



AMERICAN ACADEMY OF  
FAMILY PHYSICIANS  

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STRONG MEDICINE FOR AMERICA

### **Key Recommendations**

- Steroid injection without splinting is preferred for de Quervain's tenosynovitis – SORT B
- Steroid injection for trochanteric pain is safe and highly effective, often achieved with a single injection – SORT C
- Subacromial steroid injection provides short-term relief superior to placebo and at least equal to systemic NSAIDs without the systemic side effects – SORT B
- Steroid injection reduces short-term pain (6 weeks) from lateral epicondylitis – SORT A
- Intraarticular steroid injections in the knee reduce pain and swelling from osteoarthritis – SORT A
- Addition of local anesthetics to steroid injections improves pain relief and can be used to differentiate diagnosis – SORT C



## Shoulder Injections

### Subacromial Injection

- Indication: Rotator cuff tendonitis / subacromial bursitis / impingement
  - Pathophysiology: Impingement, inflammation, thickening and degeneration
  - Rotator cuff tear vs. tendinopathy
  - Lidocaine-only diagnostic injection test indicates tear if <50% pain relief or <75% full strength after injection

### Corticosteroid Injection

- Efficacy
  - Better than placebo and superior or equal to NSAIDs
- Indications
  - (-) lidocaine test
  - (+) lidocaine test but unable to undergo surgery

### Subacromial Injection

- Injection Technique
  - Posterior, lateral or anterior approach
  - 5 or 10 cc syringe, 1 ½ to 3 inch needle, 22 g
  - 5-8 cc anesthetic
  - 1-2 cc steroid

### Glenohumeral Joint Injection

- Indication
  - Glenohumeral arthritis may be posttraumatic from a dislocation
  - Restricted range of motion
  - Diffuse shoulder pain
- Injection Technique
  - Anterior or posterior approach
    - Angle is directly toward joint, rather than upsloping as in subacromial injection
  - 5 cc syringe, 1 ½ to 3 inch needle, 22 g
  - 3 cc anesthetic
  - 1-2 cc steroid

## **Shoulder Injections**

### **AC Joint Injection**

- Indication
  - Acromial-clavicular arthritis may be posttraumatic from separation or related to subacromial impingement
  - AC sprain/separation
    - Six types are described based on direction and degree of separation of clavicle from acromion
    - Types IV-VI require surgical intervention
    - Injection indicated for types I-III if persistent pain after reasonable trial of rest, medication
- Injection Technique
  - Superior approach
  - 3 cc syringe, 5/8 to 1 inch needle, 25 g
  - 1-2 cc anesthetic
  - 1 cc steroid

### **Proximal Biceps Injection**

- Indication
  - Proximal biceps tendonitis
  - Pain in anterior shoulder, positive Speed's test
  - Long head of biceps usually involved
- Injection Technique
  - Oblique, peritendinous approach to long head of biceps, aiming proximally
  - 3 cc syringe, 5/8 to 1 inch needle, 25 g
  - 1-2 cc anesthetic
  - 1 cc steroid



## Elbow Injections

### Elbow Epicondyle Injection

- Lateral – (tennis elbow) pain with wrist extension
- Medial – (golfer's elbow) pain with wrist flexion
- Tenderness over or about epicondyle
- Pathophysiology: Tendinous degeneration with fibroblast hyperplasia with absence of inflammation after initial stage

### Lateral Epicondylitis Injection

- Multiple RCT done
- Superior initially to P.T.
- No difference after one year
- Best in conjunction with PT

### Elbow Epicondyle Injection

- Injection Technique
  - In plane between soft tissue & tendon at either medial or lateral epicondyle, fanlike distribution
  - 3 cc syringe, 5/8 to 1 inch needle, 25 g
  - 1-2 cc anesthetic
  - 1 cc steroid

