Surgical Indications and Outcomes
Indications for Surgery

- Athletically active
- 2-tendon or osseous avulsion > 2 cm retraction
- 3 tendon tears regardless of retraction
- Persistent
  - Pain, loss of power, sciatic nerve involvement

Rust AJSM 2014
Cohen JAAOS 2007
Carmichael JBJS 2009
Why operate?

• Nonsurgical treatment of complete ruptures associated with
  • Pain
  • Muscle weakness
  • Sciatica

• Surgical repair results in 58 to 95%
  • Return of function
  • Sports activity
  • Near normal strength
  • Decreased pain

Rust AJSM 2014
Cohen JAAOS 2007
Barnett KSSTA 2014
Timing of Surgery

• Scarring of sciatic nerve unpredictable
• Within 2 weeks is preferable
  • Avoid delay in diagnosis and referral
• Repair within first 6-8 weeks (acute phase)
Procedure Surgical technique

- Transverse crease incision or longitudinal incision
- Sciatic nerve and posterior cutaneous nerves protected
- Gluteus maximus retracted superiorly
- Tendons are mobilized and debrided to healthy tissue
- Repair to ischial tuberosity with suture anchors
Surgical technique video
Postoperative counseling

- Sitting Discomfort
  - 50%
- Posterior thigh numbness
  - 10% +
- Incisional numbness
  - 38%

Cohen Bradley AJSM 2012
Neurologic outcomes following proximal hamstring avulsion and repair

- 162 patients
  - 67 operative
  - 95 nonoperative
- Sciatic nerve symptoms in 45 (28%)
  - 22% neuropathic pain
  - 7% sensory deficits
  - 5% motor deficits
- 89% of nerve symptoms improved with sciatic neurolysis and proximal hamstring repair

Wilson Krych 2016
Results: Acute vs Chronic

- Chronic ruptures: patients report lower SANE score
  - “Feeling” normal
    - Acute 80%
    - Chronic 66%
- Acute repairs
  - Less bracing
  - Less scarring of nerve
  - Less atrophy/retraction

Rust AJSM 2014
Cohen JAAOS 2007
Strength Recovery

• 52 patients
  • All: At or equal to 75%
  • Difference between acute or chronic

• 3/10 players with symmetric strength to opposite side

• Series of 14 patients
  • 8/14: 100% recovery
  • All: 75% or greater strength
Return to Sport

• Average of 6.6 months
  • All patients satisfied with level of return to function, although “not normal”  
    [source: Cohen Bradley AJSM 2012]

• 10/14 return to “strenuous activity”  
  [source: Bowman AJSM 2013]

• 70/96 (73%) complete ruptures returned to pre-injury level of activity

• 21/36 (58%) partial ruptures returned to pre-injury level of activity  
  [source: Barnett KSSTA 2014]
Postoperative management

- Avoid combined knee extension, hip flexion
- Bracing
  - Acute tears with minimal retraction
    - HKB
  - Chronic tears with tension
    - Hip-knee-ankle orthosis
Bony avulsions
Patient

- 39 y/o male
- CC: Left posterior thigh pain
- Date of Injury: ~12/13/2013
  - Deer hunting
  - Slipped on ice
  - Felt a tearing sensation in posterior thigh
  - Extensive ecchymosis posterior and medial thigh, down into calf
- Seen ~2 weeks after injury
Initial Musculoskeletal Examination

- Widespread ecchymosis posterior and medial thigh and at ankle
- Passive hip flexion → pain in posterior thigh
- No palpable defect
- Mild TTP at ischium
- Moderate TTP midsubstance of the hamstring
December 2013

• Diagnosis: Hamstring strain

• Plan:
  • Compression
  • Ice
  • Physical therapy
January 2014

• Possible retear after slipping on floor
  • Recurrent ecchymosis
  • Gradual improvement
  • Continued with PT
March 2014

• History
  • Pain with sitting
  • Subjective hamstring weakness
  • Unable to return to running

• Physical Exam
  • Decreased muscle strength left hamstring
  • Palpable mass posterior thigh
  • TTP posterior thigh musculature
  • NVI
March 2014 – Dr. Krych

• Assessment
  • Chronic proximal hamstring avulsion
  • 10 cm retraction

• Plan
  • Hamstring repair +/- interposition allograft
  • Sciatic neurolysis
  • Post-operative bracing (6 weeks)
• Retrospective

• 72 patients
  • 51 acute → direct repair
  • 21 chronic
    • 7 direct repairs
    • 14 allograft interposition reconstructions
• Mean follow-up 45 months

• Chronic tears
  • Inferior sports activity scores
  • Significant improvement from pre-op levels in sports and ADLs

• Allograft reconstruction
  • Greater than 5-6 mm retraction → allograft
  • Similar outcomes to directed repair in sports and ADLs
Conclusions

- Proximal hamstring avulsions are increasingly recognized
- Important to maintain a high level of suspicion based on history and physical examination
- MRI extremely helpful in diagnosis
- Surgery indicated for 2 tendon tears > 2 cm or 3 tendon tears
- Rehabilitation critical to returning to a high level of function