A Patient’s Guide to Shoulder Pain

Part 2

Evaluating the Patient

James T. Mazzara, M.D.

Shoulder and Elbow Surgery    Sports Medicine    Occupational Orthopedics
Patient Education Disclaimer

This presentation provides information to educate consumers on various health topics. It is NOT intended to provide instruction on medical diagnosis or treatment. The information contained in this presentation is compiled from a variety of sources. It may not be complete or timely. It does not cover all diseases, physical conditions, ailments or treatments. You should NOT rely on this information to determine a diagnosis or course of treatment. The information should NOT be used in place of an individual consultation, examination, visit or call with your physician or other qualified health care provider. You should never disregard the advice of your physician or other qualified health care provider because of any information you read in this handout or on any websites you visit as a result of this presentation. If you have any health care questions, please consult your physician or other qualified health care provider promptly. Always consult your physician or other qualified health provider before you begin any new treatment, diet or fitness program.
My Background

• Manchester Orthopedic Surgery and Sports Medicine since 1991
• Board Certified
• Hartford Hospital
• Manchester Memorial Hospital
• Shoulder and Elbow Surgery
• Sports Medicine
• Occupational Orthopedics
A Physicians Role

• A significant part of our role as physicians is to educate our patients about why they hurt and how we can help them get better.
• I hope this presentation helps someone get the relief they need from a painful shoulder problem.
• More information can be obtained on the internet from my website www.OrthoOnTheWeb.com or www.orthodoc.aaos.org/jtmazzara
Patient History

• Important things to know
  – Chronic symptoms or acute exacerbation
  – Stiffness, loss of motion
  – Weakness (when)
  – Functional impairment
  – Catching, crepitus, grinding
  – Treatments and response
Shoulder Pain with Cuff Tears

- Rotator cuff pain
  - Constant ache
  - Varies with activity
  - Night pain
  - Wake up with position change
  - May be severe
  - Constant or intermittent
Rotator Cuff Shoulder Pain

- Deep, dull, diffuse ache

The pain from rotator cuff pathology is often referred to the outer part of the arm. Sometimes as far as the elbow.
Non Rotator Cuff Shoulder Pain

- Pain to the back of shoulder upper back or neck
- Pain to top of shoulder
  - Think arthritis of the neck
- Pain beyond the elbow
  - Think pinched nerve in the neck
Timing of Pain

• Rest Pain (constant)
  – Synovitis (Inflammation of the joint)

Calcification

– Calcific tendinitis or bursitis (constant and intense)
Timing of Pain

- Pain in mid range of motion
  - Arthritis - Damaged joint surface
  - Inflamed irregular joint surface
  - Inflamed tissues
Timing of Pain

- Pain at the end of the range of motion
  - Impingement pain
  - Bone spurs
  - Pinched and stretched tissues around the shoulder joint

Frayed rotator cuff tendon
Physical Examination
Physical Examination

• Inspection
  – Symmetry
  – Atrophy
  – AC prominence
  – Biceps rupture

This patient cannot lift his arm due to a nerve injury not a rotator cuff tear.
Range of Motion

- Range of Motion
  - Active and passive
  - Forward elevation
  - ER @ side
  - ER in abduction
  - Internal rotation
Rotator Cuff Weakness

- May be due to splinting from pain
- Significant only if present after a xylocaine block
- Weakness after an injury
  - Rotator cuff tear
  - Nerve injury
    - Suprascapular
    - Axillary
    - Brachial plexus
  - Cervical disk herniation
Strength Testing

• Assess elevation, abduction, ER, IR strength
• Compare to opposite side
• If weak, check reflexes
External Rotation Weakness

- Supraspinatus &/or infraspinatus
- Small tears
  - Minimal if any weakness noted
- Large tears
  - Weakness notable
  - May result in inability to maintain external rotation
  - Fall off into internal rotation
Drop Arm Test

- Loss of control of the arm when gradually lowering it to the side
- Occurs in the range from 130° to 90°
- 100% positive predictive value if there is a tear
- 10% sensitivity – may be positive even if there is no tear
Massive Cuff Tear

• Lag Sign

Massive Cuff Tear

• Hornblower’s Sign

Fig. 1 – Power of external rotation in 90° of abduction in the scapular plane. The examiner supports the patient’s arm with the elbow flexed to 90° and the shoulder in maximal external rotation. The examiner’s other hand is then used to assess the power of external rotation. Figure 2 – A patient with a rotator-cuff tear and a positive hornblower’s sign in one arm (arrow). She was asked to bring both hands to her mouth, but was unable to do so without abducting the affected arm.

Internal Rotation Weakness

- **Belly Press Test**
  - Subscapularis weakness or tear

Negative  Positive
Internal Rotation Weakness

- Lift Off Sign
  - Subscapularis weakness or tear

Positive  
Negative
Impingement Signs

Neer

Hawkins
Impingement Test

- Subacromial injection of 10cc 1% xylocaine (often with a corticosteroid)
- Rotator cuff tear
  - Pain relieved, weakness persists
- Impingement (tendinitis), bursitis
  - Pain relieved, strength improves
- Adhesive capsulitis / arthritis
  - Pain persists, motion unchanged
Impingement Test

• Subacromial injection of 1% xylocaine
  – At least 50% pain relief
AC Joint Exam

- Inspect for prominence
- Palpate for tenderness
- Provoke pain with “cross-body adduction”
- Relieve pain with 1cc xylocaine injection
- Consider arthritis and osteolysis
Biceps Tendon Exam

