JOINT ARTHROCENTESIS: KNEE AND ELBOW

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Emergency Medicine
Goals of the program

- Discuss indications and contraindications for procedure
- Demonstrate knee and elbow aspiration and injection
- Discuss pre and post care
- Discuss follow up
- Discuss fluid analysis and diagnosis
- Dictate the chart
Introduction

- Arthrocentesis is the removal of synovial fluid
  - Therapy to reduce pain
  - Evaluate Trauma
  - Diagnostic purposes
    - Septic Joint
    - Gonococcal Arthritis
    - Gout, etc.
- Discuss the procedure for Knee and Elbow arthrocentesis, these are the most common on ED
KNEE ANATOMY
Indications for Arthrocentesis

- Evaluate for Arthritis
- Suspected septic joint
- Evaluate joint effusion
Indications for Arthrocentesis

- Evaluate for crystals, seen in gout, pseudogout
- Evaluate for injury, is the fluid bloody?
- Drain effusion for pain relief
- Injection of medicine for therapeutics
Contraindications

- No **absolute contraindications** but several relative contraindications
- Cellulitis over the joint, site of needle entry
  - if clinically it is septic joint you can still proceed
Contraindications

- Skin lesion or rash at site of needle insertion
- Joint Prosthesis—should be performed by Orthopedist
- Coagulopathy
  - use smaller needle
  - wrap with ace wrap
  - recheck sooner
Contraindications: Osteomyelitis
Patient Preparation

- **Explain** procedure to patient, obtain consent
  1. Skin will be cleaned
  2. Local injection of anesthesia to reduce pain
  3. Insertion of a 18-20g needle into joint
  4. Aspiration of fluid
  5. Possible injection of medication
  6. Remove needle, send fluid to lab, dress area with neo/gauze/ace wrap
MATERIALS
Patient Positioning

- Supine
- Leg extended
- possibly slightly flexed
- Medial or Lateral approach
  - recommended use medial approach with small effusion and lateral with larger
Landmarks

- Palpate the superior lateral aspect of the patella
- 1 fingerbreadth above and 1 fingerbreadth lateral to this site, mark with marking pen
  - Provides best access to synovioum
- Insert needle at about a 45 degree angle
DEMONSTRATION
Post Procedure Treatment

- discuss s/s infection to prompt follow up
  - Redness
  - Warmth
  - increased swelling
  - Hematoma
  - fever/chills

- RICE
Complications

- Bleeding into joint
- Injury to deeper structures, may hit ligament
- Severe pain during procedure, needle may be hitting highly innervated cartilage
  - Redirect needle
- Large effusion occurred after aspiration
  - place ace wrap on joint immediately after
ELBOW ANATOMY
Indications

- Like the knee
  - diagnosis inflammatory issues
  - septic joints
  - pain relief
  - Septic joint, more common in larger joints, also consider gonoccal arthritis
  - Evaluate Acute Non Traumatic Pain
  - Occult Fracture? Is blood present
Differential Diagnosis

- Cellulitis
- Abscess
- Bursitis
- Tendonitis
Contraindications

- Cellulitis at needle insertion
- Overlying skin lesions/rash
- Anticoagulants
- Prosthetic joint, refer to orthopedist
- Known bacteremia
- Trauma?
Explain Exam to Patient

- Informed Consent
- Steps to Procedure
- Reason
- Possible Complications
- Post Procedure Treatment
Steps to the Procedure

- Obtain Consent
- Sitting Position
- Arm Bent 90 Degree
- Palm down with arm pronated
- Use Lateral Technique
  - Safest
  - Medial Technique: you can damage ulnar nerve and superior ulnar collateral artery
Steps to the Procedure

- Clean the skin
- Inject local Anesthesia
- Insert 18-20g needle into joint space
  - Lateral Approach
- Aspirate fluid, send for analysis
- Cover site with dressing
- Consider Ace wrap
LANDMARKS
MATERIALS
Post Procedure Complications

- Same as Knee
- Cellulitis
- Septic Joint
- Swelling
- Bleeding
Patient Follow up

- Return for prompt recheck if:
  - Increased pain
  - Increased swelling
  - Fever
  - Chills
  - Erythema to area
Clinical PEARLS

- Again, do not use medial approach to injury the ulnar nerve and superior ulnar collateral artery.
- Can use a posterolateral approach:
  - This increases the risk of injury to radial nerve triceps tendon.
- Do not confuse olecranon bursitis with a joint effusion.
- Do not insert a needle in skin that appears infected.
Fluid Analysis

- Normal fluid contains:
  - Electrolytes, glucose, uric acid, albumin, globulins, mucin, blood cells, debris
- Results can be broken down into these parts:
  1) normal
  2) traumatic
  3) inflammatory
  4) infected
TABLE WITH VALUES
Post Procedure Treatment

- Ace wrap
- Pain Medications
- Follow up with ortho
- s/s infection to prompt return
Chart Documentation

- Indication for test
- Informed consent obtained
- Steps to the procedure
- Amount and color of fluid removed
- How was it tolerated?
- Any immediate complications?
- Follow up discussed