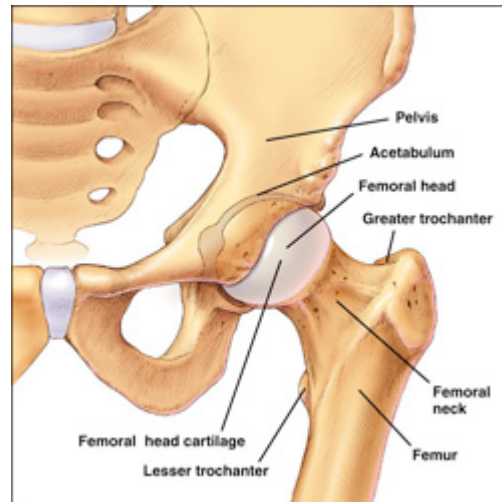


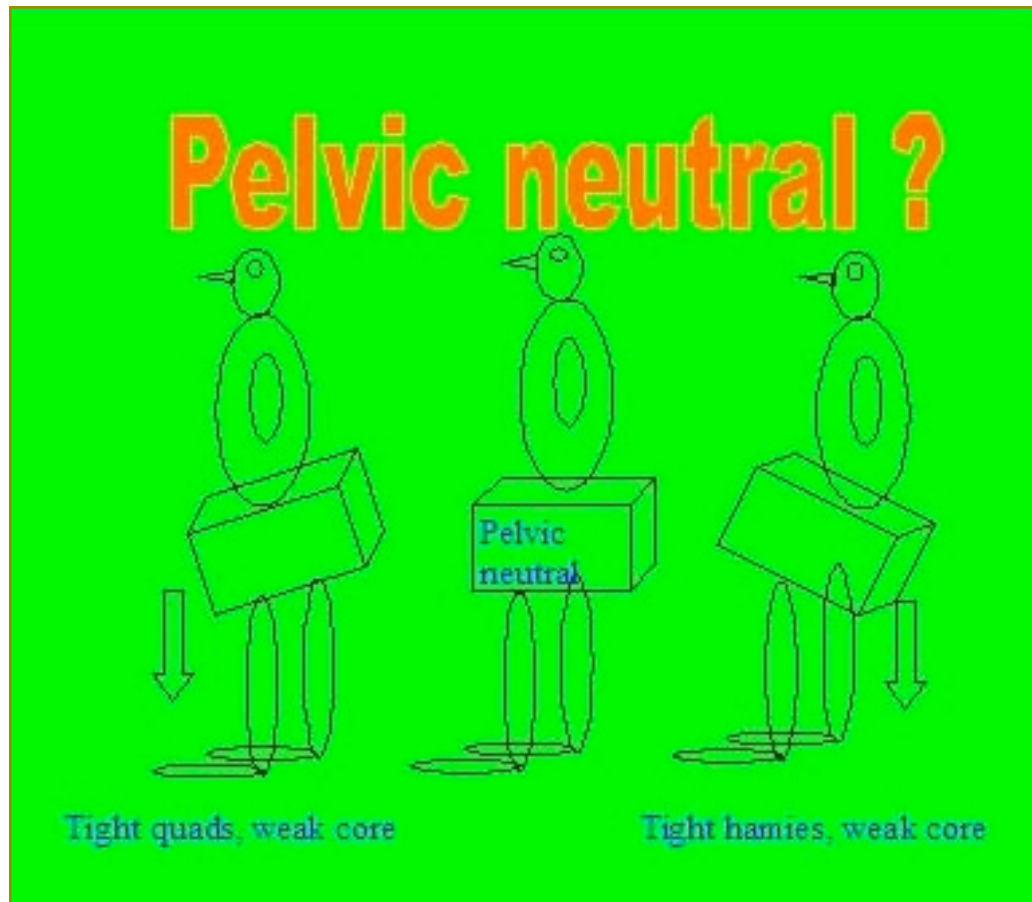
The Hip Joint

Exercises and Injuries

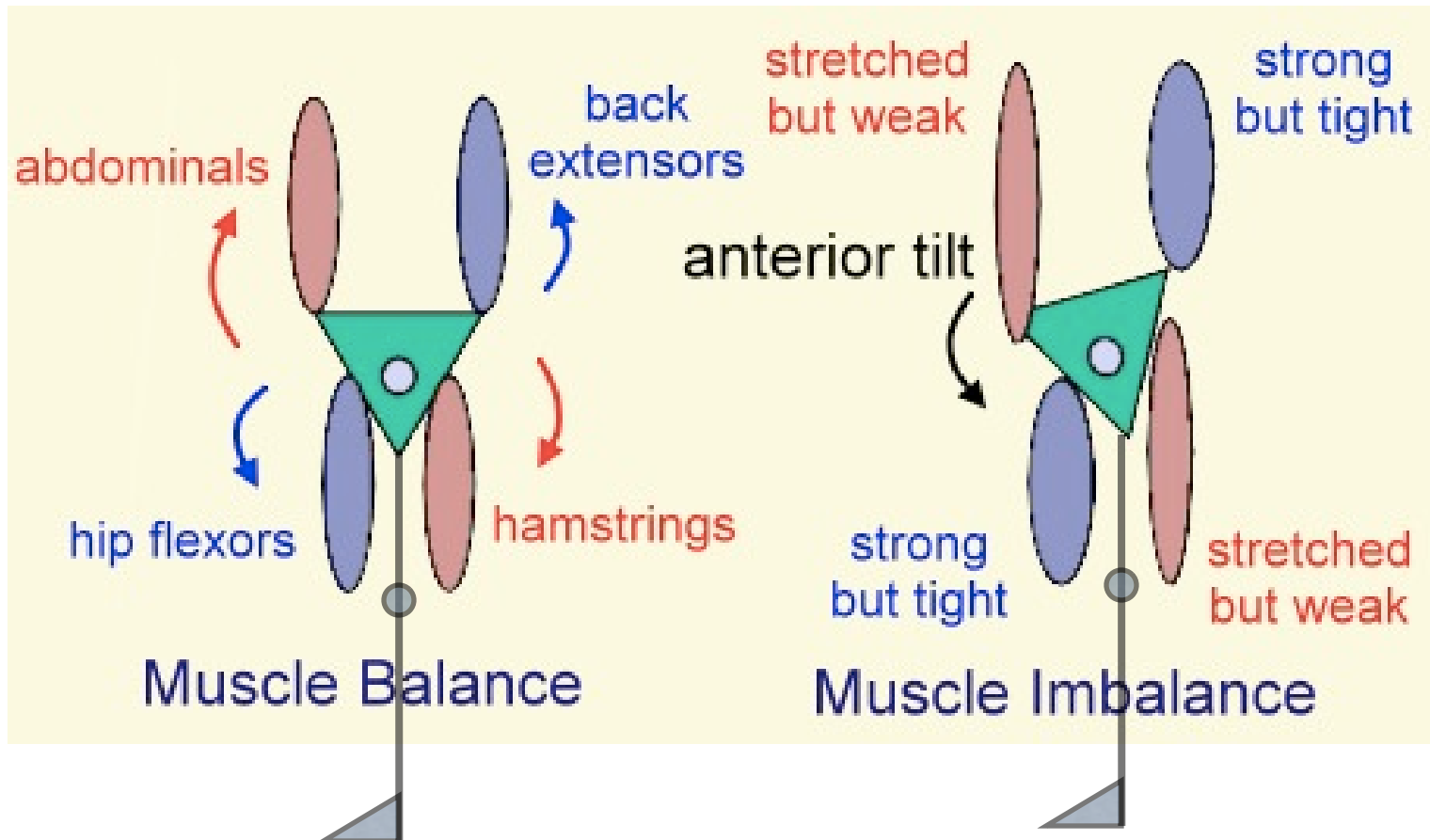


Anterior Pelvic Tilt

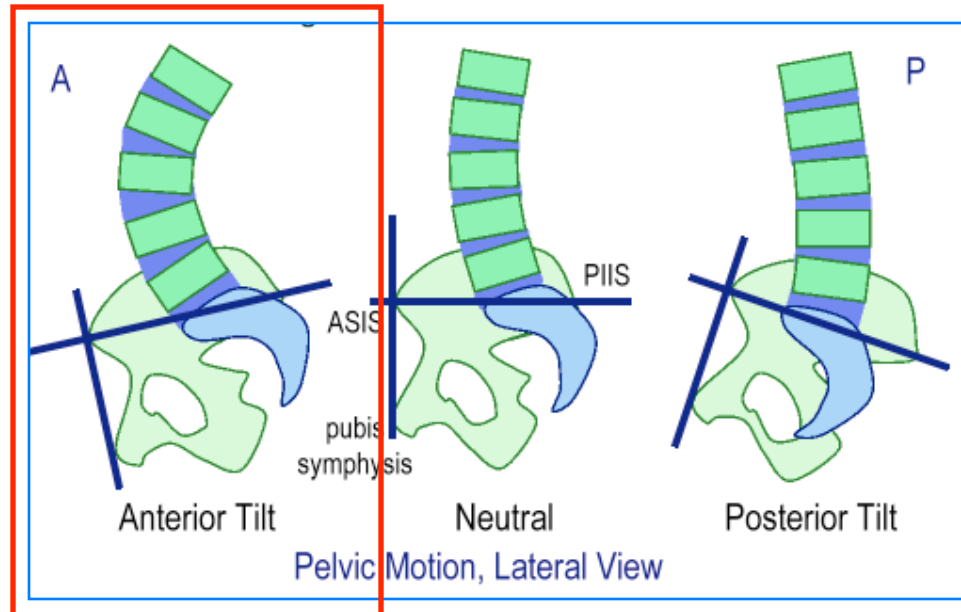
