

Joint Injection Workshop:

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This workshop is designed as a hands on demonstration of anatomical landmarks and techniques used for joint and soft tissue injections.

The following slides highlight a few key tips and principles

Materials Needed for Aspirating and Injecting Joints

- Clean, “No Touch” technique used
- Gloves (not necessary, but may be safer in regions where human immunodeficiency virus or hepatitis cases are common)
- Povidone-iodine and/or alcohol swabs
- 1%-2% lidocaine without epinephrine, or topical ethyl chloride
- 22- to 27-gauge needle for anesthetic
- 18- to 20-gauge needle for aspirating large- or moderate-sized joints
- 22- to 25-gauge needle for aspirating smaller joints
- 3 ml-5 ml syringe: anesthetic-steroid combination
- 10 ml-60 ml syringe for fluid aspiration
- Forceps; Kelleys (to allow changing syringes, etc.)
- Specimen tubes, culture container

Contraindications to Intra-Articular Corticosteroid Injections

- Periarticular sepsis
- Bacteremia
- Unstable joints
- Essentially inaccessible joints, e.g., spinal
- Intra-articular fracture
- Septic joint
- Marked juxtra-articular osteoporosis
- Failure to respond to prior injections
- Blood clotting disorders
- Probably total joint arthroplasty

Potential Sequelae from Intra-Articular and Soft Tissue Corticosteroid Injections

- Radiologic deterioration of joints – “steroid arthropathy”; Charcot-like arthropathy; osteonecrosis
- Iatrogenic infection – very low incidence
- Rupture of tendon
- Tissue atrophy and fat necrosis
- Nerve damage, e.g., inadvertent injection of median nerve in carpal tunnel syndrome
- “Postinjection flare”
- Pancreatitis
- Cushing’s syndrome
- Increased glucose


Intra-articular Corticosteroid Injections in the Hip and Knee: Perhaps Not as Safe as We Thought?

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Conflicts of interest are listed at the end of this article.

See also the editorial by Kijowski in this issue.

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Osteoarthritis (OA) of the hip and knee is among the most common joint disorders. Intra-articular corticosteroid (IACS) injections are frequently performed to treat OA and other joint-related pain syndromes; however, there is conflicting evidence on their potential benefit. There is a lack of prospective and large retrospective studies evaluating potential joint findings, including increased risk for accelerated OA progression or adverse joint events, after treatment with IACS injection. Four main adverse joint findings have been structurally observed in patients after IACS injections: accelerated OA progression, subchondral insufficiency fracture, complications of osteonecrosis, and rapid joint destruction, including bone loss. Physicians, including radiologists, should be familiar with imaging findings and patient characteristics that may help them identify potential joints at risk for such events. The purpose of this report is to review the existing literature, describe observed adverse joint events after IACS injections, and provide an outlook on how this may affect clinical practice. Additional research endeavors are urgently needed to better understand and identify risk factors prior to intervention and to detect adverse joint events after injection as early as possible to prevent or minimize complications.

Typical Doses of Corticosteroid used for Injection (Usually Mixed with Lidocaine)