- Faces forward with arm IR 10°
- Tenderness over the intertubercular groove
- Palpate 7cm distal to acromion
- Bicipital pain moves lateral as arm is ER
- Bicipital tenderness persists after SA injection unless there is a cuff tear
- Intraarticular or a bicipital groove injection eliminates biceps pain
Speed’s Test

- Bicipital pain with resisted forward flexion, arm supinated, elbow @ 30°
  - 90% sensitive
  - 14% specific
  - Positive predictive value 23%
  - Negative predictive value 83%
Yergason’s Test

- Bicipital pain with resisted supination, elbow @ 90°, arm @ side
  - Neither sensitive nor specific
Biceps Instability Test

- Arm fully abducted in ER
- Arm is slowly lowered to side with progressive IR
- Biceps will dislocate during this maneuver

This is an MRI of a dislocated biceps tendon. The circle indicates its normal position.
Best Tests for Diagnosing Cuff Tears

1. Weak supraspinatus testing
   - Arm in 90° forward elevation in scapular plane

2. Weakness in External Rotation
   - Arm at the side

3. Positive Impingement Sign
## Best Tests for Diagnosing Cuff Tears

<table>
<thead>
<tr>
<th># Positive Tests</th>
<th>Age</th>
<th>Probability</th>
</tr>
</thead>
<tbody>
<tr>
<td>All 3</td>
<td>All</td>
<td>0.98</td>
</tr>
<tr>
<td>Any 2</td>
<td>&gt;60</td>
<td>0.98</td>
</tr>
<tr>
<td>Any 2</td>
<td>&lt;60</td>
<td>0.64</td>
</tr>
<tr>
<td>Any 1</td>
<td>&gt;70</td>
<td>0.76</td>
</tr>
<tr>
<td>Any 1</td>
<td>40-60</td>
<td>0.45</td>
</tr>
<tr>
<td>Any 1</td>
<td>&lt;40</td>
<td>0.12</td>
</tr>
<tr>
<td>0</td>
<td>All</td>
<td>0.05</td>
</tr>
</tbody>
</table>

Radiographs

- Acromial shape
- Position of humeral head
- AC arthritis
- Calcific tendinitis
- Glenohumeral arthritis
- Destructive lesions
1 & 2: AP in Scapular Plane

- 2 Views: IR, ER
- Calcium deposits
- Greater tuberosities: excrescences, cysts
1 & 2: AP in Scapular Plane

- 2 Views: IR, ER
- Calcium deposits
- Greater tuberosities: excrescences, cysts

Moderate osteoarthritis

Severe osteoarthritis
3: Axillary View

- Evaluate GH joint & tuberosities
- Glenoid version
- Joint space narrowing
- Os acromiale
  - This is an anatomic variation best seen on this special view
4: Outlet View

- Evaluate subacromial space
- Acromial shape and thickness
5: 30° Caudal Tilt View

- AP view with a 30° caudal tilt
- Demonstrates anterior acromial projection
Tendon Imaging

- MRI
  - 90% accurate in diagnosing complete RC tears
  - 70% accurate in diagnosing partial RC tears
  - These data may vary. It depends on who is reading the MRI.

This spur is pushing on the rotator cuff causing “impingement”.
# Best Studies for Diagnosing Cuff Tears

<table>
<thead>
<tr>
<th>Full Thickness Tears</th>
<th>Accuracy</th>
</tr>
</thead>
<tbody>
<tr>
<td>Clinical Exam</td>
<td>0.4</td>
</tr>
<tr>
<td>Ultrasound</td>
<td>0.7</td>
</tr>
<tr>
<td>MRI</td>
<td>0.7</td>
</tr>
<tr>
<td>Arthroscopy</td>
<td>0.9</td>
</tr>
</tbody>
</table>

| Partial Thickness Tears              | <0.2 for all studies |

# Detection and Quantification of Rotator Cuff Tears

Comparison of Ultrasonographic, Magnetic Resonance Imaging, and Arthroscopic Findings in Seventy-one Consecutive Cases

By Sharlene A. Teefey, MD, David A. Rubin, MD, William D. Middleton, MD, Charles F. Hildebolt, MD, Robert A. Leibold, MD, and Ken Yamaguchi, MD

*Investigation performed at Mallinckrodt Institute of Radiology, St. Louis, Missouri*

<table>
<thead>
<tr>
<th>Overall Detection Accuracy</th>
<th>Full thickness</th>
<th>Partial Thickness</th>
</tr>
</thead>
<tbody>
<tr>
<td>Ultrasound</td>
<td>98%</td>
<td>68%</td>
</tr>
<tr>
<td>MRI</td>
<td>100%</td>
<td>63%</td>
</tr>
</tbody>
</table>

*JBJS, 86-A, April, 2004*
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<thead>
<tr>
<th></th>
<th>Full thickness</th>
<th>Partial Thickness</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Ultrasound</strong></td>
<td>73% (retraction)</td>
<td>85% (length)</td>
</tr>
<tr>
<td></td>
<td>87% (width)</td>
<td>54% (width)</td>
</tr>
<tr>
<td><strong>MRI</strong></td>
<td>63% (retraction)</td>
<td>75% (length)</td>
</tr>
<tr>
<td></td>
<td>85% (width)</td>
<td>75% (width)</td>
</tr>
</tbody>
</table>

JBJS, 86-A, April, 2004
End of part 2

• Part 3 reviews the treatment of rotator cuff problems

Thanks

James T. Mazzara, MD