



Current Concepts in Hip Replacement

Tuesday, March 28



CCFMG
Central California Faculty Medical Group

University | Centers of Excellence

In affiliation with UCSF Fresno

Welcome

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Speaker

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Osteoarthritis of the Hip and Associated Conditions

Arbi Nazarian, MD

The HIP and KNEE Center at UOA

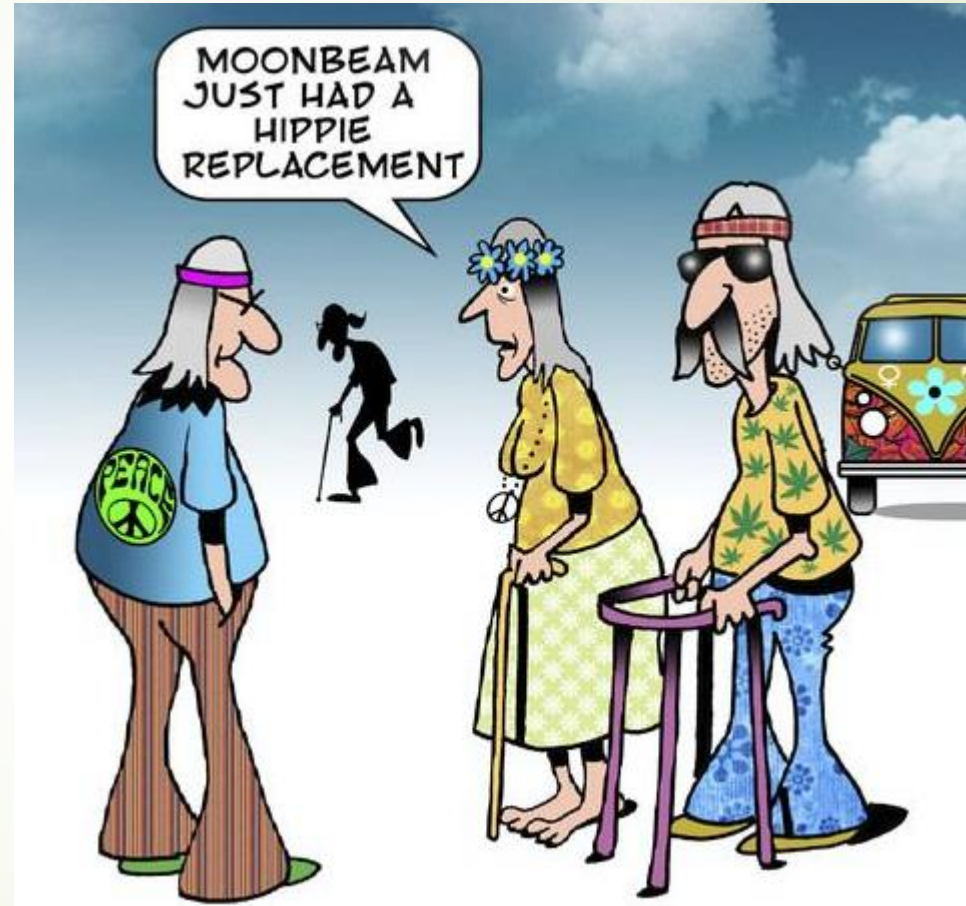
Objectives

- Identify who needs referral
- What imaging studies should I order?
- What work up is relevant?
- What can I do before I refer them out?
- What are the associated conditions?



Objectives

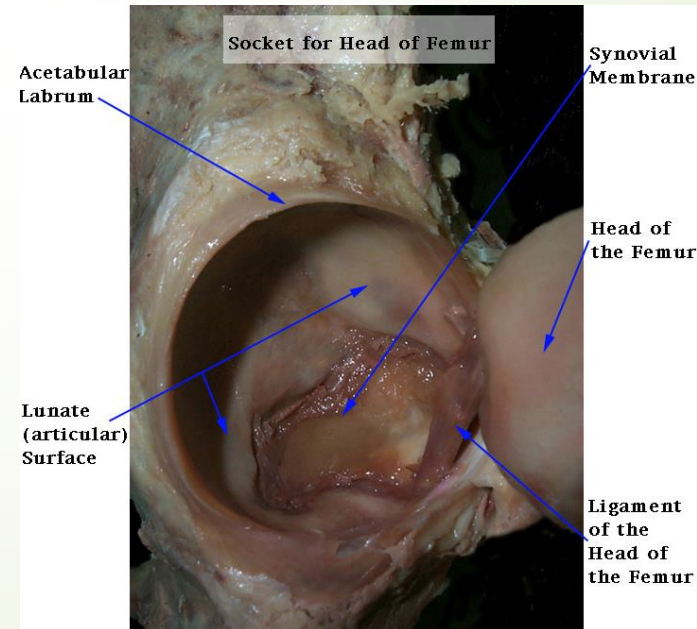
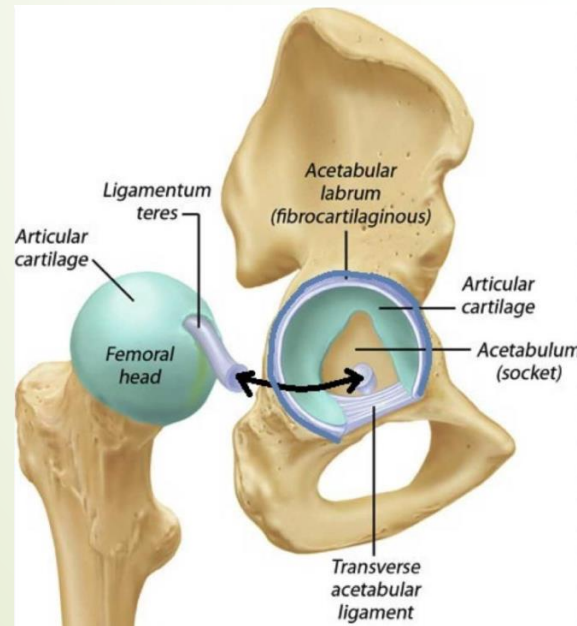
- Introduction
- History
- Anatomy
- Indications
- Contraindications
- Implants
- Techniques
- Case reviews