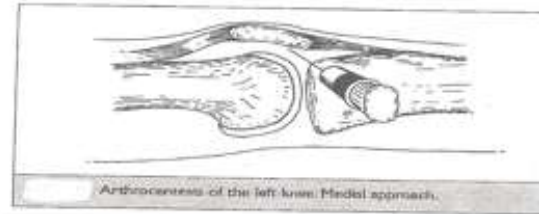
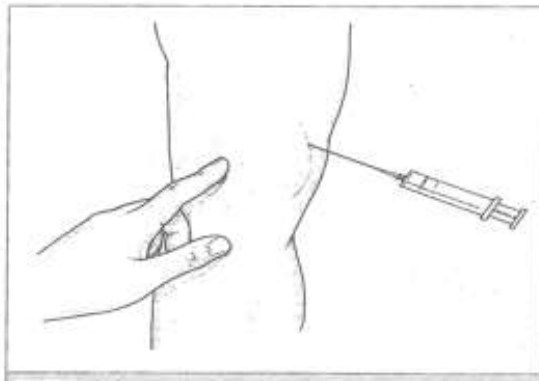
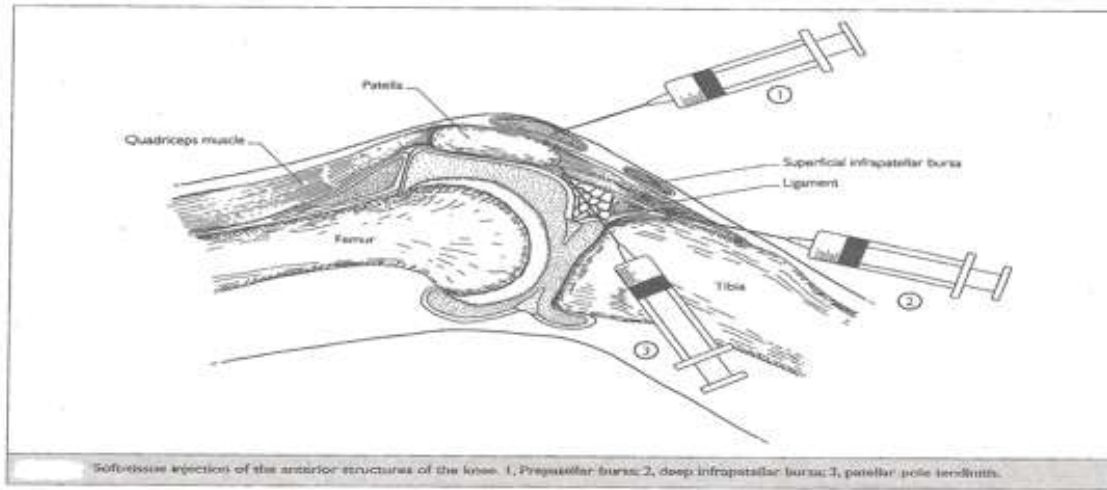
Structure	Dose (mg)*	Volume of Injection (ml)
• Large joint		
• Knee	40-60	1-4
• Shoulder	40	1-4
• Elbow	20-30	1-4
• Medium joint		
• Ankle	20-40	0.5-1
• Wrist	20	0.5-1
• Small joint		
• Interphalangeal	5-10	0.25-0.5
• Metacarpophalangeal	5-10	0.25-0.5
• Metatarsophalangeal	5-10	0.25-0.5
• Small soft-tissue structure		
• Bursa	20-40	0.5-1.5
• Tendon sheath	5-20	0.25-1
• *Doses shown are for triamcinolone hexacetonide and methylprednisolone acetate		

Characteristics of Synovial Fluid in Normal and Various Abnormal Conditions

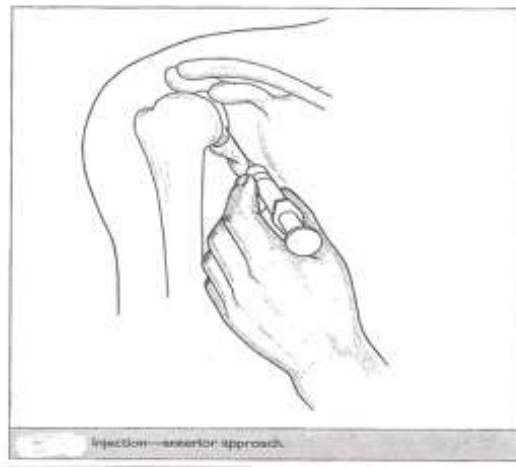
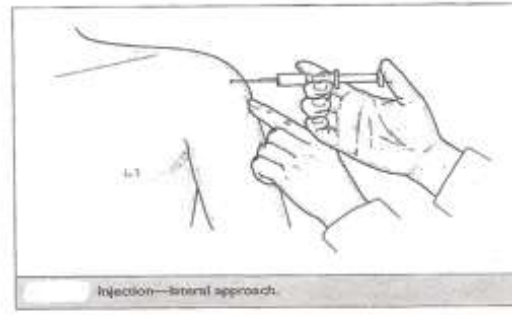
Characteristic Condition	Normal	Noninflammatory	Inflammatory	Septic
Color	Clear	Straw yellow	Yellow	Variable
Clarity	Transparent	Transparent	Hazy opaque	Opaque
Viscosity	High	High	Low	Low-high
White blood cell Count (per mm ³)	0-200	200-2,000	2,000-75,000	>50,000
Neutrophils (%)	Low	Low	Medium-high	High

Reference: Genovese, M., Joint and Soft Tissue Injection, Postgraduate Medicine, Vol. 103, No. 2, February 1998

Knee injection



Shoulder Injection



Ankle Injection

