

Hands on Workshop– Soft tissue and Joint Injections

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Disclosure of Commercial Support

- This program has received no financial support

Faculty/Presenter Disclosures

	Company/Organization	Details
I am a member of an Advisory Board or equivalent with a commercial organization.	Janssen	Summer 2019
I am a member of a Speakers bureau.	Janssen CRUS	Sonography lectures 2019 and course instructor
I have received payment from a commercial organization (including gifts or other consideration or 'in kind' compensation).	none	

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	Company/Organization	Details
I have received a grant(s) or an honorarium from a commercial organization.	None	
I hold a patent for a product referred to in the CME/CPD program or that is marketed by a commercial organization.	None	
I hold investments in a pharmaceutical organization, medical devices company or communications firm.	None	
I am currently participating in or have participated in a clinical trial within the past two years.	None	

Objectives

- To discuss materials needed for injections
 - Corticosteroids
- To discuss contraindications and complications
- To discuss a practical approach by using landmarks on a volunteer
 - Joint injection
 - Tendon and Bursa Injection

Materials

- Alcohol wipes
- Povidone-iodine wipes
- Gloves
- Sterile drapes
- Needles and syringes
- Local anesthetic
- Corticosteroid
- Laboratory tubes
- Hemostat
- Adhesive bandage



Corticosteroid Equivalency

Corticosteroid	Anti-inflammatory	Half-life
Prednisone	50 mg	12-36 hr
Betamethasone Celestone® Soluspan®	5 mg	36-72 hr
Methylprednisolone Depo-Medrol®	40 mg	12-36 hr
Hydrocortisone	200 mg	8-12 hr
Dexamethasone	5 mg	36-72 hr
triamcinolone acetonide Kenalog®	40 mg	18-36 hr
Triamcinolone hexacetonide Aristospan®	20 mg	18-36 h

Corticosteroid Equivalency

Corticosteroid	Water Solubility	Half-life
Prednisone	high	12-36 hr
Betamethasone Celestone® Soluspan®	low	36-72 hr
Methylprednisolone Depo-Medrol®	high	12-36 hr
Hydrocortisone	high	8-12 hr
Dexamethasone	low	36-72 hr
triamcinolone acetonide Kenalog®	Low	18-36 hr
Triamcinolone hexacetonide Aristospan®	Low	18-36 h