Anatomy: Description of Structures

- Ball and Socket type diarthrodial joint
- Comprised of the femoral head and acetabulum
- Stability conferred by bony architecture augmented by labrum and capsule





Epidemiology and Pathogenesis

- Arthritis technically refers to the inflammation of the joint
- However, not all arthritis is due to an inflammatory process
- Hip arthritis more accurately defined as a disease that leads to **loss or damage** of articular cartilage
- Non-inflammatory arthritis is degenerative in nature and caused by mechanical injury to the joint
- Inflammatory arthritis is caused by immunologically mediated process and often an auto-immune disorder



Osteoarthritis

- Gradual damage to the joint
- Typically caused by wear and tear related to aging
- Affects 10-15 million people in the US
- Prevalence increasing (doubled over a decade)
- Almost 1/3 of all people will develop painful hip arthritis over their lifetime
- This number increases to 2/3 in people who are obese




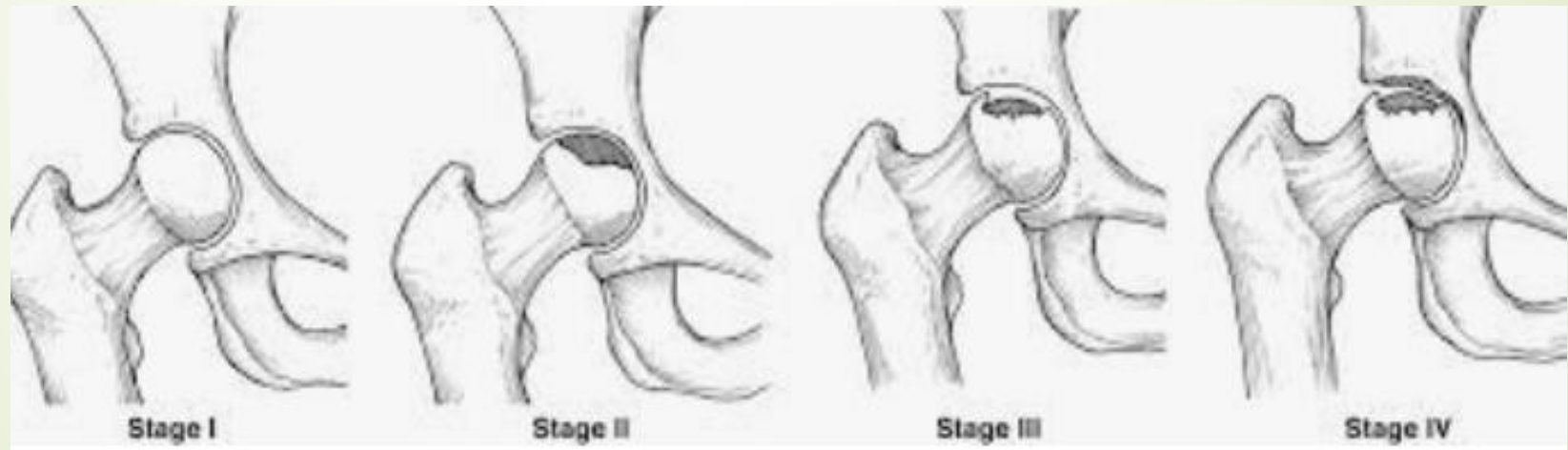
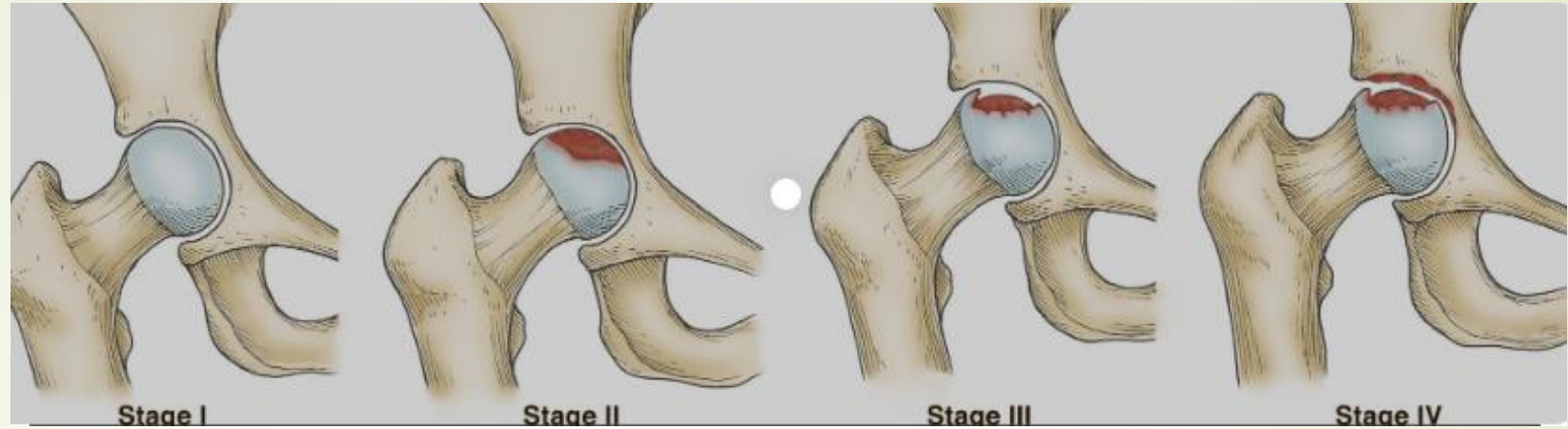
Primary vs Secondary OA

