Patient’s Guide to the Hip
F. Winston Gwathmey, MD
University of Virginia Sports Medicine
(434) 243-7778

**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

**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

more info on the web: [http://orthoinfo.aaos.org/menus/hip.cfm](http://orthoinfo.aaos.org/menus/hip.cfm)
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

- **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

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

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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

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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

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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

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