- How would weak hamstrings, and tight hip flexor muscles affect the lower back?



Anterior Tilt

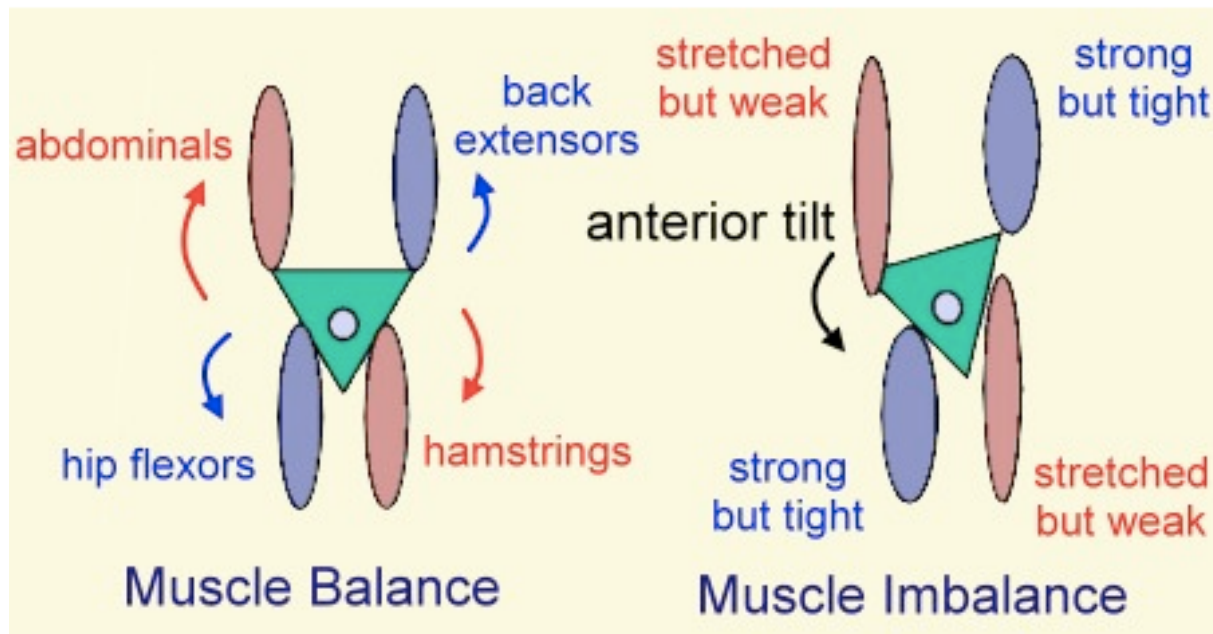


Anterior Tilt



Anterior Tilt

- How can excessive anterior tilt be corrected?