- Primary OA is thought to be largely due to “wear and tear” of cartilage that occurs with aging
- Secondary OA is damage to articular cartilage due to a specific etiology:
 - Trauma
 - Osteonecrosis
 - Obesity
 - Infection
 - Crystalline disease
 - Abnormal development



Risk Factors for Hip Arthritis

- Age
 - Excess weight – 3 times body weight goes through hip
 - Overuse – job, sports etc.
 - Gender – postmenopausal women
 - Structural or developmental abnormalities
 - Genetics
 - Other health conditions – DM, high cholesterol, Vitamin D deficiency
- 



Inflammatory Arthritis

- Systemic in nature
- Typically polyarticular
- Diagnosis challenging and management difficult
- Classically present with pain and swelling of one or multiple joints
- Can be triggered by minor illness, stress etc.
- Examples: RA, Psoriatic arthritis, SLE, Reiter's Syndrome



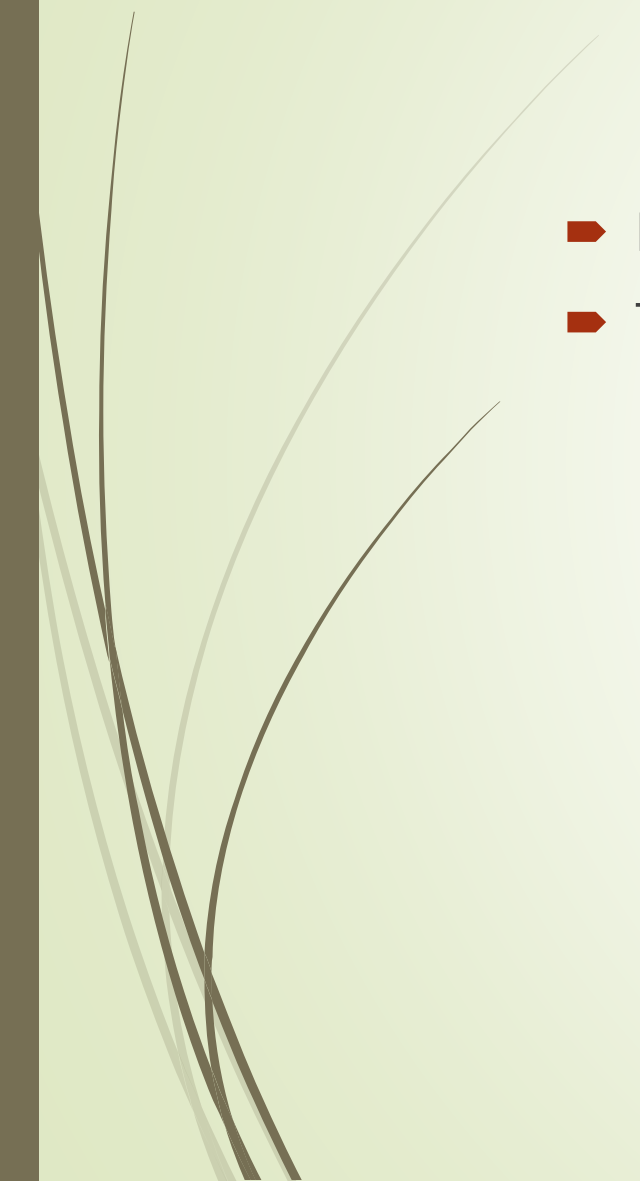


Nonsurgical Evaluation and Treatment of Hip OA

- When patients with Hip OA present to clinic initially, it is usually too early for surgical intervention (i.e. THA)
- Pain intensity may not be very severe; disease process may not be advanced; may be they're too young, or functional disability may not be that limiting
- Frequently patient are not in the "right frame of mind" for surgery
- Prosthetic joints have finite life span (minimize the chance for multiple revisions)
- Responsibility of the treating physician to offer suitable conservative options to bridge the gap before a THA.
- In some patients non-surgical options may be the only option



Goals

- Relieve pain and improve function
 - Treatment plan needs to consider several factors
 - Risk factors
 - Demographics
 - Level of pain and disability
 - Level of inflammation
 - Patient's desired level of functionality
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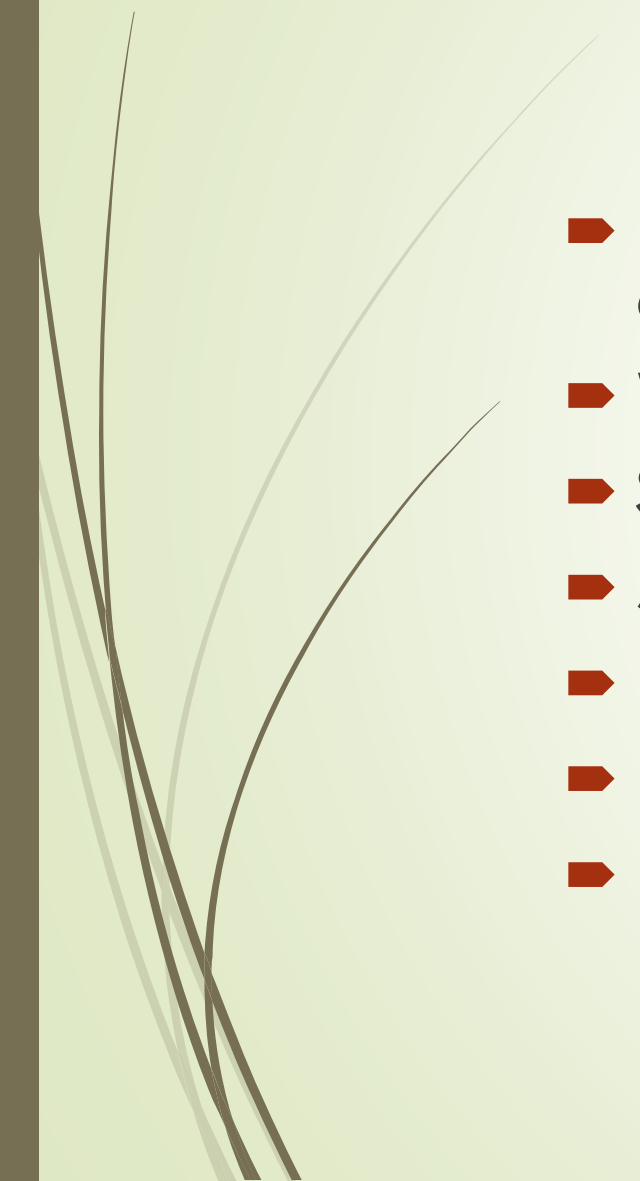


