Ultrasound-Guided Injection for Shoulder, Hip and Knee

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Faculty Disclosure

Equipment support – Sonosite Canada
Injection in the Shoulder Region

- Biceps tendon
- Subacromial Subdeltoid Bursa
- Glenohumeral Joint
- Acromioclavicular Joint
- Sternoclavicular Joint
Injection in the Shoulder Region

- Biceps tendon
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- Glenohumeral Joint
- Acromioclavicular Joint
- Sternoclavicular Joint
Anatomy and Sonoanatomy
Biceps Tendinopathy

- Primary tendinopathy is uncommon
- Mostly related to rotator cuff or SLAP
Injection

- OPP
- 3mL solution
- Peri-tendon inj.
Injection in the Shoulder Region

- Biceps tendon
- Subacromial Subdeltoid Bursa
- Glenohumeral Joint
- Acromioclavicular Joint
- Sternoclavicular Joint
Anatomy & Sonoanatomy

- Largest bursa in the body
Injection

Indication

Subacromial impingement syndrome, which covers a constellation of conditions: partial and full thickness rotator cuff tear, and rotator cuff tendinopathy.
Efficacy

• 5 systematic reviews mixed result
• Most recent review in 2007-
  – Not efficacious in the Rx of rotator cuff disease
  – 8/9 blinded inj; 1/9 Xray guided inj.
• Recent large pragmatic trial superior in pain and function in 1 & 6 weeks

Crawshaw DP et al. BMJ 2010;340:c3037
Accuracy

- 30-70% in clinical study
- 70-90% in cadaver study
- 100% in US guided study

Technique
Injection in the Shoulder Region

- Biceps tendon
- Subacromial Subdeltoid Bursa
- Glenohumeral Joint
- Acromioclavicular Joint
- Sternoclavicular Joint
Glenohumeral Joint
Sonoanatomy
Anatomy and Sonoanatomy
Rotator Cuff Interval

Deltoid

CHL

SS

SUBS

InfraS

SupraS

GT

bt

SubS

LT
Indication

- GHJ arthrosis
- Adhesive capsulitis
Accuracy

Landmark 27-100%
US-~100%

Junior vs. experience staff
64% vs. 40%

Injection in the Shoulder Region

- Biceps tendon
- Subacromial Subdeltoid Bursa
- Glenohumeral Joint
- Acromioclavicular Joint
- Sternoclavicular Joint
Acromioclavicular Joint
Efficacy

- Only 4 case series - all show at least short term improvement
Accuracy

- Landmark-40-66%
- US-95-100%
- Xray-100%
Hip

Anterior synovial recess
Accuracy

• Landmark 52-80% (risk of femoral nerve injury)
• Ultrasound 97-10%

Correlation Sonoanatomy
Hip Injection Technique

Curvilinear 2-5 MHz
Supine
Anatomy & Sonoanatomy
Improving Injection Accuracy of the Elbow, Knee, and Shoulder

Does Injection Site and Imaging Make a Difference? A Systematic Review

Erika L. Daley,* BS, Sarvottam Bajaj,* BE, Leslie J. Bisson,† MD, and Brian J. Cole,*‡ MD, MBA
Investigation performed at Rush University Medical Center, Chicago, Illinois

- Landmark based 79%  
- Imaging guided 99%

Injection Technique
Injection Technique
OARSI recommendations for the management of hip and knee osteoarthritis, Part I: Critical appraisal of existing treatment guidelines and systematic review of current research evidence
<table>
<thead>
<tr>
<th>Level of evidence</th>
<th>Agreement (number of guidelines recommending the modality/total number of guidelines addressing the modality)</th>
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<tbody>
<tr>
<td></td>
<td>&lt;25%</td>
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<td>Ultrasound (1/5)</td>
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<td>25%--</td>
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<td></td>
<td>Chondroitin sulphate (2/7)</td>
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<td>Heat/ice (7/10)</td>
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<td>Glucosamine sulphate (6/10)</td>
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<td>NSAID + H2-blockers (5/8)</td>
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<td>NSAIDs (15/16)</td>
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<td>Insole (12/13)</td>
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<td>Braces (8/9)</td>
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<td>Topical capsaicin</td>
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<td>Aerobic exercise (21/21)</td>
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<td>Acetaminophen (16/16)</td>
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<td>Education (15/15)</td>
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<td>PPI management (8/8)</td>
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<td>NSAID + misoprostol (8/8)</td>
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<td>Avocado soybean unsaponifiables (3/4)</td>
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<td>III</td>
<td>TJR (14/14)</td>
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<td>Oral steroid (0/2)</td>
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<td>Knee aspiration (2/2)</td>
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Adverse events from diagnostic and therapeutic joint injections: a literature review

Cynthia Peterson • Juerg Hodler

THR: Deep infection 10 vs 1%
TKR: All infection 22 vs 11% and 3 deep wound all with IA steroid before

Thank you