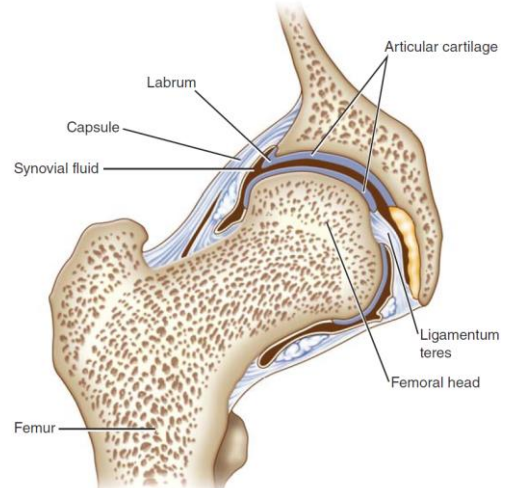


Patient's Guide to the Hip

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Hip joint anatomy

- ball and socket joint
 - acetabulum (cup or socket)
 - femoral head (ball)
- ball rotates within the socket with hip motion
- smooth articular cartilage lines surface of joint to absorb shock and allow frictionless motion
- labrum (lip) creates a seal around the femoral head and facilitates joint motion and lubrication
- thick fibrous joint capsule surrounds and stabilizes joint
- potential for variability in hip anatomy among different patients



Hip joint function

- hip connects the leg to the body
- all lower extremity motion (standing, walking, jumping, and running) initiated from the hip joint
- 24 muscles cross the hip joint
 - power hip motion and stabilize pelvis
- forces at the hip joint up to 4 times body weight with routine activities (running, stair-climbing)
- contributes to the alignment of the leg and spine



Normal Pelvic Mechanics

Hip joint dysfunction

- hip may be injured with direct or indirect impact, forceful pivoting, or overuse
- hip is at risk during certain activities (sports, running, weight-training, squats, prolonged deep hip flexion, etc.)
- variations in hip joint shape may predispose the hip to injury
- injury to the hip joint or hip pain may disrupt pelvic balance and lead to secondary problems (muscles strains, tendinitis/bursitis, low back pain, knee pain, etc.)
- cumulative damage to the hip joint may lead to cartilage damage, labral tears, and arthritis

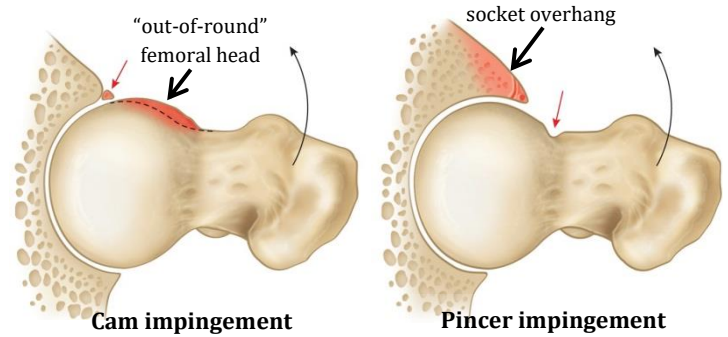


Abnormal Pelvic Mechanics

Hip joint injuries and conditions

- **femoroacetabular impingement (FAI)**

- mismatch between the ball and socket that causes abnormal contact during hip motion
- repetitive contact may lead to labral and cartilage damage
- reduced hip motion / stiffness
- alters biomechanics of the hip joint and pelvis



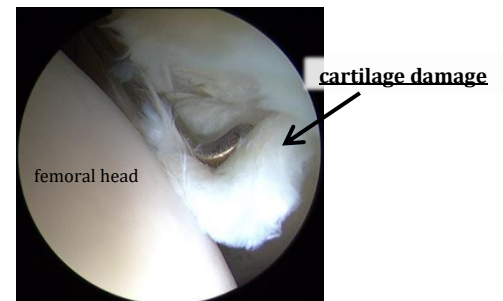
- **labral tear**

- injury to the fibrocartilage lip that lines the rim of the hip socket
- frequently caused by impingement or acute or repetitive trauma
- groin pain and catching worsened with deep hip flexion and pivoting



- **cartilage damage**

- may be an acute injury or the result of repetitive stress
- associated with cam impingement
- cartilage has limited ability to heal
- injury may be focal (like a pot-hole) or diffuse (osteoarthritis)
- symptoms may include deep groin pain and aching, catching, pain at night



Arthroscopic photo of hip joint

- **dysplasia**

- shallow hip sockets from abnormal development during childhood
- abnormally large labrum prone to tearing
- progressive damage from high local contact forces between ball and socket
- shallow socket may prohibit arthroscopy
- osteotomy for severe cases



Bilateral hip dysplasia

- **osteoarthritis**

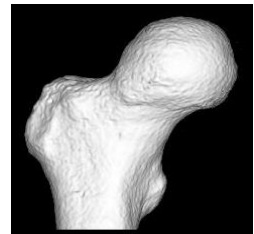
- diffuse degenerative cartilage damage
- “wear and tear”
- hip replacement for moderate to severe cases

