preoperative stiffness
Rehab Protocol

• Immobilization
  – Small tears
    • Immobilized in sling without abduction pillow 4 weeks
  – Larger Tears
    • Immobilized in sling with abduction pillow 6 weeks

*23% patients were stiff at 6 weeks but no difference in ROM, outcome scores after 1 year (Parsons et al., JSES 2010)
Phase 1 (4-6 weeks)

- Protection of Repair
- Strength of repair 20%
  - Limit shear force by limiting motion
  - Cryotherapy to help with pain relief
Phase II (1-3 months)

- Restoration of functional ROM
- Strength of repair 40%
  - PROM
  - AROM
  - Water Therapy
Phase III (3- 4 months weeks)

- Early Strengthening
- Strength of repair 60%
  - Bands
  - Light weights
Phase IV (4-6 months)

• Continued Strengthening
• Strength of repair 70%
  – Heavier weights
Phase IV (6-8 months)

- Continued Strengthening
- Strength of repair 80%
  - Return to non contact sports as tolerated
    - Ski
    - Golf
    - Tennis
    - Swimming
    - Throwing
  - Return to contact sports late if needed