Acute Proximal Hamstring Injuries

Aaron J. Krych, MD
Mayo Clinic Sports Medicine
Associate Professor
Director, Sports Medicine Fellowship
Director, Sports Medicine Research Fellowship
krych.aaron@mayo.edu
Diagnosis and Management of Acute Proximal Hamstring Tendon Injuries

- History and Exam - Aaron J. Krych, MD
- Imaging - Mark S. Collins, MD
- Surgical Repair - Indications and Outcomes - Aaron J. Krych, MD
- Non-operative & Post-operative Rehab - Jeffrey D. Strauss, PT, DPT
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History and Exam
Anatomy

• The hamstring is made up of 3 muscles:
  • Semitendinosus
  • Semimembranosus
  • Biceps femoris (long and short head)

• All 3 innervated by sciatic nerve

• Semi-T and biceps make up conjoint tendon

• Semi-M more lateral long tendon
Proximal

Distal

Medial

Lateral

ST ligament

Conjoint tendon (Biceps femoris/semi-T)

Adductor magnus tendon

Adductor magnus muscle
Proximal

Distal

Medial

Lateral

ST ligament

Conjoint tendon (reflected from bone but partially in continuity with ST ligament)
Proximal

Distal

Medial

Lateral

Conjoint tendon (reflected)

Ischial tuberosity

Semimembranosus

Distal
Function

- Knee flexion
- Hip extension
- 70% fast twitch fibers (quad 50%)
- Sprinting
- Walking
  - Late recovery phase
  - Provide eccentric control and knee stability
Acute Hamstring Tears: Etiology and Mechanism

• 12% of hamstring injuries involve a tear or avulsion of the proximal hamstring origin, 9% of which are complete avulsions

• Injury involves a traumatic event with forced hip flexion and combined knee extension

Barnett KSSTA 2014
Dierckman Arthroscopy 2012
Need to distinguish between hamstring “pull/strain” and avulsion
History of Mechanism

- Avulsions
  - Athletes
    - Waterski, bull-riders, “splits”
  - Non-athletes
    - Slip on ice
    - Slip on wet floor
- Hamstring strains
  - Sprinting—eccentric force on a lengthened muscle
Commonly Presenting Symptom

• Difficulty Sitting
• Buttock Pain
• Difficulty walking fast
• Weakness
• Sciatic nerve symptoms
  • Pins and needles in sciatic distribution
  • Rare foot drop
Clinical examination

- Dichotomy of presentations
  - Doorway sign
- Tenderness to palpation
  - Localizes well
- Strength deficits
- Palpable defect
- Bruising
- Popeye sign
Gold standard for diagnosis

- MRI