Contraindications

Absolute

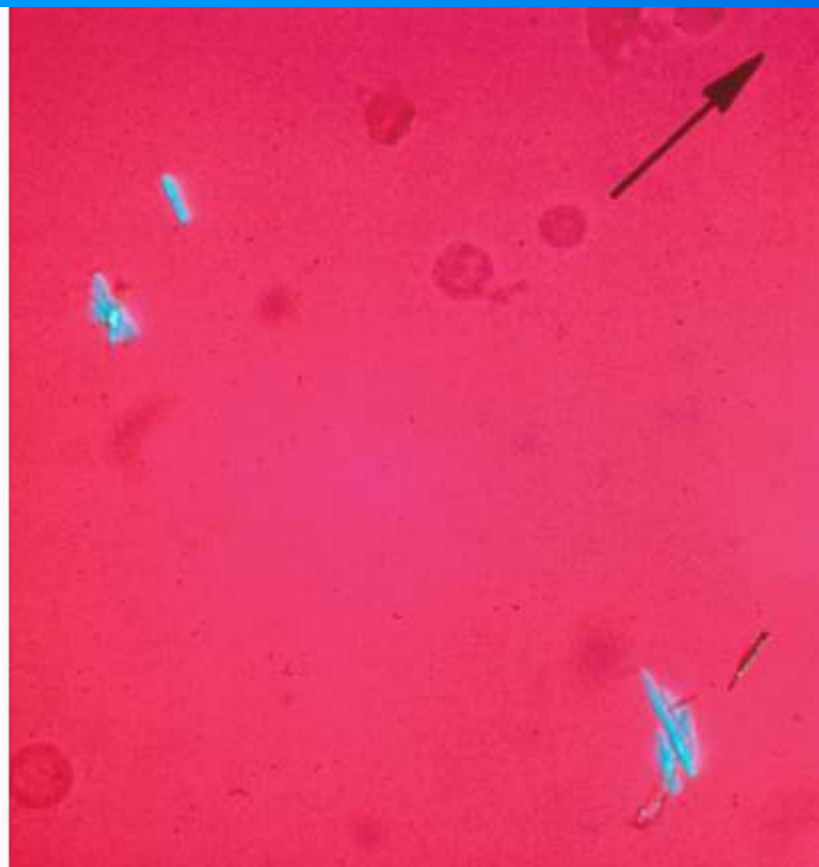
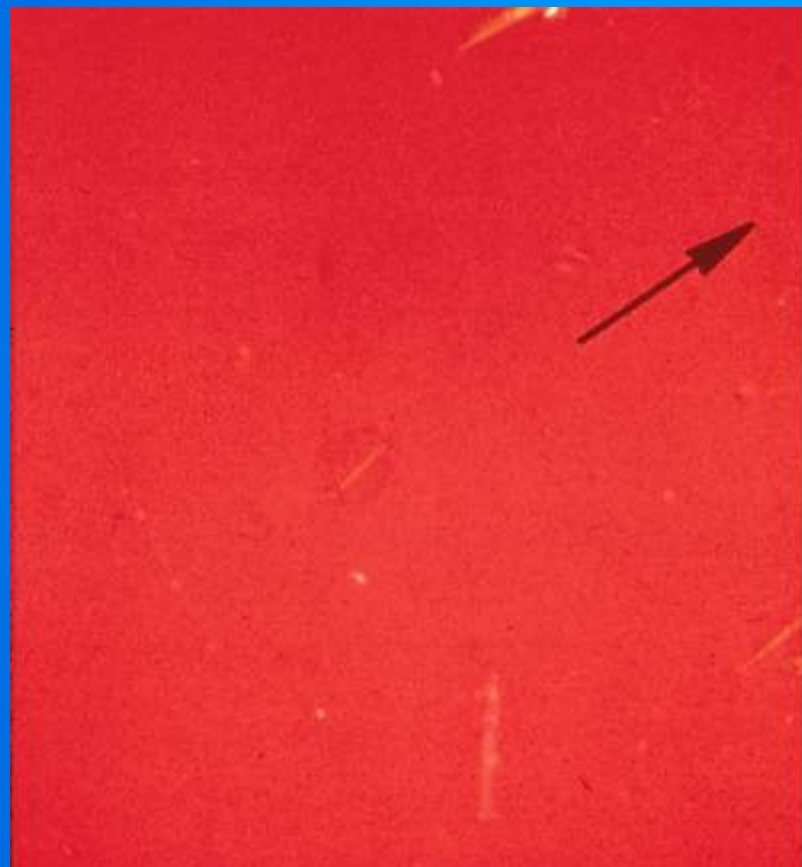
- Local cellulitis
- Septic arthritis
- Acute fracture
- Bacteremia
- Joint prosthesis
- Achilles tendonopathy
- Anaphylaxis history

Relative

- No relief with previous injection 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



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Why can't I aspirate fluid?.....

- No fluid in joint/bursa
- Tissue obstructing needle lumen
- Needle is not in joint
- Tense muscles around joint

Steroid dose for Joint Injections

JOINT	Methylprednisolone	Triamcinolone hexacetamide
	Depo-Medrol®	Aristospan®
Shoulder	40 - 80 mg	20 - 40 mg
Elbow	20 - 40 mg	10 - 20 mg
Wrist	20 - 40 mg	10 - 20 mg
Finger joint	8 - 12 mg	4-8 mg
Knee	40 - 80 mg	20 - 40 mg
Ankle	20 - 40 mg	12 - 20 mg
Metatarsal joints	8 - 12 mg	4-8 mg

