

Hands on - Steroid Injections

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Disclosures

- Abbott Pharmaceuticals
- Amgen
- Roche
- Bristol-Myers Squibb
- Janssen Ortho
- Novartis

Adult Rheumatology Injections

- Materials
- Corticosteroids
 - Dosages and Equivalency
- Contraindications and Complications
- Practical Approach using Patient
 - Joint injection
 - Tendon and Bursa Injection

Materials



- Alcohol wipes
- Povidone-iodine wipes
- Non-sterile gloves
- Sterile gloves
- Sterile drapes
- **Syringes**
- Needles
- Local anesthetic
- **Hemostat**
- Corticosteroid preparation
- Laboratory tubes for culture or other studies (aspiration)
- Adhesive bandage

Corticosteroid Equivalency

Corticosteroid	Anti-inflammatory	Mineralocorticoid	Half Life
Prednisone	20 mg	100 mg	12-36 hr
Betamethasone	2 mg	No effect	36-72 hr
Methylprednisolone Depo-Medrol®	16 mg	No effect	12-36 hr
Hydrocortisone	80 mg	80 mg	8-12 hr
Dexamethasone	2 mg	No effect	36-72 hr
Triamcinolone acetone Kenalog®	16 mg	No effect	18-36 hr
Triamcinolone hexacetone Aristospan®	8 mg	No effect	18-36 hr

Corticosteroid Equivalency

Corticosteroid	Anti-inflammatory	Water Solubility	Half-Life
Prednisone	20 mg	high	12-36 hr
Betamethasone	2 mg	low	36-72 hr
Methylprednisolone Depo-Medrol®	16 mg	high	12-36 hr
Hydrocortisone	80 mg	High	8-12 hr
Dexamethasone	2 mg		36-72 hr
Triamcinolone acetonide Kenalog®	16 mg	Low	18-36 hr
Triamcinolone hexacetonide Aristospan®	8 mg	Low	18-36 hr

Contraindications

Absolute

- Local cellulitis
- Septic arthritis
- Acute fracture
- Bacteremia
- Joint prosthesis
- Achilles tendinopathy
- Anaphylaxis history

Relative

- No relief with previous injections x 2
- Coagulopathy
- Anticoagulation
- Osteoporosis
- Diabetes
- Psoriatic plaque over possible injection site

Complications of Joint Injections

- Septic arthritis
- Hemarthrosis
- Post-injection synovitis
- Damage to internal structures
- Soft-tissue atrophy and depigmentation
- Systemic effects
- Pain

Gout



Pseudogout



Why no Fluid on Aspiration?