Diagnosis

- patient **history and physical examination** help to identify the hip joint as the source of pain
 - history of an injury or activity that stresses or may cause injury to the hip joint
 - pain localized to the groin and lateral hip
 - pain with deep flexion, twisting, and/or pivoting
 - secondary conditions such as bursitis or tendinitis may coexist and obscure the clinical picture
- **X-ray** provides 2-D view of the pelvis and hip joint
 - shows bony anatomy and identify abnormal shape and structure
 - best tool to document arthritis
 - does not show soft tissue (labrum, cartilage, etc.)
- **CT** is a 3-D view of the pelvis and hip joint
 - outstanding depiction of bony structure
 - best tool to characterize abnormal anatomy
 - may be reformatted to create a 3-D image
 - does not clearly show soft tissue structures
- **MRI** is a 3-D view of the pelvis and hip joint as well as the associated soft tissue structures
 - outstanding depiction of the soft tissue (muscles, tendons, labrum, cartilage, etc.)
 - best tool to characterize labral and cartilage injury
 - injection of contrast (MRA) may help to show structures inside the joint
 - does not clearly show bony structure
- Intraarticular **injection** helps to localize the hip joint as the source of pain
 - local anesthetic used to numb pain fibers within the joint
 - x-ray or ultrasound required to verify that the injection is in the joint
 - pain from labral tears, cartilage damage, and impingement are eliminated by anesthetic
 - pain emanating from outside the hip joint will persist
 - cortisone may be used to decrease inflammation



XR



CT



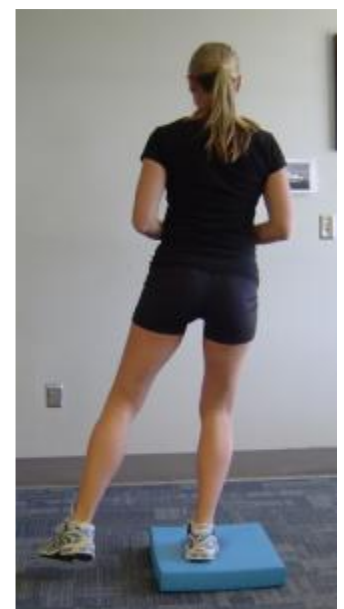
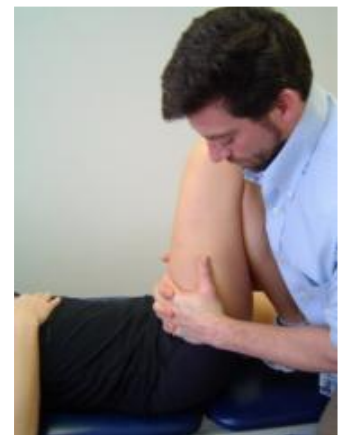
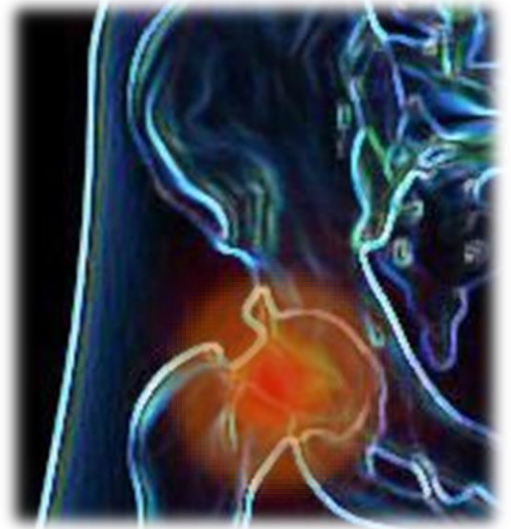
MRA



U/S

Management

- most hip joint problems respond to **conservative treatment**
 - labral and cartilage damage have limited ability to heal *but can become asymptomatic with appropriate management*
- **rest and activity modification** fundamental to conservative treatment
 - rest decreases inflammation and promotes healing
 - eliminating the offending activity may be all that is necessary to eradicate symptoms
 - reduced stress on the hip joint may slow progression of damage
- **anti-inflammatory medications** (ibuprofen, naproxen, etc.) help to decrease inflammation
- **injection of cortisone** provides local anti-inflammatory therapy
 - cortisone may be injected into the joint or in the surrounding soft tissue depending upon symptoms
- goal is to decrease pain and inflammation from within joint so that pelvic mechanics, gait, and hip function can be normalized
- **physical therapy** fundamental to management of hip injuries and conditions
 - functional assessment of strength deficiencies
 - identify and address associated secondary conditions
 - emphasize restoration of symmetrical strength and range of motion
 - manual therapy to mobilize the joint and surrounding muscles
 - anti-inflammatory modalities such as cryotherapy, ultrasound or iontophoresis help to decrease inflammation (bursitis, tendinitis, etc.)
 - optimize pelvic biomechanics to restore balance and normalize gait
 - often required pre-operatively to address weakness or inflammation
- **surgery** is reserved for patients who have a clear mechanical or structural cause of hip pain refractory to non-operative treatment



Hip arthroscopy

- **minimally invasive** surgical treatment of injuries and conditions of the hip joint
- requires **traction** to separate the ball from the socket
- small video camera inserted into joint to visualize damage and guide repair
- specialized instruments used to diagnose and repair damage
- **conditions** amenable to arthroscopic intervention include:
 - femoroacetabular impingement (FAI)
 - labral tears
 - cartilage damage
 - loose bodies
 - ligamentum teres injury
 - snapping hip
 - capsular laxity
 - synovitis
- **contraindications** to arthroscopy include:
 - advanced arthritis
 - avascular necrosis
 - hip dysplasia
 - severe deformities
- **recovery**
 - outpatient procedure - go home same day
 - physical therapy starting immediately after surgery until about 3 to 4 months post-operatively
 - crutches and partial weight-bearing for 4 to 8 weeks
 - return to most activities by 4 to 6 months
- **complications** are uncommon, but potential risks include:
 - nerve injury from portal placement
 - nerve stretching or compression from traction
 - abnormal bone formation in the soft tissues
 - inadequate or excessive bony correction
 - continued hip pain or reinjury
 - blood clot or infection