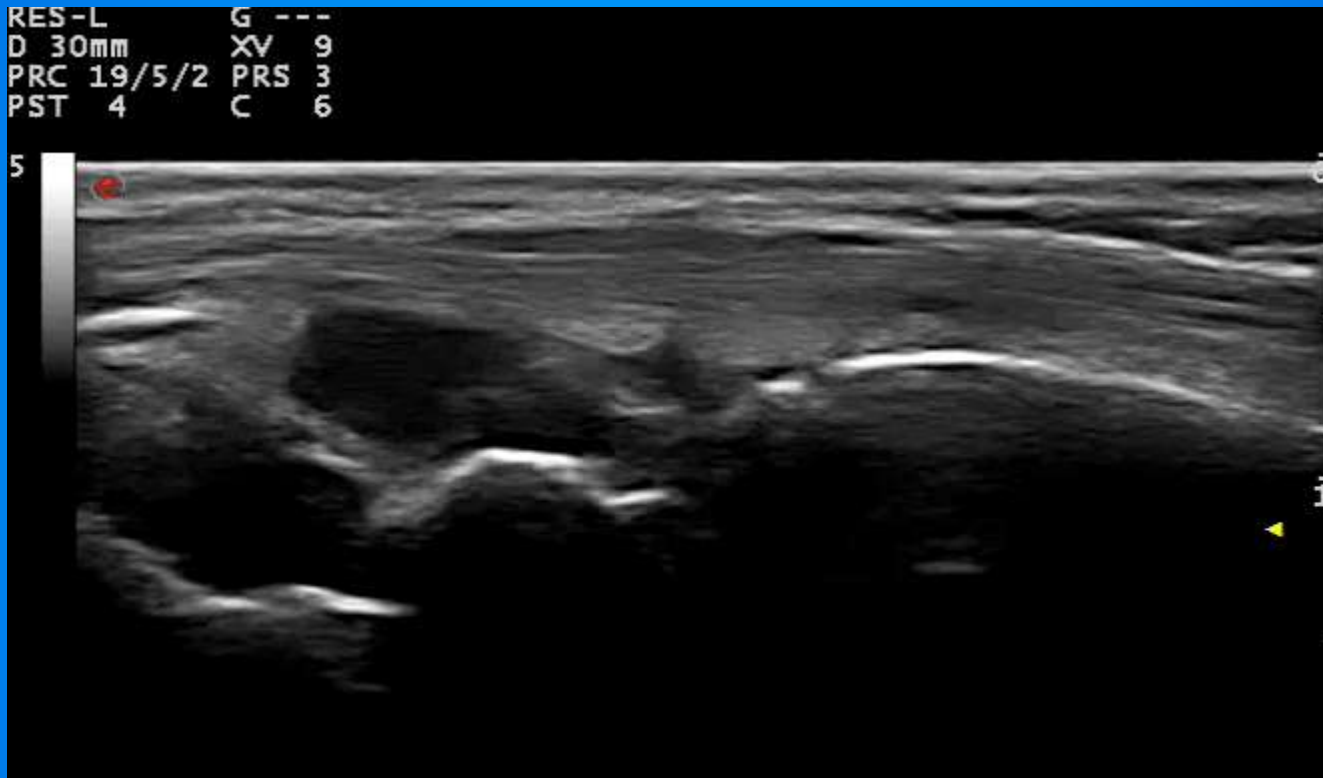
1 ml Depomedrol = 40 mg methylprednisolone

Steroid dose for Bursa/Tendon Injection

Tissue	Methylprednisolone Depo-Medrol®
Rotator cuff	40 mg
Bicep tendon	20 mg
Olecranon bursa	8-12 mg
DeQuervains	8-12 mg
Flexor tendon	8-12 mg
Trochanteric Bursa	20 - 40 mg
Pre-patellar bursa	8 mg
Plantar Fascia	20-40 mg