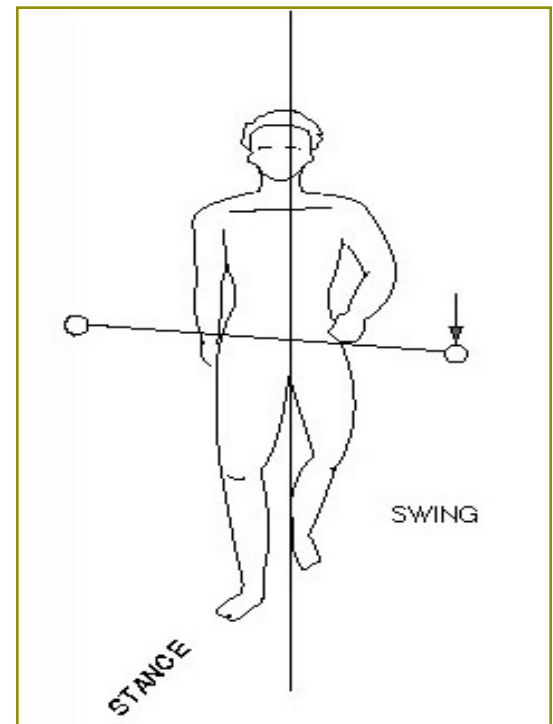
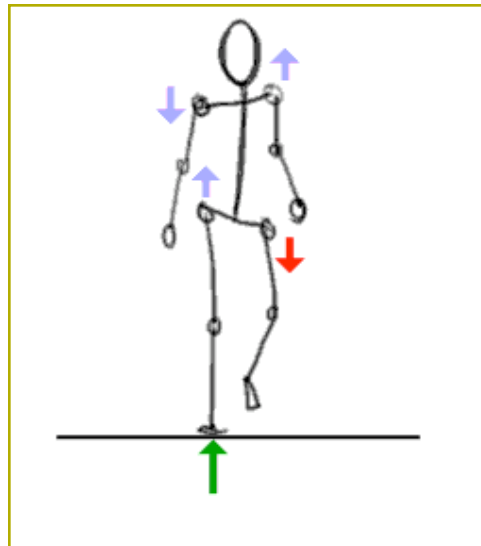


Anterior Tilt

Direction	Injuries	Cures
Anterior Tilt	1.) low back pain 2.) hamstring strain 3.) knee problems	A) Strengthen abdominal muscles and hamstrings B) Stretching hip flexors (and erector spinae)

Lateral Pelvic Tilt

- During walking the gluteus medius and minimus abduct (or hold up) the free leg, preventing it from sagging.
- Both are important in transferring weight from one leg to the other (e.g. running, hopping, skipping, etc.)
- Their effectiveness decreases with age.



Lateral Tilt

Direction	Injuries	Cures
Lateral Tilt	1.) iliotibial band syndrome 2.) low back pain -- usually one sided 3.) adductor strains 4.) lateral hip pain	A. Stretching hip adductors, B. Strengthen hip abductors

Exercises for the Hip Joint

Terminology

- **Compound**
 - An exercise that involves two or more joint movements.
- **Isolated**
 - An exercise that involves just one discernible joint movement.

Terminology

Closed Chain

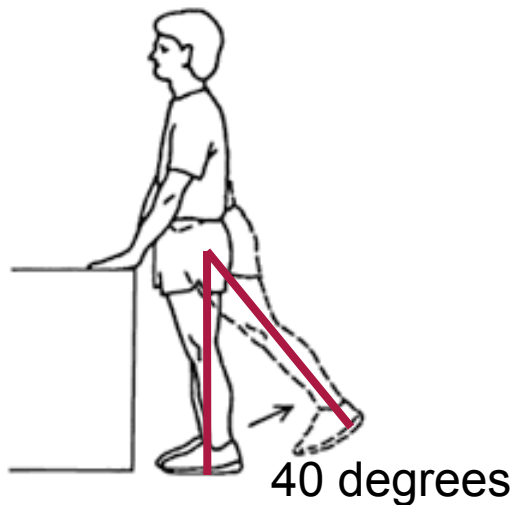
An exercise when the distal end of an extremity is fixed to any surface

Open Chain

An exercise when the distal end of an extremity is not fixed to any surface

Gluteus Maximus

- Produces hip extension beyond 15 degrees; not used extensively during walking
- Strongly used during running, hopping, skipping, and jumping
- Best isolated with the knee flexed to reduce hip extension from the hamstrings



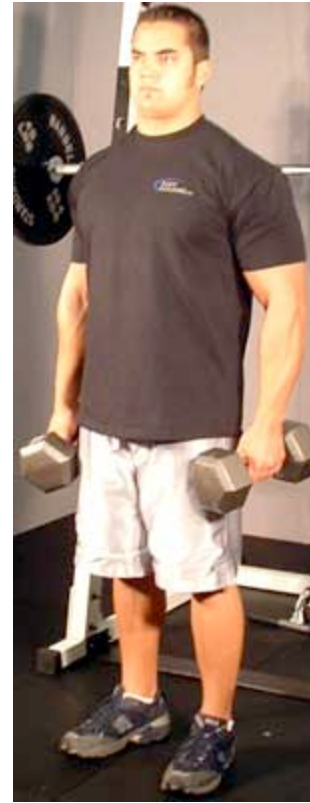
Hip Extensors – Squats



Hip Extensors – Dead Lift



Hip Extensors – Lunge



Hip Extensors – Step Up



Hip Extensors – Leg Press



Hip Extension

	Compound/Isolated	Open/Closed
Squats	C	C
Deadlift	C	C
Lunge	C	O
Step up	C	O
Leg Press	C	O

Hip Adductor Muscles

- Not heavily used in ordinary movements
- Horse back riding, the breaststroke kick in swimming



