Subacromial Impingement
(diagnostic methods)

M.N. Naderi
Fellowship in shoulder and arthroscopic surgery
Definition

• **Neer:**

  – Impingement on the tendinous portion of the rotator cuff by the coracoacromial ligament and the anterior third of the acromion

  *JBJS* Vol. 54-A, pp. 41-50, January 1972

• Stage 1: Edema and Hemorrhage

• Stage 2: Fibrosis and Tendinitis

• Stage 3: Bone Spurs and Tendon Rupture

Clinical Features

• Patients often > 30 y.
• chief complaint is shoulder pain
  – sharp pain around the front of the shoulder, with dull aching pain radiating to the hand
• Pain initially only occurs with overhead use of the arm
• may progress to persistent pain with any use of the arm or even nighttime pain
• The dominant extremity is more often affected
Differential diagnosis

• Acromioclavicular arthritis
• Glenohumeral arthritis
• Subtle shoulder instability in throwing athletes
• early adhesive capsulitis
• Fibromyalgia
• Cervical spondylosis with nerve root irritation
• Suprascapular nerve injury
- determine whether the shoulder pain is from the AC joint, Glenohumeral joint, Rotator cuff, or Neck

**When?**

**How?**

**Degree?**

**Accompanying symptoms?**

- **History**
- **Look, Feel**
- **Movement**
- **Clinical tests**
- **Radiography**
- **Sonography**
- **Arthrography**
- **CT / MRI**
- Always examine the Cervical spine first
- Move both arms at the same time
- Active then passive ROM (FF, IR, ER)

- History
- Look, Feel
- Movement
- Clinical tests
- Radiography
- Sonography
- Arthrography
- CT / MRI
Clinical tests

- painful arc sign
Clinical tests

• Hawkin's test
Clinical tests

• Neer's sign
  – False positive: adhesive capsulitis, osteoarthritis, bone lesions

• Neer Test
  – subacromial injection of 10 mL of 1% lidocaine → Pain
Clinical tests

• Copeland Impingement Test
Clinical tests

Subacromial Impingement

• Hawkin's test
• Neer's sign & test
• Copeland Impingement Test
Clinical tests

Rotator cuff Integrity

• Muscle resisting
  – Jobe’s empty can test
  – ER stress test (Resisted ER with the arms by side)
  – Lift-off test, Belly-Press test (Napoleon test)

• Lag signs
  – ER Lag sign
  – IR Lag sign
  – Drop sign
Clinical tests

Rotator cuff Integrity

- Muscle resisting
  - Jobe's empty can test
  - ER stress test (Resisted ER with the arms by side)
  - Lift-off test, Belly-Press test (Napoleon test)

- Lag signs
  - ER Lag sign
  - IR Lag sign
  - Drop sign
Clinical tests

**Rotator cuff Integrity**

- Muscle resisting
  - Jobe's empty can test
  - ER stress test (Resisted ER with the arms by side)
  - Lift-off test, Belly-Press test (Napoleon test)

- Lag signs
  - ER Lag sign
  - IR Lag sign
  - Drop sign
Clinical tests

AC Joint

- Cross body adduction test (Scarf test)
Clinical tests

Rotator cuff Integrity

• Muscle resisting
  – Jobe's empty can test
  – ER stress test (Resisted ER with the arms by side)
  – Lift-off test, Belly-Press test (Napoleon test)

• Lag signs
  – ER Lag sign
  – IR Lag sign
  – Drop sign
Clinical tests

**Biceps**

- Speed's test
- Yergason's test
Most PE manoeuvres identify reasonably well subacromial impingement of the shoulder, although, they have low specificity.

Imaging techniques should be recommended to better define shoulder lesions.

<table>
<thead>
<tr>
<th>Test</th>
<th>Sensitivity (%)</th>
<th>Specificity (%)</th>
<th>Positive Predictive Value (%)</th>
<th>Negative Predictive Value (%)</th>
<th>Overall Accuracy (%)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Neer sign</td>
<td>68</td>
<td>68.7</td>
<td>80.4</td>
<td>53.2</td>
<td>68.3</td>
</tr>
<tr>
<td>Hawkins-Kennedy sign</td>
<td>71.5</td>
<td>66.3</td>
<td>79.7</td>
<td>55.7</td>
<td>69.7</td>
</tr>
<tr>
<td>Painful arc sign</td>
<td>73.5</td>
<td>81.1</td>
<td>88.2</td>
<td>61.5</td>
<td>76.1</td>
</tr>
<tr>
<td><strong>Supraspinatus (Jobe) muscle test</strong></td>
<td>44.1</td>
<td>89.5</td>
<td>88.4</td>
<td>46.8</td>
<td>60.2</td>
</tr>
<tr>
<td>Speed test</td>
<td>38.3</td>
<td>83.3</td>
<td>80.5</td>
<td>42.9</td>
<td>54.4</td>
</tr>
<tr>
<td>Cross-body adduction test</td>
<td>22.5</td>
<td>82</td>
<td>69.3</td>
<td>36.9</td>
<td>47.8</td>
</tr>
<tr>
<td>Drop-arm test</td>
<td>26.9</td>
<td>88.4</td>
<td>81</td>
<td>39.7</td>
<td>48.6</td>
</tr>
<tr>
<td><strong>Infraspinatus muscle test</strong></td>
<td>41.6</td>
<td>90.1</td>
<td>90.6</td>
<td>45.8</td>
<td>58.7</td>
</tr>
</tbody>
</table>
Radiologic evaluation

- AP
- Axillary view
- Lat scapular view

- decreased interval (normal, 7–15 mm) between the humeral head and the acromion (tear of RC)
Radiologic evaluation

• AP
• Axillary view
• Lat scapular view

- Sclerosis and cysts in the area of the greater tuberosity
- Subacromial sclerosis (sourcil sign)
Radiologic evaluation

- AP
- Axillary view
- Lat scapular view
Radiologic evaluation

- AP
- Axillary view
- Lat scapular view

Sonography
Sonography

- Reliable & fast method for evaluation of cuff
- Dependent to operator experience
Arthrography

- High value in diagnosis of complete cuff tear
- Limited in assess of size and morphology of tear
MRI

- most commonly used test for evaluation for RC pathology
- significant potential for false-positive findings
- overuse
When doing MRI?

- No evidence of improvement in symptoms after 6 - 12 wk of conservative treatment
- If the clinical indications for surgery exist, then MRI is helpful in confirming the diagnosis and evaluating of extent of the pathology
The clinical evaluation of a patient with shoulder pain presents a diagnostic challenge. By following precise physical examination and X-ray, the diagnosis can be made accurately in most cases. Further study (Sonography, MRI, etc.) can yield more information in suspicious cases.