### Olecranon Bursa Injection

- Indication
  - Olecranon bursitis
  - Swelling, possibly erythema
  - Fluid-filled sac adjacent to olecranon
  - Consider aspiration first to clarify whether traumatic, overuse, crystal or infectious
  - Consider corticosteroid injection once infection ruled out
  - Use compressive neoprene sleeve brace or cotton elastic bandage wrap afterward
- Injection Technique
  - Use "Z" technique from lateral side to enter bursa without leaving a needle track for possible fistula formation
  - 3cc syringe, 5/8 to 1 inch needle, 25 g
  - 2 cc anesthetic
  - 1 cc steroid



## Hand and Wrist Injections

### Ganglion Cyst Aspiration and Injection

- Use 18 g needle after anesthetic to skin

### de Quervain's Injection

- Indication
  - de Quervain's tenosynovitis
  - Inflammation of thumb adductor and extensor tendons
  - Positive Finkelstein's test
  - Pain to palpation over the radial styloid
- Injection Technique
  - Wrist in ulnar deviation, inject at oblique angle near radial styloid in proximal direction, injection in tendon sheath
  - 3 cc syringe, 5/8 to 1 inch needle, 25 g
  - 1 cc anesthetic
  - 1 cc steroid

### Trigger Finger/Thumb

- Indications
  - Stenosing tenosynovitis of flexor tendons
- Nodule forms at A1 pulley on flexor tendon
- Avoid repetitive motion 4 weeks
- Passive ROM after 3 weeks
- May inject again after 6 weeks
- Consider referral for surgery if two failures
- Injection Technique
  - Volar (palmar) approach, injection at nodule by A1 pulley or at MCP crease
  - 1 cc syringe, ½ inch needle, 25 or 27 g
  - 0.5 cc anesthetic
  - 0.5 cc steroid

### Carpal Tunnel Injection

- Indication: Carpal tunnel syndrome
- Pain, neuropathic symptoms and weakness in median nerve distribution
- Positive Phalen test, carpal compression, Tinel's
- Consider initial EMG for severe or long-standing symptoms
- Consider initial surgical referral if EMG shows severe median nerve damage
- Consider two injections then surgical referral
- Injection Technique
  - Volar (palmar) approach, injection at 30-degree angle to skin at proximal wrist crease to ulnar side of palmaris longus tendon
  - Aim at middle PIP joint
  - 3 cc syringe, 1½ inch needle, 25 g
  - 0.5-1 cc anesthetic
  - 0.5-1 cc steroid



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## Hand and Wrist Injections

### Other Wrist Injections

- Finger Joint
  - Includes PIP, DIP, IP, MCP and thumb basal (1<sup>st</sup> CMC) joints
  - Indication
    - Osteoarthritis
    - Rheumatoid arthritis
    - Crystal arthropathies, usually gout
  - Injection technique
    - Dorsal approach, avoid extensor tendon
    - For 1<sup>st</sup> CMC, pull traction on thumb, aim to ulnar side to avoid radial artery
    - 1 cc syringe, ½ inch needle, 27 or 30 g
    - 0.5 cc anesthetic
    - 0.5 cc steroid
- Intersection Syndrome
  - Midforearm, dorsal approach
- Triangular Fibrocartilage Complex
  - Ulnar wrist near radial styloid
- Wrist Joint
  - Dorsal wrist near DRUJ



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### **Tender/Trigger Point Injections**

- Indication
  - Soft tissue tender points (point tenderness) or trigger points (pain induced at other site with palpation of trigger)
  - Fibromyalgia, myofascial pain syndrome
  - Muscle spasm
- Injection Technique
  - Injection into muscle/fascia at area of tenderness
  - 1 cc syringe, ½ inch to 1 inch needle, 27 or 30 g
  - 0.5-1 cc anesthetic
  - 0.5 cc steroid (optional)



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### **Greater Trochanter Injections**

#### Greater Trochanter Injections

- Indication
  - Trochanteric pain syndrome
- Pathophysiology
  - Iliotibial band friction
  - Gluteus tendinopathy
- Overuse and friction leading to hypertrophy and inflammation of greater trochanteric bursa
- Lateral hip pain, point tenderness over greater trochanter
- Injection Technique
  - Patient in decubitus position, aim directly toward posterior/superior greater trochanter, point of maximal tenderness
  - Injection in fanlike distribution
  - 10 cc syringe, 1 ½ to 3 inch needle, 22 g
  - 8 cc anesthetic
  - 2 cc steroid