History

- Insidious onset of aching pain with gradual progression is typical
- Pain distribution may be localized or radiating
- Exacerbated by increased activity and weight bearing
- In early stages, pain usually improves with rest
- As OA progresses, may occur at rest or at night
- Many patients will note worsening pain with barometric pressure changes, esp cool, damp, rainy weather.
- Stiffness, crepitus, restricted ROM
- Stiffness with rest and inactivity (gelling phenomenon)

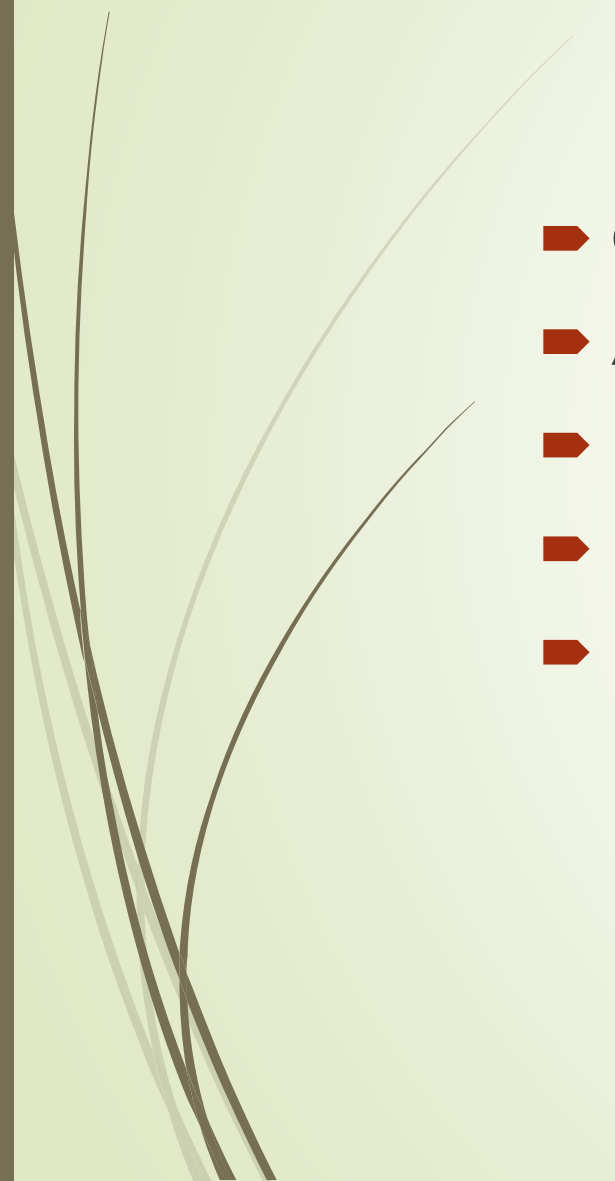


History Cont'd

- 
- Pain with prolonged sitting, squatting, kneeling, stair climbing
 - Walking on uneven ground
 - Soft tissue swelling
 - Joint effusion
 - Instability with buckling
 - Locking or catching
 - Deformity



Physical Exam

- Gait
 - Alignment
 - LLD
 - Bony enlargement
 - Palpation may yield pain
- 

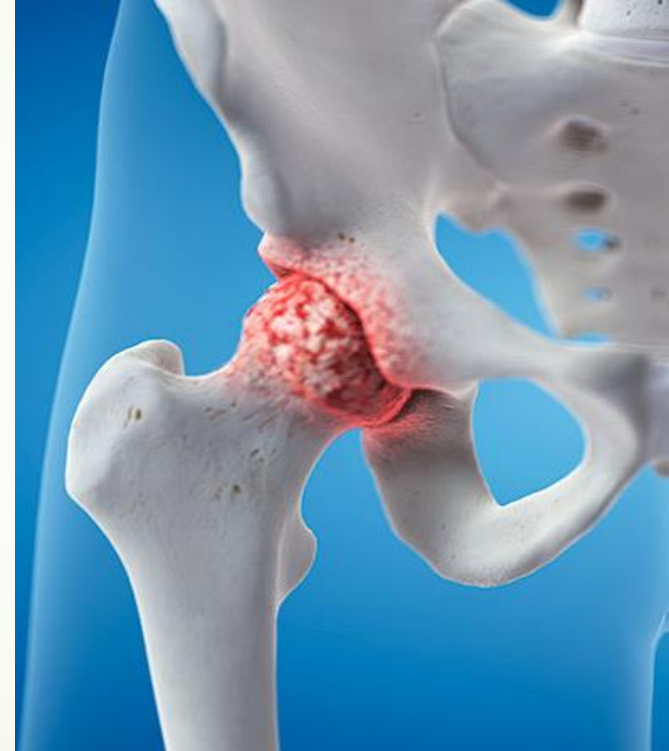


Radiographic Studies

- **AP**, lateral
- At least 50% of people older than 65 will demonstrate some evidence of Hip OA
- This number approaches 100% in people older than 75
- Interestingly, only 40-60% of these patients may be symptomatic
- Hence, why radiographic changes do not necessarily correlate with pain intensity, or vice versa