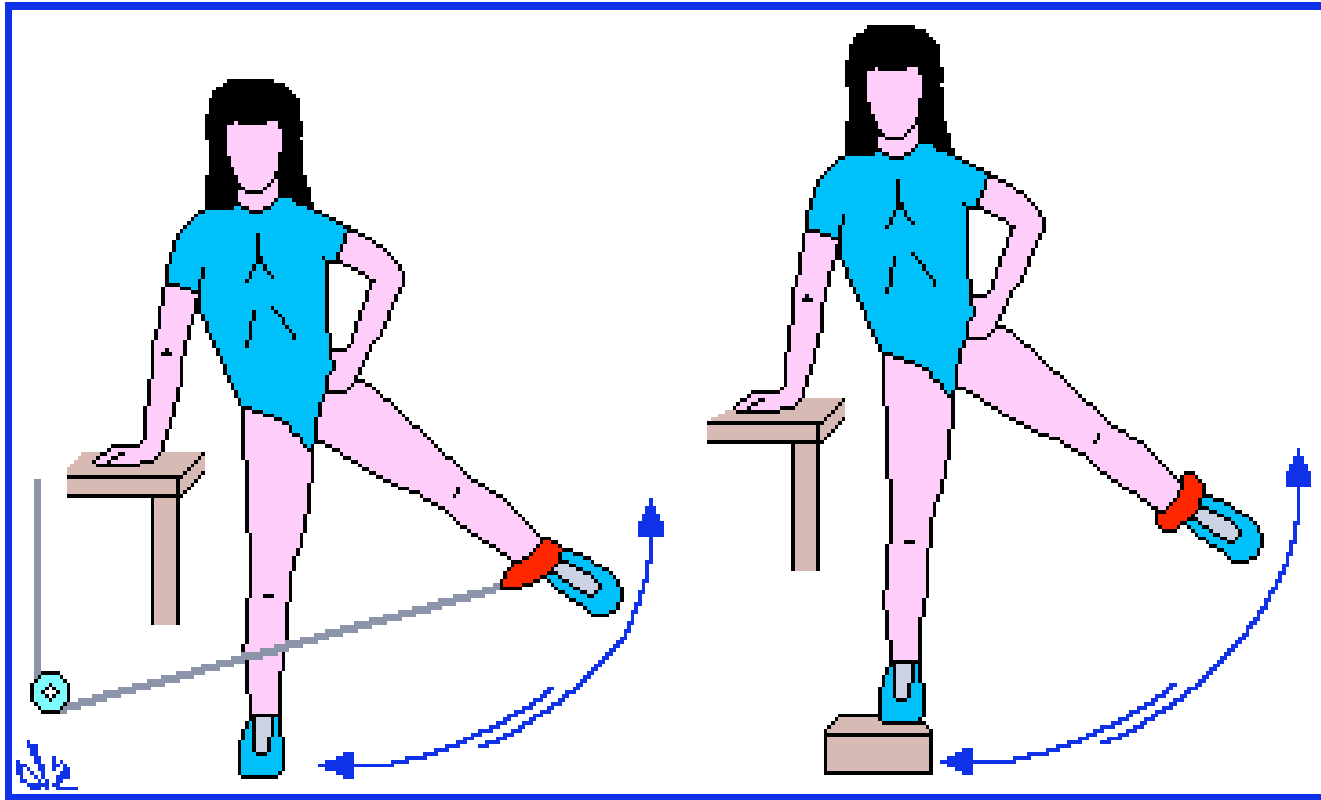
Hip Adductors – Seated



Hip Adductors – Lever



Hip Abductors – Cable



Hip Abductors – Seated



Hip Abductors – Lever



Hip Abductors/ Adductors

	Compound/Isolated	Open/Closed
Cable	I	○
Seated	I	○
Lever	I	○

Hip Flexors – Leg Raise



Hip Flexors – Lever



Iliopsoas

- Strong hip flexor muscle
- Raises legs off the floor from the supine position.
- Pulls anteriorly on the lower lumbar vertebrae
- May aggravate lower back problems
- Strong abdominal muscles can prevent lumbar strain
- Used during complete sit-ups and straight leg sit-ups.
- Stretching this muscle requires hyper-extension of the hip.



Hip Flexors

	Compound/Isolated	Open/Closed
Leg Raise	I	○
Lever	I	○

Stretching

- Opposite action of the muscle
- For example, to stretch a hip extensor muscle, perform hip flexion.

Gluteal Muscles - Stretching



Abductors - Stretching



Hip Flexors - Stretching



Tensor Fasciae Latae

- Prevents external rotation at the hip is flexed

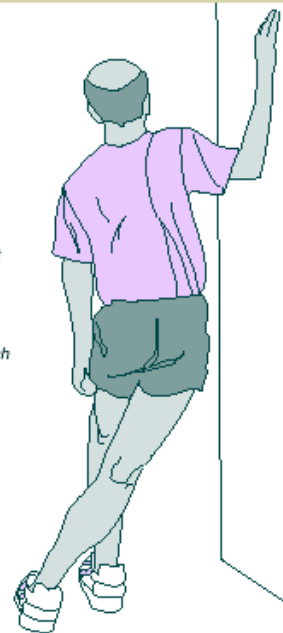


Strengthening

Iliotibial Band Stretch

This exercise helps prevent IT band syndrome.

1. Position yourself as shown, with your right hand and forearm on the wall while keeping your arm straight.
2. Move your right foot back and so that it crosses behind the left leg.
3. Slowly lean into the wall and feel the stretch in your right iliotibial band and your calves. Hold for 30 seconds.
4. Switch to other side and repeat.



Stretching



Abductors (IT Band) - Stretching



HIP INJURIES



Hip Pointer

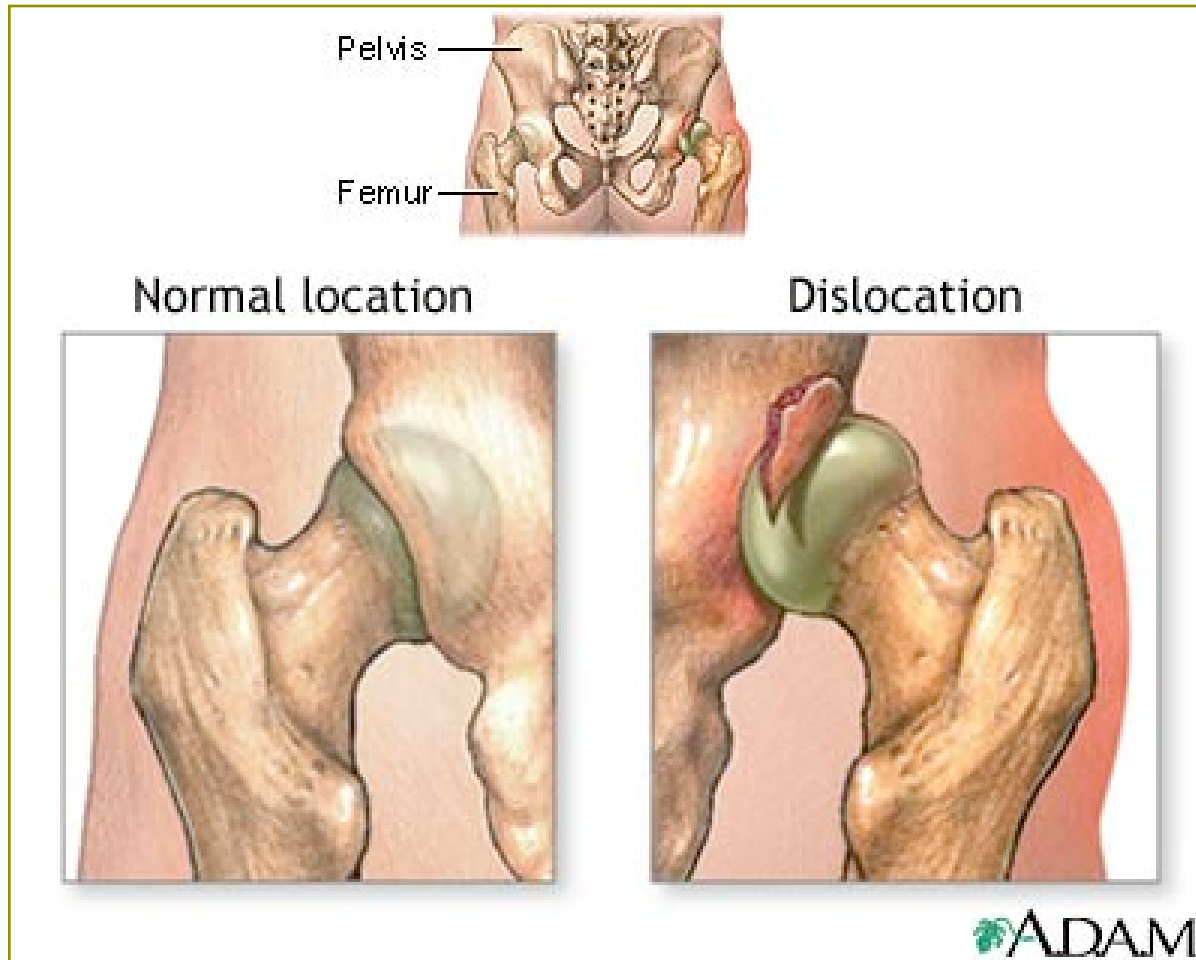


HIP POINTER



- A hip pointer is a contusion to the iliac crest, the surrounding soft tissue structures, or the greater trochanter of the femur.
- Typically, the injury is caused by a direct blow or fall.

