Joint Injection Skills Workshop

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And Faculty
Joint Injections - Objectives

• Identify evidence-based resources for performing joint injections.
• Determine indications and contraindications for joint injections.
• Identify elements of informed consent for procedure.
• Demonstrate proper technique in performing knee and shoulder injection using a simulation model.
• Describe post procedure management including wound care, warning signs, and follow-up instructions.
Approach to the Patient

• Indications/Contraindications
  • Diagnostic
  • Therapeutic
  • Absolute vs. relative contraindications

• Risk/Benefit
  • Benefits outweigh risks?
  • Evidence? Safety, efficacy
Joint Injections - Resources

Indications, safety & efficacy:

Procedure Overview:

Tendinopathy risk:
Contraindications

**Absolute**
- Corticosteroid or injectable substance hypersensitivity
- Infection (systemic, overlying cellulitis, septic arthritis/bursitis, osteomyelitis)
- Uncontrolled bleeding disorder
- Prosthetic or unstable joint
- Intra-articular fracture

**Relative**
- Corrected bleeding disorder
- Anticoagulated patient
- Hemarthrosis
- Immunosuppressed patient
- Diabetes
- High risk of tendon rupture
- Psychogenic pain

Monseau & Nizran (2013)
Knee: Evidence Based Recommendations

- Management Overview:
- Cochrane review for OA:
- Injection options:
- AAOS Clinical Practice Guideline:
Shoulder: Evidence-Based Recommendations

Management Overview:

Evidence for Adhesive Capsulitis:

Consider Ultrasound Role:

(beyond scope of this workshop but increasingly used in practice)
Preparation - Informed Consent

• Risks:
  • Bleeding, infection, pain, tendinopathy, systemic effects

• Benefits:
  • Decreased pain, improved mobility
Preparation

Gather supplies

• Gloves
• Cleansers
• Needle/syringe (typically 21G 1.5in needle, 5-10 cc syringe)
• Injectables
• Gauze/Bandaid
Supplies
Injectable Medications

Corticosteroids
• Selection
• Evidence/Safety Considerations
• Dose

Local Anesthetics
• Lidocaine vs. bupivacaine?
• Dosing
• Total Volume
• Safety?

Hyaluronic Acid (specialist)
• Indications
• Efficacy?
Local Anesthetics

Lidocaine
- Typically 1 or 2%
- No epi
- Shoulder: 1-2 mL, Knee up to 5 ml; Mixed with corticosteroid
- Short acting (1 hr)

Bupivacaine
- Typically 0.25 or 0.5%
- Shoulder: 1-2 mL, Knee up to 5 ml; Mixed with corticosteroid
- Long acting (8 hr)

Monseau & Nizran (2013); Wittich et al. (2009)
# Steroids for Joint Injection

<table>
<thead>
<tr>
<th></th>
<th>Methylprednisolone Acetate</th>
<th>Triamcinolone Acetonide&lt;sup&gt;a&lt;/sup&gt;</th>
<th>Betamethasone Acetate and Disodium Phosphate</th>
<th>Dexamethasone</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Potency&lt;sup&gt;b&lt;/sup&gt;</strong></td>
<td>5</td>
<td>5</td>
<td>25</td>
<td>25</td>
</tr>
<tr>
<td><strong>Duration</strong></td>
<td>Intermediate</td>
<td>Long</td>
<td>Long</td>
<td>Long</td>
</tr>
<tr>
<td><strong>Knee joint</strong></td>
<td>40.0 mg</td>
<td>40.0 mg</td>
<td>12.0 mg</td>
<td>6.0 mg</td>
</tr>
<tr>
<td><strong>Subacromial bursa</strong></td>
<td>40.0 mg</td>
<td>40.0 mg</td>
<td>12.0 mg</td>
<td>6.0 mg</td>
</tr>
<tr>
<td><strong>Glenohumeral joint</strong></td>
<td>40.0 mg</td>
<td>40.0 mg</td>
<td>12.0 mg</td>
<td>6.0 mg</td>
</tr>
<tr>
<td><strong>Lateral epicondyle</strong></td>
<td>10.0 mg&lt;sup&gt;c&lt;/sup&gt;</td>
<td>10.0 mg&lt;sup&gt;c&lt;/sup&gt;</td>
<td>3.0 mg&lt;sup&gt;c&lt;/sup&gt;</td>
<td>1.5 mg&lt;sup&gt;c&lt;/sup&gt;</td>
</tr>
<tr>
<td><strong>de Quervain tenosynovitis</strong></td>
<td>10.0 mg</td>
<td>10.0 mg</td>
<td>3.0 mg</td>
<td>1.5 mg</td>
</tr>
<tr>
<td><strong>Greater trochanter bursitis</strong></td>
<td>20.0 mg</td>
<td>20.0 mg</td>
<td>6.0 mg</td>
<td>3.0 mg</td>
</tr>
</tbody>
</table>

