Thigh Injuries

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Thigh Injuries

- **Skin**
  - Lacerations: local treatment, prevent infection
  - Penetrating injuries: Local treatment, prevent infection, ascertain no bony injury or serious deep injury to muscle, or neurovascular structures
Thigh Injuries

- **Skin**
  - Superficial contusions
  - Local treatment as you would treat any contusion
  - Ice, rest, protection from further injury, stretching
  - Lacerations/abrasions
  - Local treatment, prevent infection
Thigh Injuries

- Muscular injuries: Quadriceps
  - Strain
  - Mid substance injury
  - Football/running
  - Quads tendon rupture
Thigh injuries

- **Quadriceps**
  - Muscle strain
  - Quadriceps tendinitis
  - Rupture of the quad tendon
    - Most common in older individuals and in young athletes
    - In a young athlete can represent an avulsion fracture
    - Operative repair
Thigh Injuries

- **Quadriceps Rupture**
  - In a young athlete, it is usually an avulsion from the proximal or distal pole of the patella
  - "sleeve" fracture
  - Older athletes tendinous rupture
  - Will be unable to do a straight raise or extend the knee
  - Requires operative repair
Thigh injuries

- **Quadriceps**: Muscle strain
  - Most common areas of injury are musculotendinous junctions proximally and distally
  - Muscle belly can also be injured
  - Treatment with RICE
  - Can take weeks to get over
  - Less common than hamstring injuries
Thigh injuries

- Contusions
  - Common especially in football
  - Thigh guards helpful prevention
  - Can result in myositis ossificans
  - Risk for thigh compartment syndrome
  - Posterior contusion less common
Thigh injuries

- Quadriceps: Contusion, Deep
  - Blow to the thigh
  - Can lead to compartment syndrome
  - Can cause muscle fiber rupture, disruption of connective tissue and hematoma formation
  - Immobilize in 120 degrees of flexion
  - Apply ice
Thigh injuries

- **Quadriceps:** Contusion
  - Continue 120 degrees of flexion for first 24 hours
  - Begin stretching and strengthening
  - Do not apply heat
  - Risk of myositis ossificans
Thigh Injuries

- Muscular injuries hamstrings
  - Very common sports injury
  - Avulsion (hyperflexion at the hip)
  - Waterskiing injury
  - Football
  - Sprinters
  - General population (slip on ice or wet floor)
Thigh Injuries

- Muscular injuries: Hamstrings
  - Mid substance injury (usually at the myotendinous junction)
  - Distal injuries less common
  - Rapid acceleration and maximum speed running
Thigh injuries

- Hamstrings
  - Eccentric mechanism at the terminal swing phase of gait
  - Biceps femoris most commonly injured
  - High rates of re-injury
  - Predisposing factors include poor or no warm up, poor flexibility, quad:hamstring ratio of 50%, poor biomechanics
Thigh injuries

- Hamstrings
  - Complain of pain in the posterior thigh
  - Sometimes hear or feel a pop
  - Often have ecchymosis and swelling
  - May have a palpable defect
Thigh Injuries

- Muscular injuries: Hamstring avulsion
  - Waterskiing hyperflexion injury: Starting on the dock, getting up out of the water, fall
  - Can happen in the general population as well
Thigh Injuries

- Muscular injuries: Hamstring avulsion
  - In skeletally immature athletes, avulsion forms the apophysis of the ischial tuberosity and can be treated conservatively most often.
  - Sometimes require surgical repair, most often in adults.
Thigh Injuries

- Muscular injuries: Hamstring avulsion
  - Complete rupture unrepaired can go on to significant functional disability
  - Some studies show better results with early intervention and others so no difference between those repaired acutely versus chronically
  - Often missed
Thigh Injuries

- Muscular injuries: Hamstrings, midsubstance
  - Long time to full recovery 16-50 weeks to pre-injury status
  - RICE, Stretching, modalities, manual therapy
Thigh Injuries

- Muscular injuries: Adductors
- Rare injury
- Adductor injury can be a cause of groin pain in breast strokers
- Adductor injury can occur in soccer athletes esp if they have poor hip ROM
- Hockey
Thigh injuries

- Abductors
- Medline search revealed no studies regarding abductor injury
- Many studies looking at hip weakness as it relates to other injury
Thigh Injuries

- Muscular injuries: Iliotibial band
  - At the hip over the greater trochanter
  - Mid substance at the junction between the lateral quad or hamstring
  - Junction of the mid/distal 1/3rd of the femur
  - Distal at the lateral femoral condyle
  - Insertion at Gerdy’s tubercle
Thigh Injuries

- ITBS
  - Common injury in runners
  - Commonly seen at the hip in non-athletic people
  - Overuse injury
  - +/- history of trauma but often overuse injury
  - Complain of pain laterally
  - Can’t sleep on that side
Thigh Injuries