HIP DISLOCATION



Dislocation

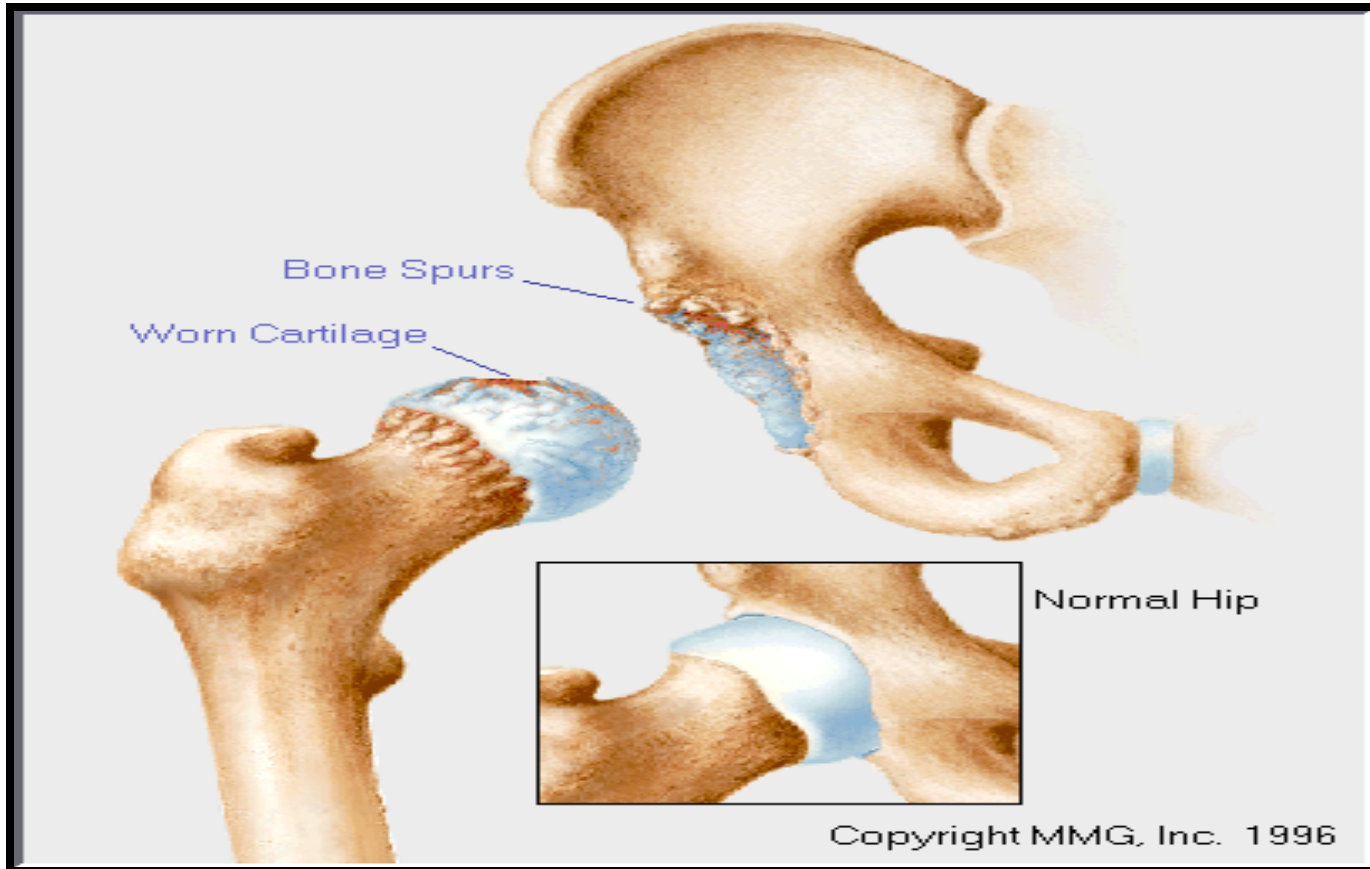
- Any traumatic hip dislocation requires immediate treatment, ideally within six hours or less.
- This is because a traumatic hip dislocation interrupts the normal blood circulation to the top of the femur, depriving the bone of its vital oxygen supply.
- Unless the dislocated hip is reduced (replaced in its socket) promptly, and normal circulation is restored within the hip joint, there can be permanent damage to the head of the femur. This permanent damage is called **avascular necrosis**.

Dislocation

- January 13, 1991, Bo Jackson partially dislocated his hip, tearing the blood vessels to the neck and head of the femur.
- X-rays revealed a small fracture to the posterior of the hip socket.
- Four weeks later, scans of the joint showed the beginning of vascular necrosis, in which the bone cells die because of deficient blood supply, and chondrolysis, in which cartilage degenerates.
- Eventually Jackson would require a total hip replacement which relieves him of pain and allows him full range of motion.



HIP REPLACEMENT SURGERY

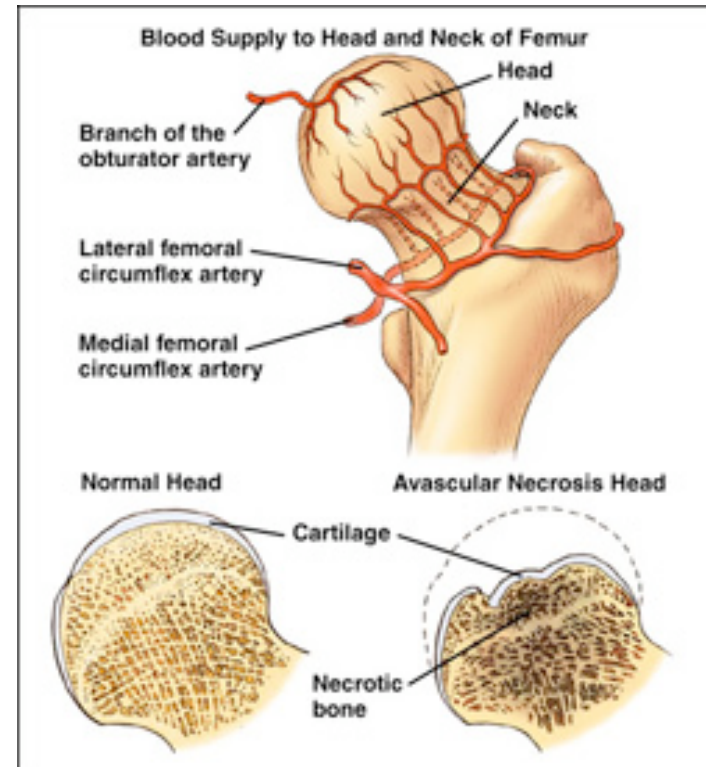


Causes

1. Osteoarthritis is perhaps the most common cause for hip replacement surgery.

2. Avascular necrosis is another cause of degeneration of the hip joint.

3. Abnormalities of hip joint function resulting from fractures of the hip and some types of hip conditions that appear in childhood can also lead to degeneration many years after an injury.

