



AMERICAN COLLEGE OF
OCCUPATIONAL AND
ENVIRONMENTAL MEDICINE

SHOULDER DISORDERS GUIDELINE

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CONTRIBUTORS TO THE SHOULDER DISORDERS GUIDELINE

Editor-in-Chief:

Kurt T. Hegmann, MD, MPH, FACOEM, FACP

Assistant Editor:

Matthew A. Hughes, MD, MPH

Evidence-based Practice Shoulder Panel Chair:

Laura Rachel Kaufman, MD, PhD

Evidence-based Practice Shoulder Panel Members:

Andrew Green, MD

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J. Mark Melhorn, MD, FAAOS, FACOEM, FAADEP, FACS, FASSH, FAAHS

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Robert W. Watson, Jr., MD, MPH

Joseph D. Zuckerman, MD

Methodology Committee Consultant:

Michael S. Weiss, MD, MPH, FACOEM, FAAPMR, FAANEM

Managing Editors:

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Research: Julie A. Ording, MPH

Editorial Assistant: Debra M. Paddack

Bone scans were traditionally used for diagnosis and may be positive even though an x-ray may be normal. (Ficat 85; Sinha 99; Svahn 75; Harreld 09) However, they have largely been replaced by MRI scans.

1. *Recommendation: Routine Helical CT for Evaluating Acute, Subacute, or Chronic Shoulder Pain*
Routine helical CT is not recommended for evaluation of acute, subacute, or chronic shoulder pain.

Strength of Evidence – Not Recommended, Insufficient Evidence (I)

2. *Recommendation: Helical CT for Evaluating Osteonecrosis*
Helical CT is recommended for evaluation of patients with osteonecrosis who have contraindications for MRI.

Indications – Patients with shoulder pain from osteonecrosis with contraindications for MRI (e.g., implanted hardware) or increased polyostotic bone metabolism.

Strength of Evidence – Recommended, Insufficient Evidence (I)

3. *Recommendation: Helical CT for Select Acute, Subacute, or Chronic Shoulder Pain*
Helical CT is recommended for select patients with acute, subacute, or chronic shoulder pain in whom advanced imaging of bony structures is thought to potentially be helpful. It is also recommended for those who need advanced imaging, but have contraindications for MRI.

Indications – Patients with acute, subacute or chronic shoulder pain with need for advanced bony structure imaging. Patients needing advanced imaging, but with contraindications for MRI (e.g., implanted hardware) are also candidates.

Strength of Evidence – Recommended, Insufficient Evidence (I)

Rationale for Recommendations

Helical CT scanning has been largely replaced by MRI. However, there are patients who have contraindications for MRI (e.g., implanted ferrous metal) helical CT is recommended. Helical CT scan has been thought to be superior to MRI for evaluating subchondral fractures; however, a definitive study has not been reported. (Stevens 03)

Helical CT has few if any adverse effects, but is costly. It is recommended for select use.

Evidence for the Use of Helical CT Scans

There are no quality studies evaluating the use of helical CT scans for diagnosing shoulder pain.

LOCAL ANESTHETIC INJECTIONS FOR SHOULDER PAIN DIAGNOSIS

See for Rotator Cuff Tendinosis Injections.

ELECTROMYOGRAPHY (INCLUDING NERVE CONDUCTION STUDIES)

See the Neck and Upper Back Complaints and Hand, Wrist, Forearm Complaints for discussion regarding use of electrodiagnostic studies for evaluation of cervical and distal upper extremity-related disorders that may present as shoulder pain. Electrodiagnostic studies have also been used to confirm diagnostic impressions of other peripheral nerve entrapments, brachial plexopathies, and neurologic component of thoracic outlet syndrome. (Moghekar 07; Wilbourn 07)

Recommendation: Electromyography for Diagnosing Subacute or Chronic Peripheral Nerve Entrapments
Electrodiagnostic studies are recommended to assist in the diagnosis of subacute or chronic peripheral nerve entrapments, including the long thoracic nerve, brachial plexopathies, and suprascapular nerve.