<sup>a</sup> Typically considered the best compound for intra-articular injection.

<sup>b</sup> Hydrocortisone equivalents (per mg).

<sup>c</sup> Recent evidence suggests that steroids can actually worsen the course of lateral epicondylalgia.

Resource table from Monseau & Singh Mizran (2013)
Needle Sizes for Joint Injections

Table 1

<table>
<thead>
<tr>
<th>Injection Site or Disorder</th>
<th>Needle Gauge</th>
<th>Minimum Needle Length</th>
<th>Typical Total Volume</th>
</tr>
</thead>
<tbody>
<tr>
<td>Knee</td>
<td>20–22 G</td>
<td>1.5 inches (40 mm)</td>
<td>5–10 mL</td>
</tr>
<tr>
<td>Subacromial bursa</td>
<td>21–25 G</td>
<td>1.5–2 inches (40–50 mm)</td>
<td>5–8 mL</td>
</tr>
<tr>
<td>Glenohumeral joint</td>
<td>20–22 G</td>
<td>1.5–2 inches (40–50 mm)</td>
<td>5–8 mL</td>
</tr>
<tr>
<td>Lateral epicondyle</td>
<td>22–25 G</td>
<td>0.5 inch (16 mm)</td>
<td>1–2 mL</td>
</tr>
<tr>
<td>de Quervain tenosynovitis</td>
<td>22–25 G</td>
<td>0.5 inch (16 mm)</td>
<td>1–2 mL</td>
</tr>
<tr>
<td>Greater trochanteric bursitis</td>
<td>22–25 G</td>
<td>1.5–2 inches (40–50 mm)</td>
<td>4–6 mL</td>
</tr>
</tbody>
</table>

Resource table from Monseau & Singh Mizran (2013)
Site Preparation

Prepare skin

• Providine-Iodine vs. Chlorhexidine (preferred)
• Mark skin
• Sterile no-touch technique
Knee Injection

Indications

• Diagnostic (aspiration)
• Therapeutic (e.g. OA)
• Preparation
• Supine
• Knee extended
• Approach
• Superolateral
Knee Anatomy & Assessment

http://www.rheumtutor.com/knee-exam/

Note: You may need to log in to the AHSL first (http://ahsl.arizona.edu/). Off-site students may need to use VPN.
Knee Injection Sites

Injection Technique: Knee

- **Review Approach Considerations:**
- **Technique Lateral Approach:**
- **Anterior approach:**
Shoulder Injection

Indications

• Therapeutic (e.g. Adhesive Capsulitis, Bursitis)
• Preparation
• Seated
• Approach
• Glenohumeral – Posterior
• Subacrominal
• Based on indication
Shoulder Anatomy & Assessment

http://www.rheumtutor.com/shoulder-exam/

Note: You may need to log in to the AHSL first (http://ahsl.arizona.edu/). Off-site students may need to use VPN.
Shoulder Injection Technique:

• **Posterior shoulder injection:**
• **Subacromial injection—lateral approach**
Subacromial bursa injection – lateral approach

Monseau & Singh Mizran (2013)
Glenohumeral joint injection - posterior approach

Monseau & Singh Mizran (2013)
Posterior view of the left shoulder showing the needle directed toward the coracoid process anteriorly. The inset in the upper left corner shows the same joint from an anterior view. Notice the needle placement within the glenohumeral joint.

Wittich et al. (2009)
Patient Education & Follow-up

Wound care
  • Apply dressing
  • Rest

Warning signs
  • Bleeding
  • Infection

Return f/u
References & Resources