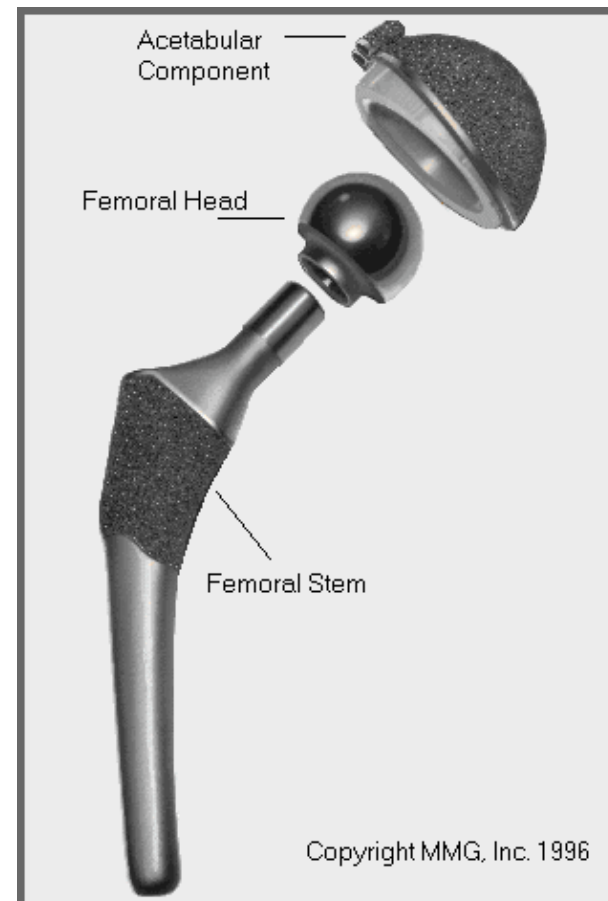


Surgery - FYI



Parts

- Acetabular component – metal shell with plastic inner socket
- Femoral component – metal stem with a metal or ceramic head