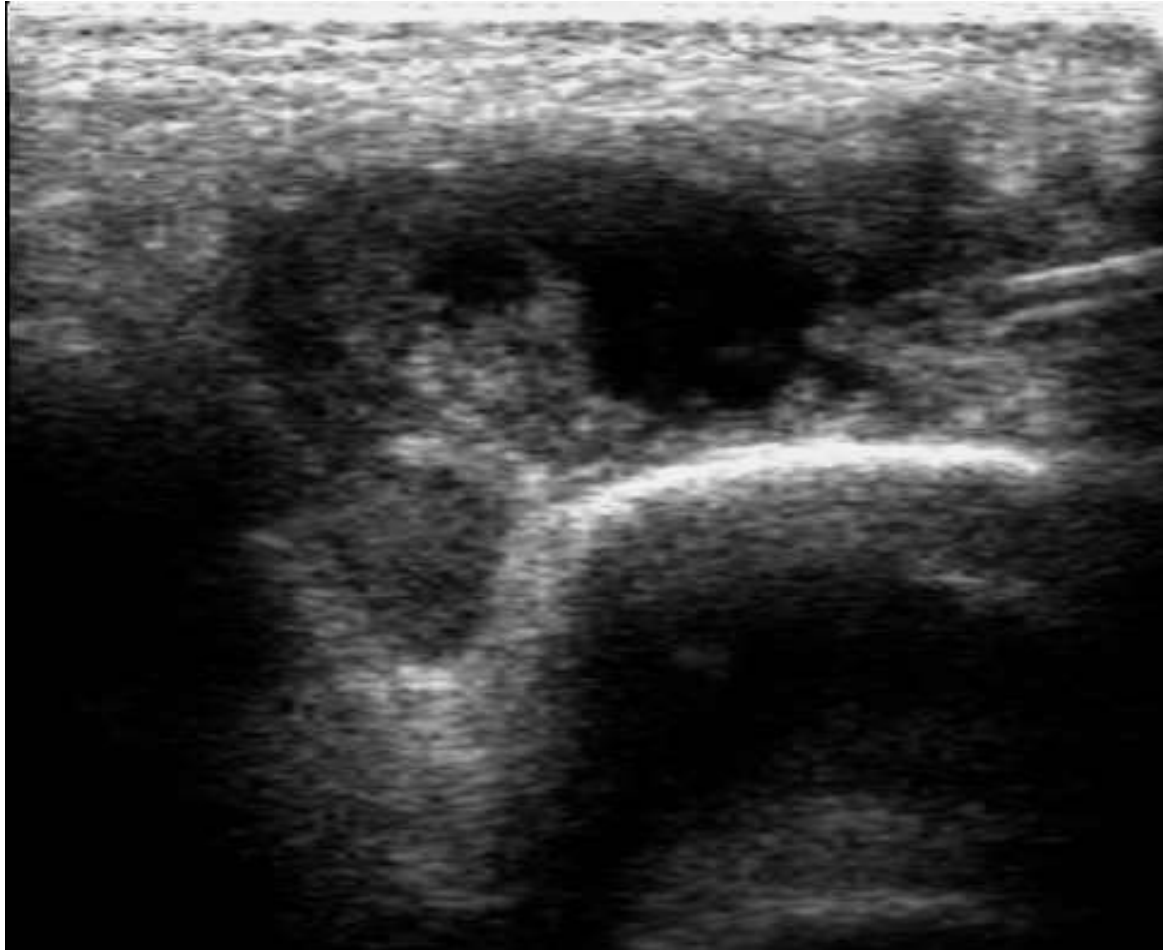
- No fluid in joint or bursa
- Tissue obstructing needle lumen
- Needle is NOT in joint
- Tense muscles around joint

Steroid dose for Joint Injections

Joint	Methylprednisolone	Triamcinolone hexacetamide
Shoulder	40 - 80 mg	20 - 40 mg
Elbow	20 - 40 mg	10 - 20 mg
Wrist	20 - 40 mg	10 - 20 mg
Finger joint	10 mg	5 mg
Knee	40 - 80 mg	20 - 40 mg
Ankle	20 - 40 mg	10 - 20 mg
Metatarsal Joints	10 mg	5 mg

Steroid dose for Bursa/Tendon Injection

Tissue	Methylprednisolone	Triamcinolone hexacetamide
Rotator cuff	40 mg	20 mg
Bicep tendon	20 mg	10 mg
Olecranon bursa	10 mg	5 mg
DeQuervains	10 mg	5 mg
Flexor tendon	10 mg	5 mg
Trochanteric Bursa	20 -40 mg	10 -20 mg
Pre-patellar bursa	10 mg	5 mg
Plantar Fascia	20 mg	10 mg



Courtesy of Dr. E. Filipucci

Knee

- Mix 1-5 ml lidocaine with 40-80 mg methylprednisolone
- 1½ x 22 gauge needle
- Approach:
 - Supra-patella bursa
 - Medial or lateral sub-patellar
 - Anterior with flexed knee

Shoulder

- **Glenohumeral joint** (1½ x 22 gauge needle)
 - **Anterior:** 1 cm below and lateral to coracoid. Aim medial/posteriorly
 - **Posterior:** posterior angle of acromion. 1 cm lateral and posterior. Aim for coracoid
 - **Sub-acromial bursa:** posterior angle of acromion. 1 cm lateral. Aim horizontally below acromion

