Ultrasound of the Knee Bursae and Cysts

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Knee Bursae

- Suprapatellar Recess
- Prepatellar Bursa
- Deep infrapatellar Bursa
- Superficial infrapatellar Bursa
- Semimembranosus -Tibial Collateral Ligament Bursa
- Pes Anserinus Bursa
- Baker Cyst

Anterior Knee Bursa:
- Prepatellar bursa
- Superficial infrapatellar bursa
- Deep infrapatellar bursa

Prepatellar Bursa: aseptic fluid

Prepatellar Bursa: complex fluid
Superficial Infrapatellar Bursa

Deep Infrapatellar Bursa

Adventitious Bursae:
- Site of friction
- Myxomatous degeneration of fibrous tissue
- Medial epicondyle:
  - Rider’s bursa: horseback riding
  - Limbo-dancing
    - Trinidadian art form of limbo dancing

Baker Cyst:
- Semimembranosus-medial gastrocnemius bursa
- 50% over age of 50 have communication with knee joint
- Cyst communication to posterior knee between SM-MG tendons required

Anatomy: posterior

From: Netter’s Atlas of Human Anatomy

Technique: Baker cyst
- Locate posterior femoral condyle: transverse
  - Toggle transducer to produce anisotropy
  - Identify the medial gastrocnemius and semimembranosus
- Locate soleus, medial, and lateral gastrocnemius muscles
  - Follow medial border of medial gastrocnemius muscle
  - Visualize semimembranosus tendon

AJR 2001; 176:373
No Baker Cyst

Axial

Femur

SM

MG

Anterior

Posterior

Baker Cyst Evaluation: pitfall

Transverse

SM

MG

Baker Cyst

Axial Axial T2w

Medial Gastrocnemius

SM

Baker Cyst

Transverse Longitudinal

SM

MG
**Baker Cyst:**

- Anechoic or hypoechoic
- Internal echoes:
  - synovium, hemorrhage, intraarticular body
- Leak:
  - Soft tissue edema inferior

AJR 2001; 176:373
Baker Cyst: rupture

- Superior to inferior
- Medial to lateral

Aspiration
- Inferior to superior
- Medial to lateral
- Aspirate joint effusion first if present
- Steroid injection
  - Baker cyst injection works better than intra-articular injection


Semimembranosus-tibial collateral ligament bursa
- Occurs between SM tendon and tibial collateral ligament
- Must not be confused with Baker cyst

From AJR 1996; 166:875
Pes Anserinus

- Pes anserinus: "goose foot"
  - Sartorius
  - Gracilis
  - Semitendinosus
- Bursa:
  - Deep to conjoined tendon
  - Adjacent to proximal tibia
- Rarely distended

Radiology 1995; 194:525

Pes Anerinus: bursal fluid

Longitudinal
Transverse

Snapping Sartorius over Pes Anerinus Bursa

Tibia

Ganglion Cyst

- Anechoic or hypoechoic
- Possibly multilocular
- Gastrocnemius origins, Hoffa’s fat pad, cruciate ligaments
- Exclude other cysts (meniscal)

Ganglion Cyst: aspiration

Post-aspiration
Ganglion Cyst: gastrocnemius origin

Varices

Cruciate Ganglion Cyst
Peroneal Intraneural Ganglion

- Joint fluid from proximal tibiofibular joint
  - Enters peroneal nerve via articular nerve branches
  - Shown at MR arthrography after exercise
  - Extends proximal via epineurial sheath
- May also form via tibial nerve

1 Spinner et al. Clin Anatomy 2007; 20:826
2 Spinner et al. Skeletal Radiol 2006; 35:172

Peroneal Intraneural Ganglion

Note: "signet ring" appearance

Intraneural Ganglion

> 15 cm

Atrophy

Asymptomatic
Take Home Points:

- Bursa:
  - Anatomic
  - Adventitious
- Baker cyst:
  - Must see neck for diagnosis
- Intraneural ganglion: common peroneal nerve
- Ganglion cyst: multilocular, non-compressible

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