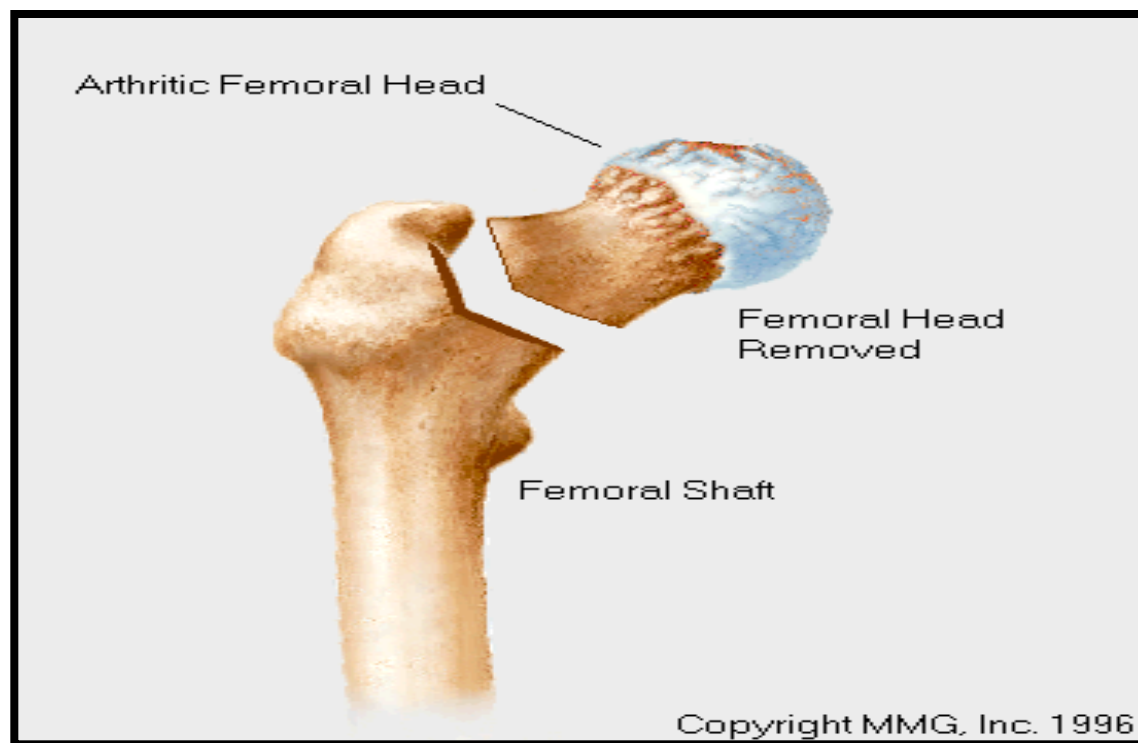


Operation



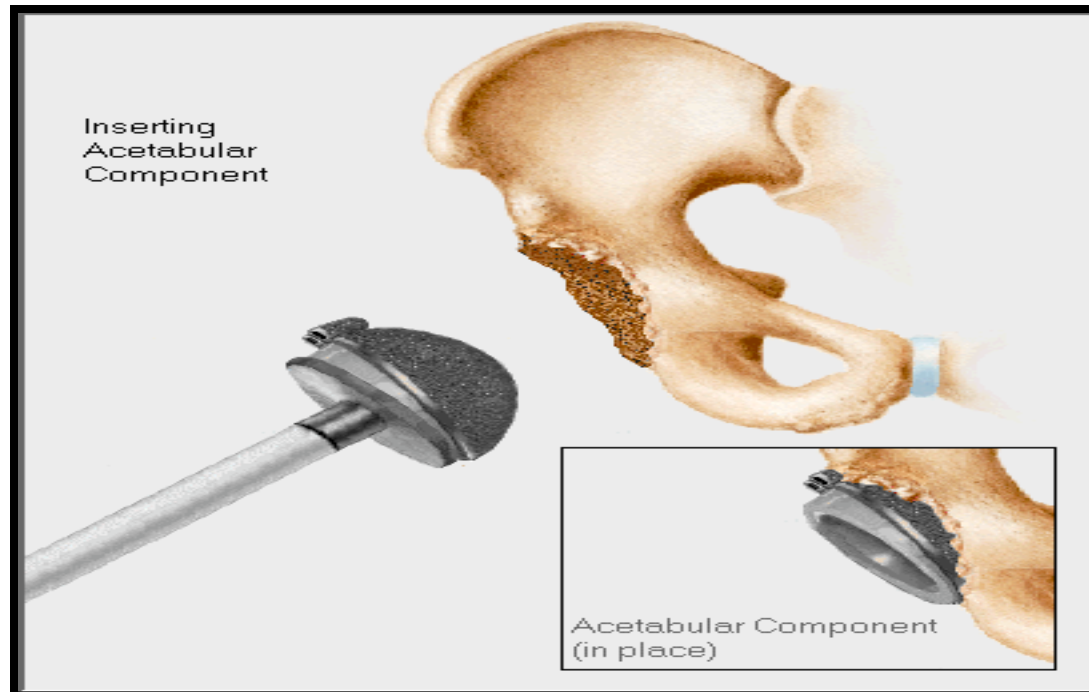
Removing the femoral head

- Dislocate the hip joint
- Cut femoral neck with power saw

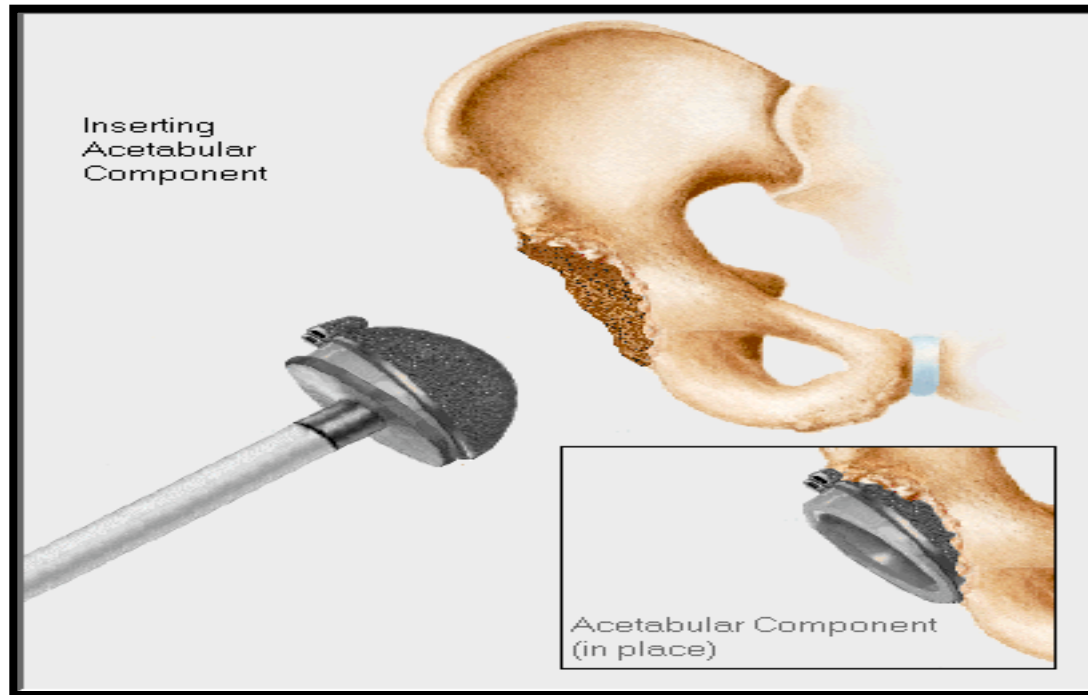


Reaming the Acetabulum

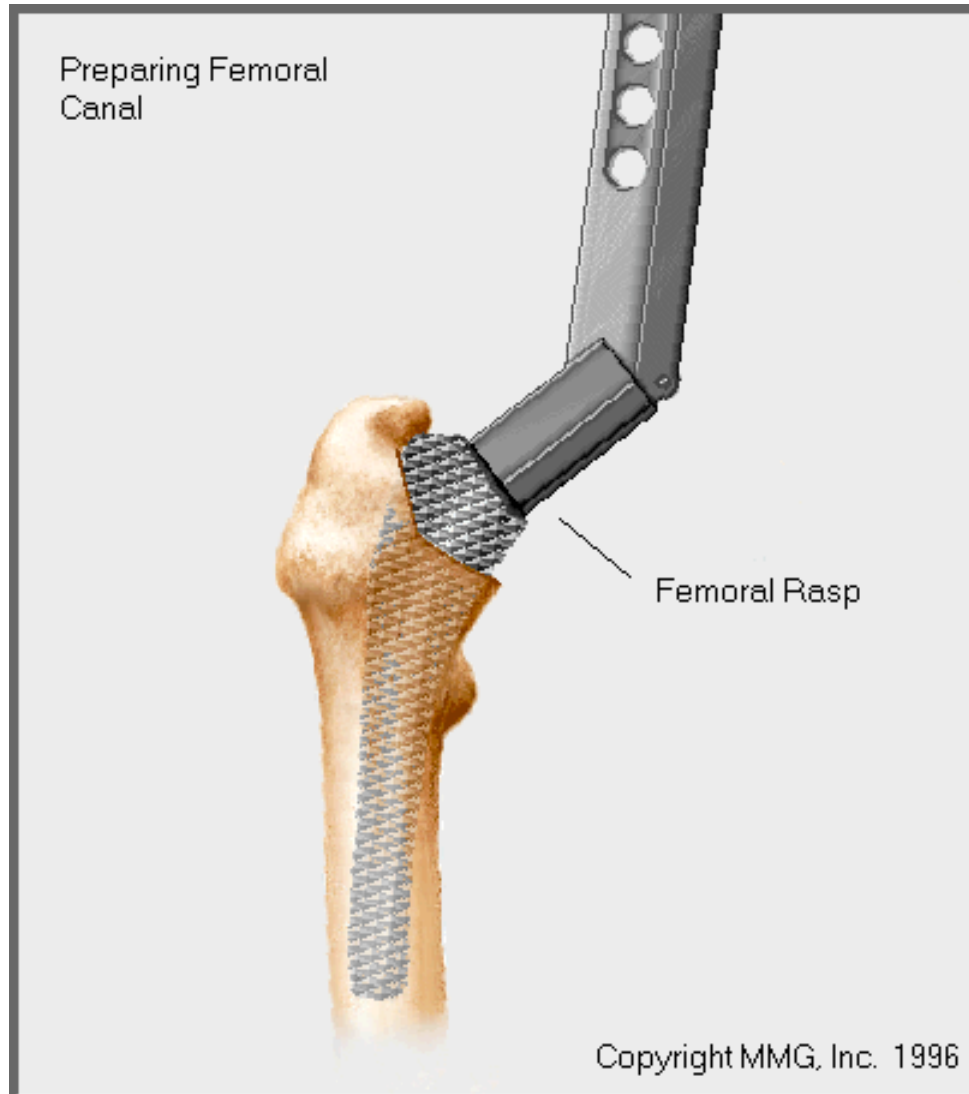
- Power drill and special reamer remove the cartilage
- Bone is formed to fit the metal shell