Indications – Patients with subacute or chronic paresthesias with or without pain, particularly with unclear diagnosis.

Strength of Evidence – Recommended, Insufficient Evidence (I)

Rationale for Recommendation

Electrodiagnostic studies may assist in confirming peripheral nerve entrapments such as the long thoracic nerve and suprascapular nerve. These studies are minimally invasive, have minimal potential for adverse effects, and are moderate to high cost depending on the extent of the testing required.

Evidence for the Use of Electromyography

There are no quality studies evaluating the use of electrodiagnostic studies for diagnosing peripheral nerve entrapments relevant to the shoulder.

FUNCTIONAL CAPACITY EVALUATIONS

See Chronic Pain Guidelines.

MAGNETIC RESONANCE IMAGING (MRI)

Magnetic resonance imaging (MRI) is often used as a secondary test after x-ray for many shoulder joint problems since it tends to be helpful for imaging soft tissues, particularly the rotator cuff. (Mulyadi 09; Chang 06; Ardic 06; Tuite 00; Connell 99; McFarland 09; Pandya 08; Cartland 92; Chang 08; Tirman 94; Wnorowski 97; Tung 00; Reuss 06) Although studies are not heterogeneous, pooled estimates of the sensitivity for full-thickness tears has been calculated and is 89% with specificity 93%, while for partial thickness tears, these estimates are only 44% sensitivity and 90% specificity. (Dinnes 03) Similarly accuracy is lower for smaller than larger tears. (Yamakawa 01) MRIs are considered the gold standard for evaluation of osteonecrosis patients and are used to quantify volume of affected tissue including marrow edema which is inversely correlated with prognosis. (Harreld 09; Jones 04; Koo 95; Coombs 94; Cherian 03; Radke 03; Scheiber 99; Helenius 06)

1. *Recommendation: MRI for Diagnosing Rotator Cuff Tears, Tendinoses, Impingement, or Subacromial Bursitis*

MRI is recommended for patients suspected of having acute, clinically significant rotator cuff tears. It is also recommended for select patients with subacute or chronic shoulder pain thought to potentially have a symptomatic rotator cuff tear.

Indications – Patients with an acute, clinically significant rotator cuff tear or subacute or chronic shoulder pain suspected of having a clinically meaningful rotator cuff tear. If there is significant rotator cuff weakness, immediate imaging may be indicated. (Exceptions include elderly patients or those who have substantial signs of pre-existing large/massive rotator cuff tear. It is also reasonable to wait for 1 or 2 weeks to ascertain whether the condition is likely to resolve with conservative care without obtaining an MRI.) Most acute tears without significant weakness should wait approximately 2 weeks prior to imaging as some patients with acute pain and limited ROM resolve clinically. Those with subacute or chronic pain should generally have failed additional non-operative treatment including NSAID, exercise and injection(s).

Dose/Frequency – Repeat MRI based on significant change in symptoms and/or examination findings.

Strength of Evidence – **Recommended, Insufficient Evidence (I)**

2. *Recommendation: MRI for Diagnosing Osteonecrosis (AVN)*

MRI is recommended for diagnosing osteonecrosis.

Indications – Patients with subacute or chronic shoulder pain thought to be related to osteonecrosis (AVN), particularly in whom the diagnosis is unclear or in whom additional diagnostic evaluation and staging is needed.

Strength of Evidence – **Recommended, Insufficient Evidence (I)**

Rationale for Recommendations

There is one moderate-quality study comparing MRI with arthrography, suggesting MRI is superior to arthrography; (Blanchard 99) however, arthrography alone has been largely replaced by other procedures. Otherwise, MRI has not been evaluated in high-quality studies for shoulder joint pathology. (Kassarjian 05; Leunig 04; Dinnes 03) MRI appears particularly helpful for soft tissue abnormalities. MRI has been suggested for evaluations of patients with symptoms over 3 months. (Kassarjian 05; Armfield 06; Bredetta 05) MRI was