Hip Anatomy and Ultrasound Scanning Technique

Jon A. Jacobson, M.D.
Professor of Radiology
Director, Division of Musculoskeletal Radiology
University of Michigan

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• Not relevant to this talk

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Technique
1. Start with low frequency transducer: global, complete examination
2. Familiarize with anatomy
3. Compare to contralateral side
4. Consider dynamic imaging

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
Sonographic Technique: Hip

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

Yellow arrow = gluteus medius
White arrow = gluteus minimus

Axial MRI

Greater Trochanter

Yellow arrow = gluteus medius
White arrow = gluteus minimus

Greater Trochanter

Gluteus Minimus and Medius: Long Axis

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

Gluteus Minimus: Long Axis

Gluteus Medius: Long Axis

Iliobial Tend
**Sonographic Technique: Thigh**

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

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**Posterior Thigh: anatomy**

- From: Netter’s Atlas of Human Anatomy

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**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*

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**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 over ischial tuberosity*

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**Proximal hamstring: at ischial tuberosity**

- Transverse

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**Posterior Thigh: proximal hamstring**

- Transverse
Posterior Thigh: Semitendinosus Raphe

Note: hyperechoic raphe or veil that moves obliquely through semitendinosus muscle in proximal thigh

Posterior Mid Thigh: moving distal

Note: tapering of semitendinosus over SM

Posterior Mid Thigh: moving distal

Note: tapering of semitendinosus over SM

Posterior Thigh: longitudinal

Hamstring Origin

Sciatic Nerve

Take-home points:

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

Syllabus on line and other educational material:
www.jacobsonmskus.com
Twitter handle: @jacobsn