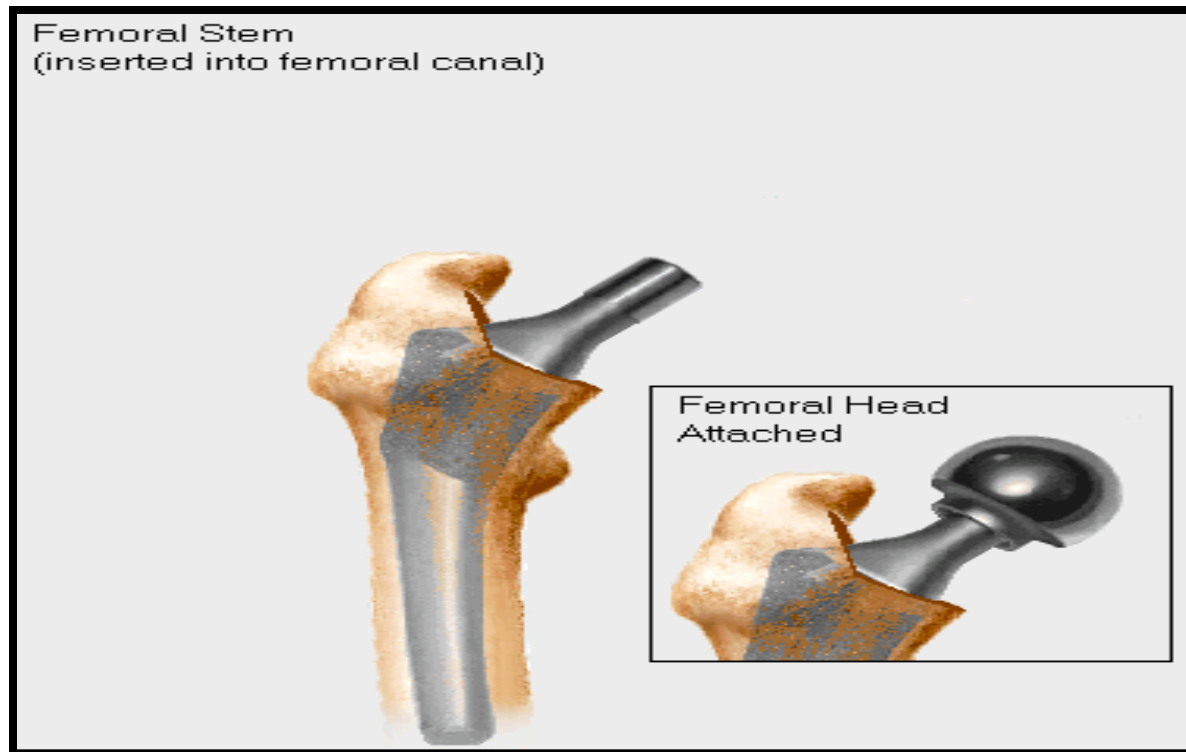
Inserting the Acetabular Component



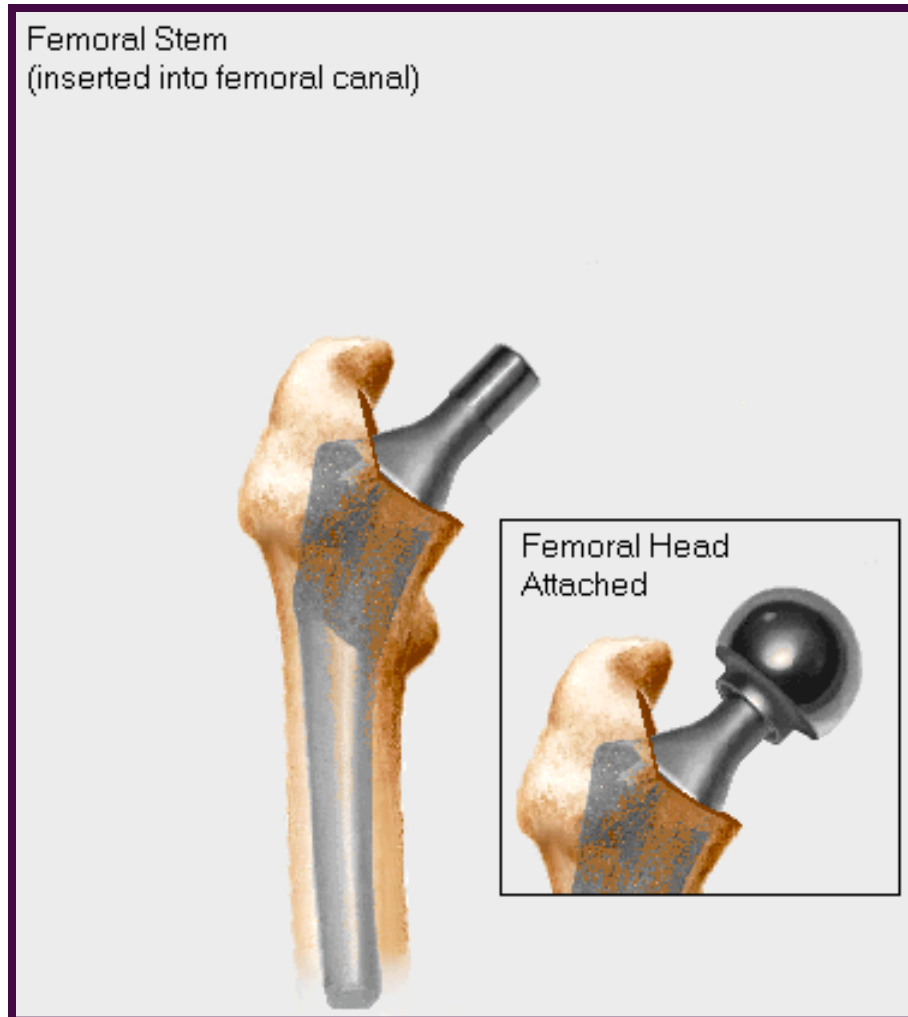
Preparing Femoral Canal



Inserting the Femoral Stem



Attaching the Femoral Head



Completed

