Musculoskeletal Soft Tissue Masses

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Outline
- Joint recess
- Bursa
- Tendon
- Lymph Node
- Ganglion
- Subcutaneous
- Other

Joint Recess
- Mass arising from a joint is a benign synovial process:
  - Rheumatoid arthritis
  - Pigmented villonodular synovitis
- Synovial sarcoma: very rarely involves a joint

Pigmented Villonodular Synovitis

Bursa
- Mass arising from a bursa
  - Benign synovial process
  - Understand locations of normal bursa
  - Anechoic or hypoechoic
  - Compressible
  - May be complex
  - Example: Baker cyst
**Baker Cyst**

- Transverse
- Longitudinal

**Tendon**

- Gout
  - Popliteus tendon: knee
  - Patellar tendon: inferior
  - Other tendons
- Giant cell tumor of tendon sheath
- Pseudotumor:
  - Tendon tear and retraction
  - Rectus femoris, tibialis anterior

**Gout: patellar tendon**

**Giant Cell Tumor of Tendon Sheath**

- Transverse
- Parasagittal

**Rectus Femoris Tear: full tear, pseudomass**

**Lymph Node**

- Hyperplastic:
  - Oval, hyperechoic hilum, hilar vascular pattern
- Malignant:
  - Asymmetric thick cortex
  - Round
  - Loss of hyperechoic hilum
  - Variable vascular pattern
Ganglion Cysts

- Mass may correspond to a ganglion cyst
  - Hypoechoic
  - Multilocular
  - Not compressible
  - Specific locations

Ganglion Cysts

- Wrist:
  - Volar: between radial artery and FCR
  - Dorsal: over scapholunate ligament
- Knee:
  - Cruciates, gastrocnemius tendon
  - Hoffa infrapatellar fat pad
- Ankle:
  - Tarsal tunnel

Ganglion Cysts: dorsal

- Differential diagnosis:
  - Parameniscal cyst
  - Paralabral cyst: hip and shoulder
Lateral Meniscus: tear and parameniscal cyst

Subcutaneous Masses
- Lipoma
- Fat necrosis
- Epidermal inclusion cyst
- Other: benign versus malignant

Lipoma: subcutaneous
- Oval or oblong
- Homogeneous
- Isoechoic to adjacent fat
- Hyperechoic:
  - With increased fibrous tissue components
- No internal vascularity
- Compressible

Inampudi et al. Radiology 2004; 233:763

Liposarcoma: well-differentiated
- Hypoechoic
- Looks like a lipoma
- Need MRI with any suspected deep lipoma!

Fat Necrosis
- Pain, palpable, focal
- Thigh, women
- No erythema
- Normal WBC

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Epidermal Inclusion Cyst:
- Not ruptured:
  - Isoechoic to hyperechoic, oval
  - Internal anechoic areas: characteristic
  - Surrounding hypoechoic halo
  - Increased through-transmission
- Ruptured:
  - Irregular shape, no halo

Inampudi et al. Radiology 2004; 233:763
Epidermal Inclusion Cyst

Other Masses: malignant
- Sarcoma
- Metastasis
- Other

Tumor
Metastasis: Renal Cell Carcinoma
Sarcoma: high grade

Soft Tissue Metastasis: lung

Take Home Points
- Key to differential diagnosis:
  - Specific anatomic location
  - Joint and tendon: benign
  - Bursa: unilocular, compressible
  - Ganglion: multilocular, not compressible
  - Lipoma: subcutaneous, oval, compressible
  - Malignancy: hypoechoic, heterogeneous

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