Basics of MSK Ultrasound

Delma Y Jarrett, MD
Assistant Professor
Boston Children’s Hospital
No commercial disclosures
Pediatric MSK - Ultrasound

Advantage of Ultrasound

- Cost
- Availability
- Spatial resolution
- Clinical correlation
- Dynamic Imaging

- Neonate
  - Small patients
    - Good acoustic penetration
    - Superior spatial resolution of ultrasound
  - Lots of cartilage
  - No sedation
Pediatric MSK - Ultrasound

• Barriers to use of ultrasound
  – Remember to consider it....
  – Get referring physicians on board
  – Know anatomy
Pediatric MSK - Ultrasound

• Technique
  – High frequency linear transducer (7-15 MHz)
  – Patient positioning
  – Doppler – vascular injury or hypervascularity
  – Comparison with contralateral side
MSK Ultrasound – Neonate/Infant

• **Trauma**
  - Epiphyseal separations/ Salter Harris fractures
  - Glenohumeral dysplasia

• **Infection**
  - Osteomyelitis/septic arthritics

• **Congenital**
  - Define anatomy
MSK Ultrasound – Neonate/Infant

Longitudinal


Infant shoulder sonography: technique, anatomy, and pathology
Glenohumeral Joint

- scapula
- labrum
- ossification center
5-day-old baby, breech twin; had a difficult extraction → C section and decreased movement of the left shoulder. “Negative”
5-day-old baby, breech twin with decreased movement of the left shoulder. US performed 10 days later.
MSK Ultrasound – Neonate/Infant

Elbow joint

Anterior approach

Capitellum

Radial head
MSK Ultrasound – Neonate/Infant

Elbow joint

Lateral approach

Capitellum

Radial head
MSK Ultrasound – Neonate/Infant

Elbow joint

Posterior approach
6 day old infant, born at 35 weeks by C-Section, not moving left elbow
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6 day old infant, born at 35 weeks by C-Section, not moving left elbow
MSK Ultrasound – Neonate/Infant

Knee joint joint

Anterior Approach
MSK Ultrasound – Neonate/Infant

Knee joint joint

Lateral Approach

Medial Approach
1 day old male, noted to have recurvatum deformity of the right leg.
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1 do male, noted to have recurvatum deformity of the right leg.
Glenohumeral Joint

- Scapula
- Labrum
- Ossification center
MSK Ultrasound – Neonate/Infant

- Scapula
- Glenoid labrum
- Humeral head

Posterior Transverse

- Scapula
- Labrum
- Ossification center
10 month old with brachial plexus birth palsy, superomedial and posterior dislocation of right shoulder
Normal left shoulder, posterior approach

Ultrasound at 5 months of age
Abnormal right shoulder, posterior approach
MSK Ultrasound – Neonate/Infant

- Trauma
  - Epiphyseal separations
  - Salter Harris fractures
- Infection
  - Osteomyelitis/septic arthritis
- Congenital
  - Define anatomy
11 do female. USH until prior day, stopped moving right shoulder. Swelling and? bruising on exam. Concern for NAT. “Subluxation”
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MSK Ultrasound – Neonate/Infant

• Trauma
  – Epiphyseal separations
  – Salter Harris fractures

• Infection
  – Osteomyelitis/septic arthritis

• Congenital
  – Define anatomy
4 month old female with Aicardi syndrome and elbow click