- ITBS: treatment is typically conservative
  - Injection
  - PT for stretching
  - NSAIDs
  - Look at the gait/foot for problems
- Surgery is rarely indicated
- Z-plasty can be done for recalcitrant cases
Thigh Injuries

- **ITBS**
  - Tears of the gluteus medius or minimus are sometimes seen at the time of surgery
  - More common at the knee in athletes
  - Commonly seen in runners
  - Most have hip/glute weakness
Thigh Injuries

- Muscular injuries
  - Myositis ossificans: intramuscular formation of bone (heterotopic bone formation)
  - 75% of cases are traumatic
  - Can be secondary to intramuscular hematoma
  - Managed with indomethacin
  - Most often treated conservatively
Thigh injuries

- Compartment syndrome of the thigh
  - Can be seen with or without fracture
  - Reports of exercise induced compartment syndrome of the thigh
  - Large thigh contusion/hematoma
Thigh Injuries

- **Compartment syndrome Cont:**
  - Seen in patients who are anti coagulated
  - Can be seen status post hematoma or thigh contusion
  - Diagnosed by measuring compartment pressure
  - Pressure >30mmHg
Thigh Injuries

- Compartment syndrome
  - Thigh compartments
    - Anterior: quadriceps, femoral nerve and artery
    - Posterior: hamstrings, sciatic nerve
    - Medial: adductors, cutaneous branch of the obturator nerve
  - Less common than compartment syndrome of the calf/leg as there is more space in the compartments of the thigh
Thigh injuries

- Compartment syndrome of the thigh
  - Can lead to muscle necrosis, fibrosis, scarring and limb contractures
  - Nerve injury can occur
  - Painful thigh
  - Pain with weight bearing unwilling to extend the knee
  - Can have paraesthesias
Thigh injuries

- Compartment syndrome of the thigh
  - Treatment is fasciotomy
  - Surgical emergency
  - Usually packed open
  - Compartment syndromes after fasciotomy often need skin grafting
  - Fewer complications in those with compartment syndrome without fracture
Compartment syndrome
Compartment Syndrome

- Stryker device Or any other brand
- VERY easy to use
- Instructions online with videos
- If you can give an injection you can use this
- Get one at your hospital and know where it is kept
Thigh Injuries

- Bony injury
- Acute fracture
- Stress fracture
Thigh Injuries

- Fractures
  - Proximal (hip)
  - Shaft
  - Distal
    - Supracondylar
    - Intracondylar
    - Intra-articular
Thigh Injuries

- Fractures
  - Acute complete fractures almost always require operative intervention
  - Some non-displaced distal injuries can be treated in a cast
  - Intra-medullary nailing
  - Plating (ORIF)
  - External fixation
Thigh Injuries

- Acute fractures
  - Bike Vs car
  - Fall from bike
  - Collision sport
  - Motorized sports
  - Extreme sports
Case 1: 16 year old wrestler presents to the clinic with a cc of “knee pain”. He is visiting his grandparents for the summer and has just returned from wrestling camp where he participated in some unusual conditioning. Was told by the trainer he had strained his adductor. Was only symptomatic on the left
Thigh Injuries

- Case 1: Complains of pain at the distal medial femur. Grandfather is reluctant to let me do x-rays. “It’s just a muscle”.
Thigh Injuries: Case 1
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Thigh Injuries Case 1

- Differential
  - Tumor (right age group and location for osteosarcoma)
  - Infection
  - Fracture
Thigh Injuries Case 1
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Thigh Injuries Case 1

- Was seen by my partner in my absence who placed him in a long leg cast on the left and a knee immobilizer on the right
- Returned home and I never saw him in follow up
Thigh Injuries

- Stress fractures
  - More common in endurance athletes
  - In female population be sure to ask about menses and check bone density
  - Beware female athlete triad
  - Most can be treated conservatively
  - Can go on to more unstable injury if the athlete does not rest
Thigh injuries

- Acute fractures
- Skeletally mature
- Skeletally immature
Thigh Injuries

- Case 2: 10 year old sustains an injury to his thigh while playing organized football. Radiographs reveal a fracture of the shaft of the femur
Thigh Injuries

- Case 2: In a skeletally immature person difficulties with operative intervention.
- At 10 too big for a hip spica cast
- External fixation
- Plating
- Flexible nail
- Trochanteric nail
Case 3: 35 year old female involved in a MVA

Some LOC

Fracture of the proximal third of the femur

Treated with IM nailing
Thigh injuries: Case 3
Thigh injuries: Case 3
Thigh Injuries

- Other stuff
  - Infection
  - Tumor: femur is a common location for many primary and metastatic tumors
  - Posterior distal femur is number one place for osteosarcoma followed by proximal tibia
Thigh Injuries

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