The Hip

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Learning Objectives

- Learn basic anatomy of the hip
- Identify common diseases and injuries to the hip
- Explore treatments and technologies to manage hip pain
Bone Anatomy
Muscle Anatomy

Gluteal Group

Adductor Group

(c) The iliopsoas muscle and the adductor group
Muscle Anatomy

Iliopsoas Group

Lateral Rotator Group
Importance of the Hip

Without the hip, we would not be able to do a variety of things

-Walking
-Running
-Bears our body weight
-Gives us stability

[Diagram showing possible hip movements: flexion, extension, abduction, adduction, external/INTERNAL rotation]
Hip Fracture Statistics Among Older People

- Most common fall injury among older people is a fractured hip (95%)
- >300,000 people (65+) are hospitalized from hip fractures each year
- Women are more susceptible to this injury (¾ of hip fractures)
- Suffer from osteoporosis
- Statistically fall more often than men
Common Diseases and Injuries

Avascular Necrosis

-Caused by fracture or dislocation of joint, which damages blood vessels surrounding hip bones

-Most common site is the head of the femur

-Develops gradually

-Symptoms include pain that worsens
Avascular Necrosis of The Hip
Avascular Necrosis Treatments

Physical therapy
- Provides only symptomatic control and does little to alter or slow progression of disease

-Surgical
  Prophylactic
  Core decompression
  Bone grafting
Common Diseases and Injuries

Bursitis

- Small fluid sacs called bursae that cushion bones, tendons, and muscles become inflamed
- Causes include repetitive motions, injury, or trauma to the area
- Symptoms include swelling, redness, pain
Common Diseases and Injuries

Labral Tear

- Common in athletes (high contact sports like football and hockey)
- Also caused by structural abnormalities and repetitive motions
- Symptoms include locking sensation in hip, pain, and stiffness
MRI of Labral Tear
Labral Repair

Nonsurgical Treatment:

- Physical therapy

- Physical therapist will work to strengthen hip muscles, restore normal neuromuscular control, and improve posture

- SERF (Stability through External Rotation of Femur) strap

- Cortisone shots to reduce inflammation
Labral Repair Cont.

Surgical (Labral Refixation)

-Arthroscopy

-Surgeon will trim torn tissue around acetabular rim and reattach torn labrum to bone of acetabular rim

-Each layer of tissue is sewn back together and reattached to original position

-Debridement
Common Diseases and Injuries

Sciatica

-Sciatic nerve runs from lower back, down back of each leg

-When something puts pressure on nerve, it sends radiating pain through hips and legs (inflammation of the sciatic nerve)

-Can also be caused by pregnancy
Sciatica Treatments

- Heat and cold therapy
- Pain medications
- Epidural steroid injections
- Chiropractic/mechanical manipulation
- Acupuncture
- Massage therapy
Sciatic Nerve Compression Treatment: Minimally Invasive Surgery

- Use arthroscopy to decompress sciatic nerve

- Scar tissue, fibrous bands, or tendon structures can compress the sciatic nerve
Common Diseases and Injuries

Hip Dysplasia

- In some severe cases, hip can be completely out of socket because of deformity

Causes:

- Congenital
- Acquired- from keeping hip in “adducted” position for extended periods of time

Symptoms:

- Legs of different lengths
- Less mobility, limping, or waddling
- Uneven skin folds on thigh
Hip Dysplasia X-Ray vs. Normal Hip X-Ray
Common Diseases and Injuries

Arthritis

- Cartilage that cushions joints starts to break down
- Due to aging, trauma, or other factors
- Joints rub together (bone on bone) during movement
Arthritis and Dysplasia Treatment

- Moderately Invasive Surgery
- **Hip resurfacing** - alternative to total hip replacement in that the damaged femoral head is reshaped and fitted with a metal covering that fits into the socket
Arthritis and Dysplasia Treatment

- **Major Reconstruction Surgery**
- **Osteotomy** - major surgery where damaged portions of the hip are removed and the joint is reshaped and repositioned to correct a deformity and improve alignment and function
  - Appropriate for those who are young with arthritis who aren’t ready for total hip replacement
Arthritis and Dysplasia Treatment