Common Features of Radiographs

- Joint space narrowing or obliteration
- Subchondral sclerosis
- Subchondral cysts
- Bone remodeling
- Osteophytes (bone spurs)
 - -> most sensitive finding
- Intra-articular loose bodies





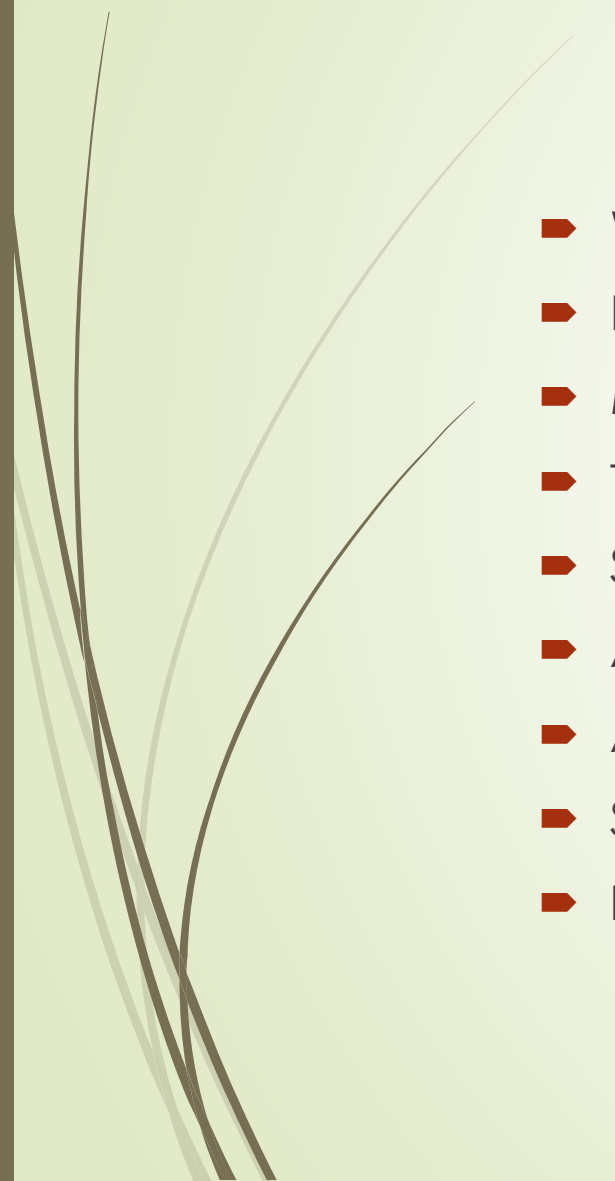
Specialized Studies

- MRI
- CT
- Bone scan

Only if diagnosis is still unclear!



Treatment - Conservative

- 
- Weight loss
 - Physical Therapy, Exercise, and Activity modification
 - Modalities (TENS, US)
 - Topicals
 - Supplements
 - Assistive Devices
 - Acupuncture
 - Systemic Medication
 - Injectable Options



Weight Loss

- Obese females most at risk
- Traditionally believed to be caused by increased weight/pressure on the joints
- However, many patients first notice OA in non-weight bearing joints
- May be related to their proinflammatory state caused by the adipose tissue
- Whatever the mechanism, weight loss has shown to help
- Low-impact aerobic exercise and appropriate nutrition
- Alternatively, may consider medications or even bariatric surgery