Shoulder

- **Acromio-clavicular joint** (1½ x 25 gauge needle)
 - Shrug shoulder to identify joint
 - Mix 0.2 ml lidocaine and 10 mg methylprednisolone
- **Biceps tendon** (1½ x 25 gauge needle)
 - Identify tendon by ER and IR shoulder
 - Mix 0.5 ml lidocaine and 20 mg methylprednisolone

Ankle (Tibiotalar)



- Use 1½ x 22 gauge needle
- Mix 0.5 ml lidocaine with 20 mg methylprednisolone
Identify space between med malleolus and Tibialis anterior tendon
- Aim towards lateral malleolus

Olecranon bursa



- Extend the elbow
- Use 20 gauge needle
- Aspirate/inject from superior/apical pole
- Inject 0.3 ml lidocaine and 10 mg methylprednisolone

Elbow Epicondyle



- Flex elbow to 90°
- Use 1½ x 25 gauge needle
- Mix 1-2 ml lidocaine with 20-40 mg methylprednisolone
- Inject insertion point of tendon in circumferential fashion

Greater Trochanteric Bursa



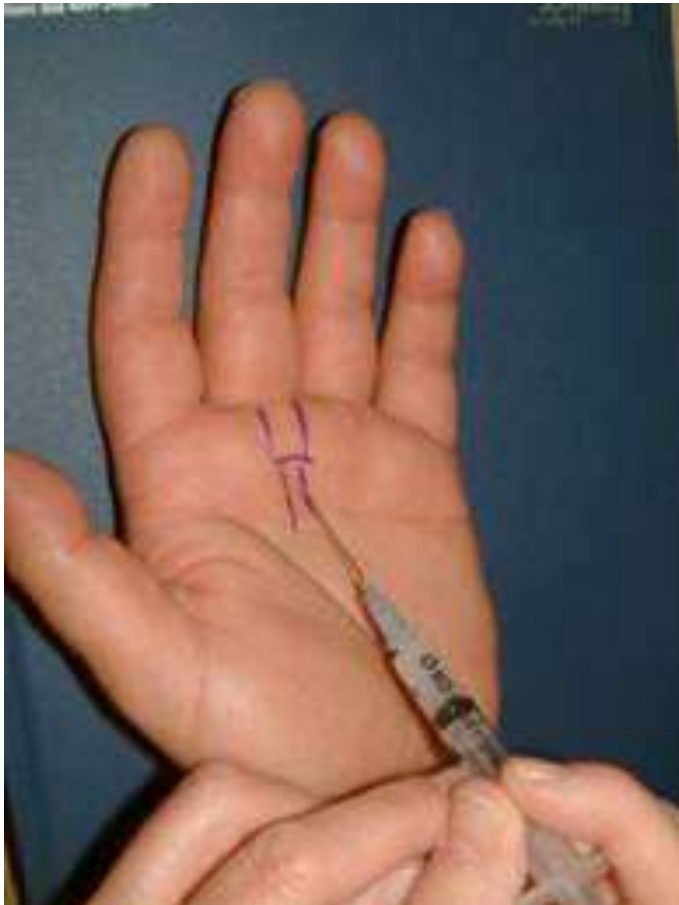
- Use 1½ x 22 gauge needle
- Mix 1-3 ml lidocaine with 40 mg methylprednisolone
- Inject bursa in circumferential fashion

Plantar Fascia



- Use 1½ x 25 gauge needle
- Mix 1-2 ml lidocaine with 20 mg methylprednisolone
- Medial aspect of heel
- Inject in circumferential fashion in mid heel

Trigger Finger



- Mix 0.1-0.3 ml lidocaine with 8-12 mg methylprednisolone using 1 x 30 gauge needle
- Inject base of finger, 45° towards tip
- Pierce until feel “scratchy” tendon, withdraw and inject
- Splint 24 hours

References

1. Fam A et al. Musculoskeletal Examination and Joint Injections Techniques. 1st edition. Moseby. 2005.
2. <http://www.emedicine.com/>
3. <http://courses.washington.edu/colleges/vids/injection.shtml>
4. Rheumatology Examination and Injection Techniques. Ehrlich. JAMA. 1999; 282: 697-698.