- **Major Reconstruction Surgery**
- **Total Hip Replacement:** second most common replaced joint
  - Becomes an option when irreparable joint damage interferes with hip function and causes constant pain
Total Hip Replacement

https://www.youtube.com/watch?v=Mv5O2J1jf2o
Levels of Treating Arthritis

1. Pre-arthritis

2. Early arthritis

3. Severe Arthritis
Pre-Arthritis Technologies

- My Hip Injury App
  - Detailed injury information including pictures, symptoms, causes
  - Includes exercises that can be done to relieve pain
- Medical Guardian fall sensor detection
- LifeAlert
Early Arthritis Technologies

- TENS device
- HipTrac™
  - Osteoarthritis
  - Joint stiffness
  - Loss of mobility
  - Femoral acetabular impingement
Early Arthritis Technologies (cont.)

Regenexx Alternative Treatments

- Stem Cell Treatments
  - Adult stem cell extraction
  - Relocation to damaged area
  - “Natural” treatment

- Blood Platelet Treatments
  - Platelet rich plasma with lots of growth factors
  - Stimulates stem cells in damaged area
  - “Natural” treatment
Severe Arthritis Technologies

- VeriLast Hip Implants
  - Oxinium oxidized zirconium
  - XLPE plastic insert
- MAKOplasty
  - Very precise hip implant
  - 3D modeled for each patient
  - Mostly robotic procedure
    - Reduced likelihood of hip-dislocation

https://youtu.be/XHfNBynsIsU
Femoral Head Fracture

- Relatively uncommon

- 6-16% of posterior hip dislocations are associated with femoral head fractures

- Injury occurs among 2 populations

(1) Athletes → typically high energy trauma
(2) Elderly people with osteoporosis → typically stress fractures

- Often a devastating injury
Common Treatments

- Physical Therapy
- Medications
Treatment: Physical Therapy

- Low impact exercises, stretching, swimming
- To strengthen hip and relieve pain
- Stretching muscles and tendons around the joint help ease pain and reduce risk of injury in hip
EVERYONE STAND UP!!
Treatment: Medications

- Help ease pain, reduce inflammation, slow bone loss, modify the course of inflammatory disease, or prevent joint damage
## Treatment: Types of Medications

<table>
<thead>
<tr>
<th>Type</th>
<th>Help with Pain</th>
<th>Reduce Inflammation</th>
<th>Additional Information</th>
</tr>
</thead>
<tbody>
<tr>
<td>Nonsteroidal anti-inflammatory drugs (NSAIDS)</td>
<td>Yes</td>
<td>Yes</td>
<td>- Mainly taken orally but sometimes topically - Primarily for arthritis</td>
</tr>
<tr>
<td>Corticosteroids</td>
<td>No</td>
<td>Yes</td>
<td>- Taken orally or injected at site</td>
</tr>
<tr>
<td>Analgesics</td>
<td>Yes</td>
<td>No</td>
<td>- For arthritis without inflammation</td>
</tr>
<tr>
<td>Disease modifying anti-rheumatic drugs (DMARDs)</td>
<td>Yes</td>
<td>Yes</td>
<td>- Slow the progression of joint damage from rheumatoid arthritis.</td>
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<tr>
<td>Gout Medications</td>
<td>Yes</td>
<td>Yes</td>
<td>Reduce levels of uric acid in blood to prevent future attacks of joint pain</td>
</tr>
<tr>
<td>Biologic response modifiers</td>
<td>No</td>
<td>Yes</td>
<td>Block a step in the inflammation process without suppressing the entire immune system</td>
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<tr>
<td>Osteoporosis medications</td>
<td>No</td>
<td>No</td>
<td>Slow the loss of bone and help the body build new ones</td>
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Learning Outcomes

- Understanding of basic anatomy of the hip
- Able to identify common diseases and injuries to the hip
- Understanding of treatments and technologies to manage hip pain