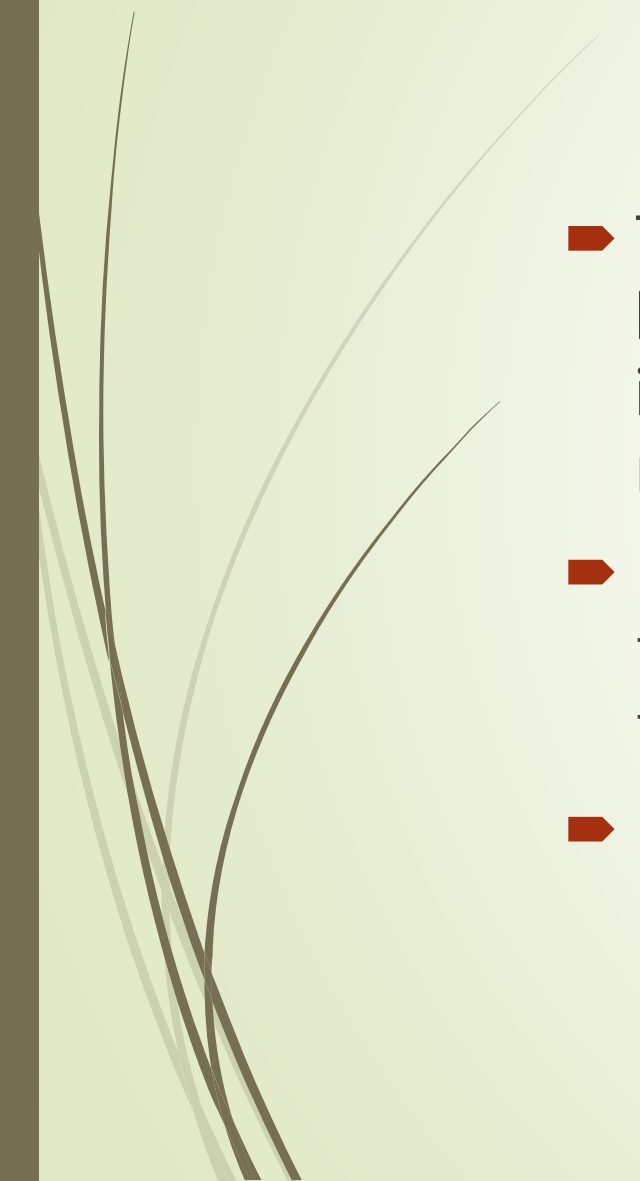


PT, Exercise and Activity Modification

- Principles of joint protection: proper body mechanics and posture, avoiding high-impact activities, supportive shoes, orthotics
- Physical therapy plays large role in teaching proper mechanics
- Exercise improves strength, proprioception, flexibility, as well as losing weight
- For instance: walking, aquatic therapy, cycling, yoga, Pilates, Tai Chi
- Effect of exercise on pain and function have been found equivalent to NSAIDs
- Although in severe OA PT/Exercise can exacerbate symptoms and be actually counterproductive



Modalities

- TENS is believed to affect pain sensation by stimulating larger fiber sensory afferent nerves to activate inhibitory interneurons that modulate transmission of nociceptive neurons
 - US is believed to produce high frequency sound waves that can produce thermal and nonthermal effects in the tissue with the goal of reducing inflammation
 - Results: inconclusive
- 



Topicals



- Ice, heating pads, massage, topical medications, CBD oil
- Topical NSAIDs are effective alternatives to their systemic counterparts and are less toxic
- Topical Capsaicin
 - active ingredient in hot peppers
 - works by downregulating substance P in local tissue
 - no side effects reports and it won't interact with any other medications
 - patients should be warned to use gloves when applying as it has a initial period of hypersensitivity before the substance P is downregulated



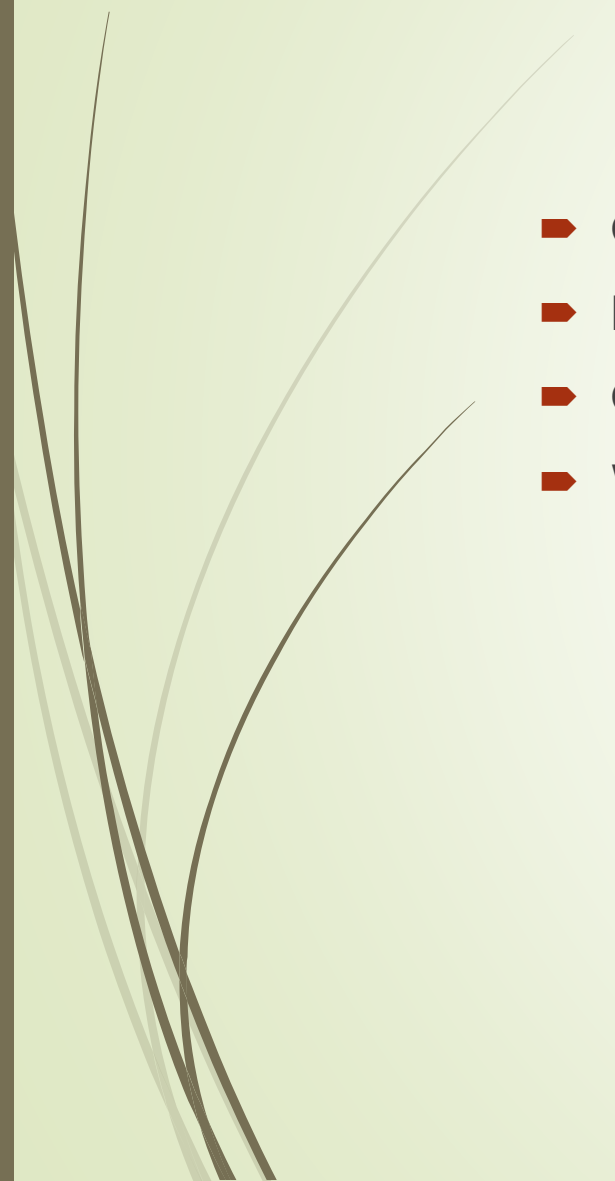
Supplements



- **Glucosamine and Chondroitin** – conflicting results in studies
- Cochrane review found only one glucosamine formulation (Rotta) that showed consistent benefits in studies
- Whether or not effective, it's apparent that patients think they're effective
- Recommended dose for Chondroitin is 1200 mg/day and Glucosamine 1500 mg/day
- Glucosamine should not be used in patients with seafood allergy and caution in diabetics due to increase in sugar levels
- **Fish oil** – limited data, shown to improve lipid profile, reduce production of proinflammatory cytokines