## Knee Injections

### Knee Joint Viscosupplements

- Effective in knee OA (LOE 1a), may be effective in hip, shoulder and other OA
- Delayed effect (1-3 weeks)
- Long duration (6 months)
- Weekly injections, 3-5x
  - SynviscOne: one-time injection
- May delay need for joint replacement

### Articular Knee Joint Injection

- Indications
  - Osteoarthritis
  - Synovitis
- Diffuse pain, may be localized over medial, lateral joint line or peripatellar
- If effusion, consider aspiration via a superolateral approach
- Injection Technique: Seated for anterolateral vs. anteromedial injection or supine for superolateral vs. lateral midpatellar approach
  - 5 cc syringe, 1 ½ needle, 22 g
  - 3 cc anesthetic
  - 2 cc steroid

### Pes Anserine Bursa Injection

- Indication: Pes anserine bursitis
- Pathophysiology: Friction overuse of sartorius, gracilis and semitendinosus tendons results in thickening and swelling
- Local tenderness at medial knee over proximal tibia, pain on motion and at rest, swelling
- Injection Technique
  - Seated, inject at point of maximal tenderness
  - Injection in fanlike distribution
  - 3 cc syringe, 1 to 1 ½ inch needle, 25 g
  - 2 cc anesthetic
  - 1 cc steroid



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## Knee Injections

### Prepatellar Bursa Injection

- Indication: Prepatellar bursitis (washerwoman's knee)
- Local tenderness, fluctuance over patella
- Trauma or overuse
- Consider aspiration to evaluate for infection
- Use compressive neoprene sleeve brace or Ace wrap afterwards
- Injection Technique
  - Supine, inject / aspirate from lateral approach using “Z” technique to avoid creating fistula track
  - 3 cc syringe, 5/8 to 1 inch needle, 25g
  - 2 cc anesthetic
  - 1 cc steroid

### IT Band Injection

- Indication: Iliotibial band friction syndrome
- Local tenderness over lateral femoral condyle and Gerdy's tubercle
- Overuse
- IT Band tightness demonstrated by Ober's test
- Injection Technique
  - Lateral, decubitus, at lateral femoral condyle aiming toward Gerdy's tubercle
  - 3 cc syringe, 5/8 to 1 inch needle, 25g
  - 2 cc anesthetic
  - 1 cc steroid



## Foot Injections

### MTP Joint Injection

- Indication
  - Osteoarthritis
  - Crystal arthropathies, usually gout
  - Differentiate from septic joint
  - Caution with diabetic patients
- Injection Technique
  - Dorsal approach, avoid extensor tendon
  - 1 cc syringe, ½ inch needle, 27 or 30 g
  - 0.5 cc anesthetic
  - 0.5 cc steroid

### Intermetatarsal Neuroma Injection

- Indication: Neuroma
  - Neuropathic symptoms, pain, fullness or “lump” in ball of foot
  - Between metatarsal heads, pain with squeeze test
  - 1st interspace: Heuter’s neuroma
  - 2nd interspace: Hauser’s neuroma
  - 3rd interspace: Morton’s neuroma
  - 4th interspace: Islen’s neuroma
- Injection Technique
  - Dorsal approach, place between metatarsal heads
  - 3 cc syringe, 5/8 to 1 inch needle, 25 g
  - 1 cc anesthetic
  - 1 cc steroid

### Plantar Fascia Injection

- Indication
  - Plantar fasciitis (heel spur)
  - Morning, first step, heel pain
  - Tenderness over medial plantar fascial insertion
- Injection Technique
  - Medial plantar approach, fan out injection
  - Caution with depth; avoid injecting into fat pad
  - 3 cc syringe, 1 inch to 1 ½ inch needle, 25 g
  - 1-2 cc anesthetic
  - 1 cc steroid