Hip Anatomy and Ultrasound Scanning Technique

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Disclosures:
• Consultant: Bioclinica
• Advisory Board: Philips
• Book Royalties: Elsevier
• Not relevant to this talk

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Sonographic Technique: hip and thigh
• Hip:
  – Anterior: hip joint, musculature, iliopsoas bursa
  – Lateral: gluteal tendons, bursae
  – Posterior: external rotators
  – Other: symphysis pubis, inguinal hernia
• Thigh:
  – Anterior: quadriceps femoris
  – Medial: abductors
  – Posterior: hamstring

Sonographic Technique: Hip
• Anterior
  – Hip joint
  – Anterior musculature
  – Snapping iliopsoas
  – Iliopsoas bursa
  – Lateral femoral cutaneous nerve
• Transducers:
  – 10 – 12 MHz linear
  – <10 MHz curvilinear if needed

Hip: anterior recess
• Anterior and posterior layers
  – Fibrous tissue + minute layer of synovium
  – Hyperechoic
  – Each 2 - 4 mm thick

Radiology 1999; 210:499

Femur
**Sonographic Technique: Hip**

- **Lateral**
  - Greater trochanter
  - Gluteal tendons
  - Bursae
  - Snapping hip
- **Transducers:**
  - 10 – 12 MHz linear
  - <10 MHz curvilinear if needed

**Greater Trochanter: gluteal tendons.**

- Anterior
- Lateral
- Posterior

Greater Trochanter

- Yellow arrow = gluteus medius
- White arrow = gluteus minimus

Axial MRI
Greater Trochanter

Yellow arrow = gluteus medius
White arrow = gluteus minimus

Greater Trochanter

AF: anterior facet
LF: lateral facet
PF: posterior facet

Gluteus Minimus and Medius: Long Axis

Gluteus Minimus: Long Axis

Gluteus Medius: Long Axis

Sonographic Technique: Thigh

- **Posterior:**
  - Semimembranosus
  - Semitendinosus
  - Biceps femoris
    - Long and short heads
  - Sciatic nerve
- **Transducers:**
  - 10 – 12 MHz linear
  - <10 MHz curvilinear if needed
Posterior Thigh: anatomy

From: Netter's Atlas of Human Anatomy

Proximal Hamstring: gluteal fold

Note: Conjoined semitendinosus (ST) and biceps femoris long head (BF) tendon (yellow arrow), semimembranosus (SM) blue arrow), and sciatic nerve in a triangle configuration

*Toggle transducer to eliminate anisotropy*

Proximal hamstring: at ischial tuberosity

Note: Semimembranosus tendon (yellow arrow) moving medial to lateral

"Conjoined ST-BF and SM tendons only seen together in long axis when they cross near distal tuberosity"

Proximal hamstring: gluteal fold to ischial tuberosity

Note: Semimembranosus tendon (yellow arrow) moving medial to lateral

"Conjoined ST-BF and SM tendons only seen together in long axis when they cross near distal tuberosity"

Posterior Thigh: proximal hamstring

Posterior Thigh: Semitendinosus Raphe

Note: Hyperechoic raphe or veil that moves obliquely through semitendinosus muscle in proximal thigh
Take-home points:

- Know bone landmarks
- Hip evaluation:
  - Anterior: hip joint
  - Lateral: greater trochanter
- Thigh: focused examination

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