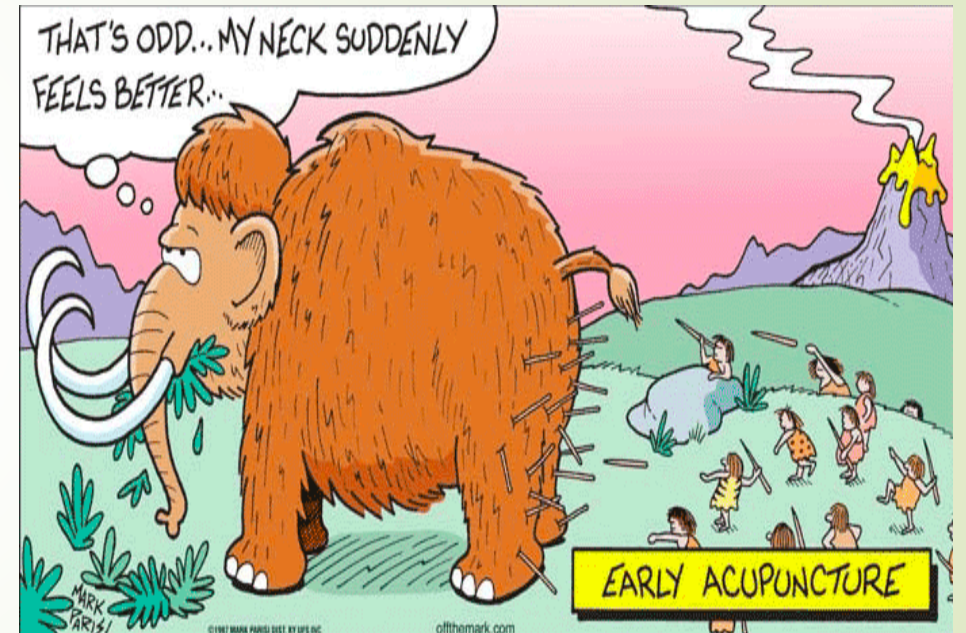


Assistive Devices

- Canes – help reduce pressures on the affected joint, assist with balance
 - FWW
 - Crutches
 - Wheelchair
- 

Acupuncture

- Use riddled with controversy
- Recent studies have shown traditional acupuncture beneficial compared to sham acupuncture
- Concern for possibility of infection from needles
- FDA has standards for needle sterility
- Reasonable complementary treatment for knee OA





Systemic Medications

- Acetaminophen (or paracetamol) first line - hepatotoxicity
- NSAIDs - GI bleeding and renal toxicity

Injectable Options

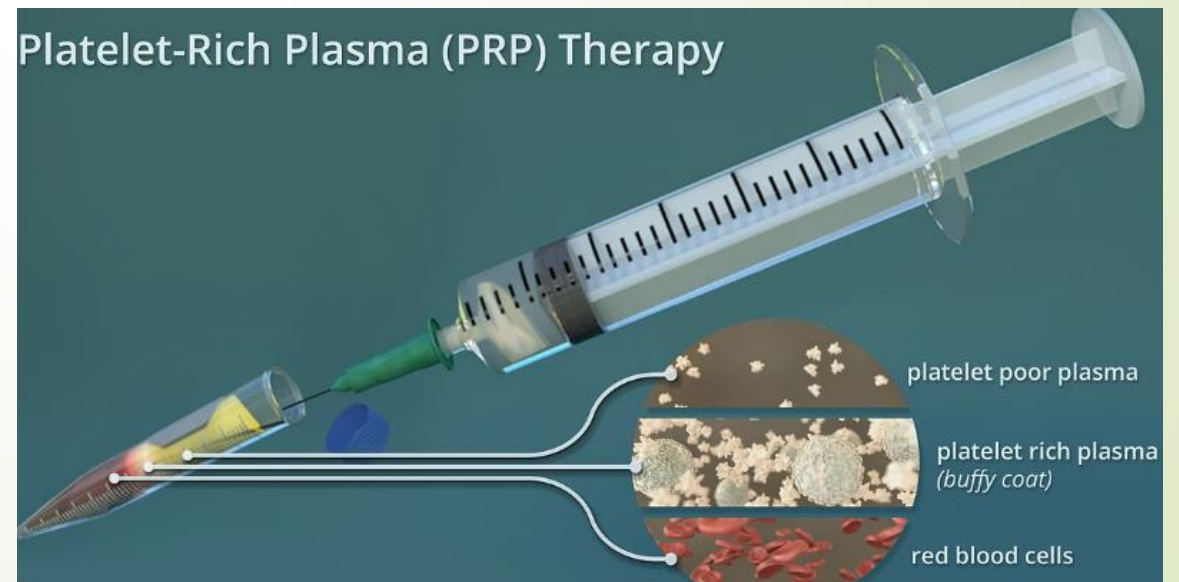
- Steroid

- Cocktail (anesthetic mixed with steroid), may repeat every **3-4 months**, attention for DM (increases sugar levels), potential systemic affects, cartilage damage, decrease bone density



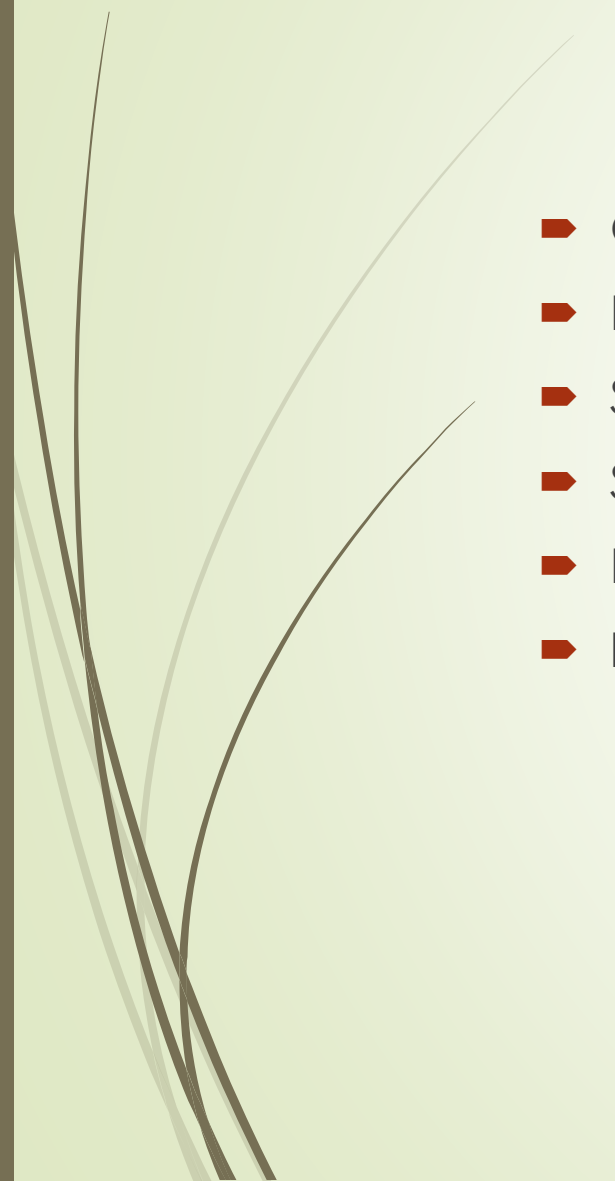
Autologous Blood Injections

- PRP
- Theory behind PRP is that the growth factors that are released from these concentrated injections may have healing effects
- Mostly anecdotal