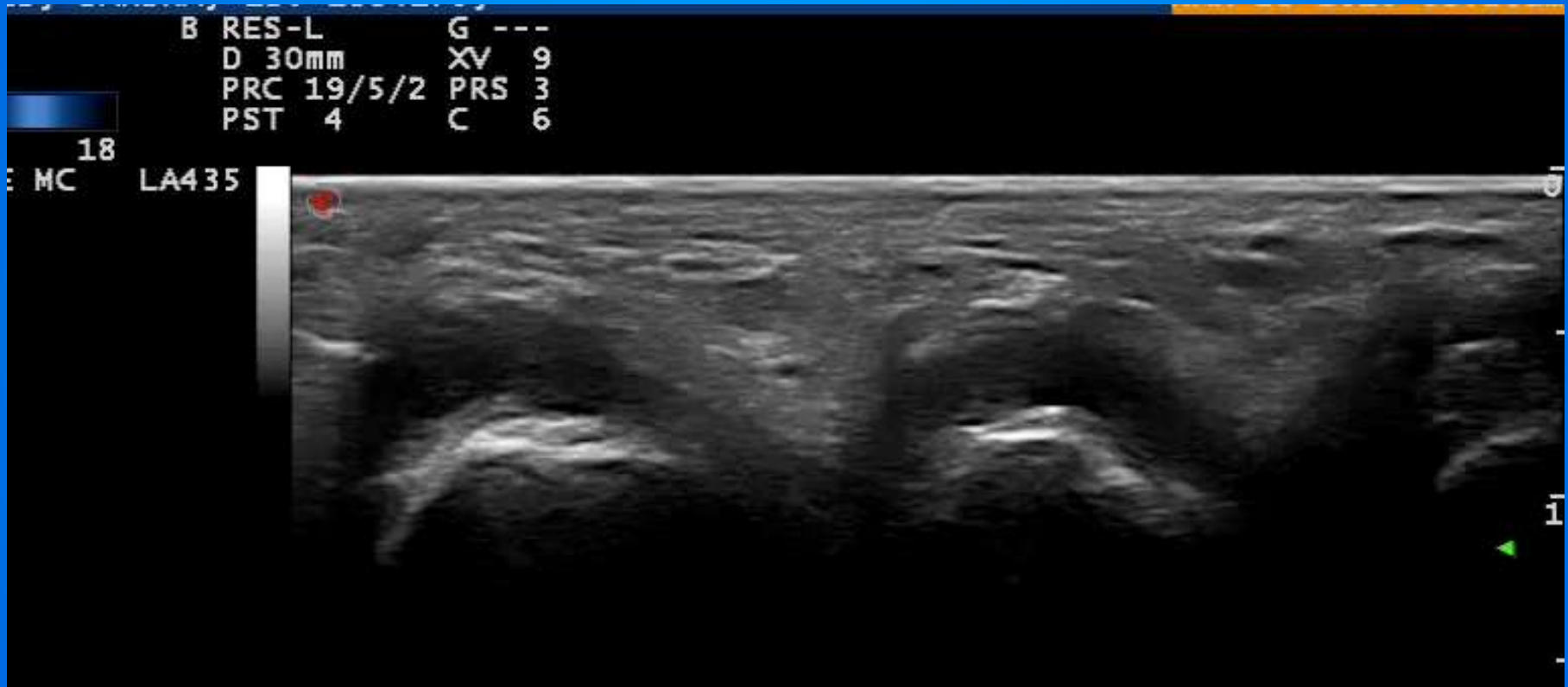
1 ml Depomedrol = 40 mg methylprednisolone

Ultrasound guided Injections



Right wrist

Ultrasound guided Injections



Injection MTP 2

References

1. Fam A et al. Musculoskeletal Examination and Joint Injections Techniques. 1st edition. Moseby. 2005.
2. <https://www.rheumtutor.com/injection-techniques/msk-injection-techniques-in-vivo-series/>
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5. EXAMEN MUSCULOSQUELETTIQUE (L') 2E ÉD. (French). Jean Luc Tremblay

And now the demonstration.....

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

- Gleno-humeral joint injection
- 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 injection
 - Shrug shoulder to identify joint
 - Mix .2 ml lidocaine and 10 mg methylprednisolone with 1½ x 25 gauge needle
- Bicep tendon
 - Identify tendon by ER and IR shoulder
 - Mix .5 ml lidocaine and 20 mg methylprednisolone with 1½ x 25 gauge needle

Ankle

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

Olecranon bursa

- Extend elbow
- Aspirate/inject from superior/apical pole with .3 ml lidocaine and 10 mg methylprednisolone with a 20 gauge needle

Elbow epicondyle

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

Greater Trochanteric Bursa

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

Plantar Fascia

- Mix 1-2 ml lidocaine with 20 mg methylprednisolone using 1½ x 25 gauge needle
- 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, angle 45°
- Pierce until feel “scratchy” tendon, withdraw and inject
- Splint 24 hr