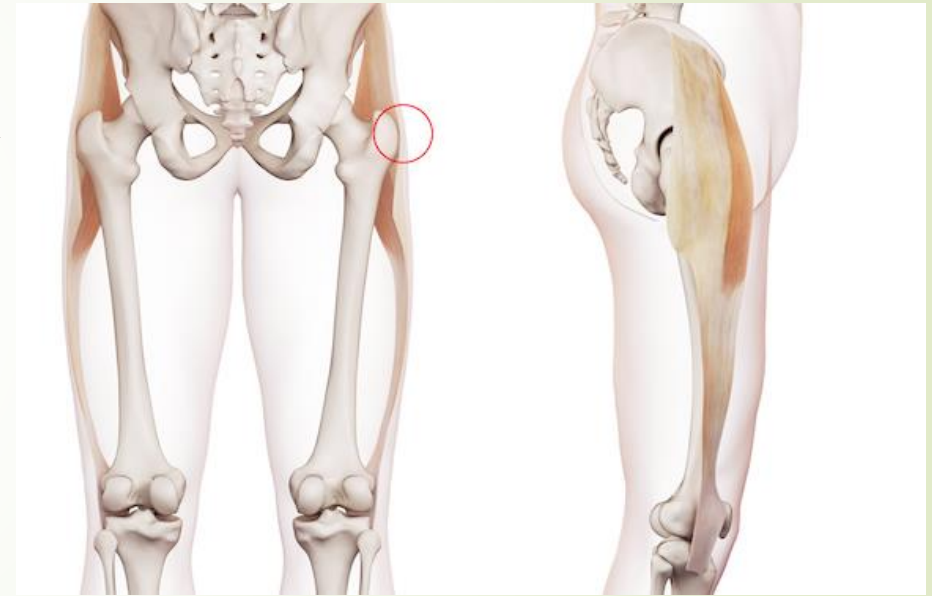


Associated Conditions

- 
- Greater Trochanteric Bursitis
 - Lower back pathology
 - Sciatica
 - SI dysfunction
 - Pubic Symphysis
 - Iliopsoas Tendonitis

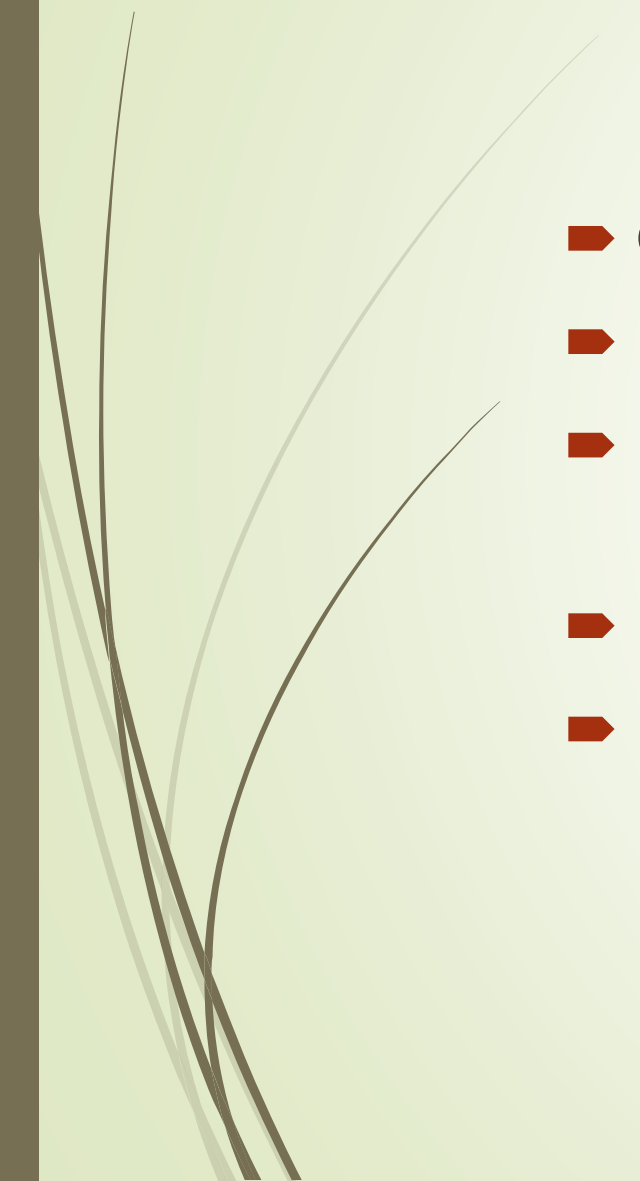
Greater Trochanteric Bursitis

- Very common source of lateral hip pain
- Often contributed to Hip OA or lower back
- Repetitive iliotibial band tracking over the trochanter
- Bursa wedged between GT and ITB
- Irritates bursa causing inflammation
- Point TTP over the GT
- Diagnosis made clinically
- Treatment: NSAIDs + PT, Corticosteroid injection
- Surgery: Bursectomy (reserved only for cases resistant to conservative measure)



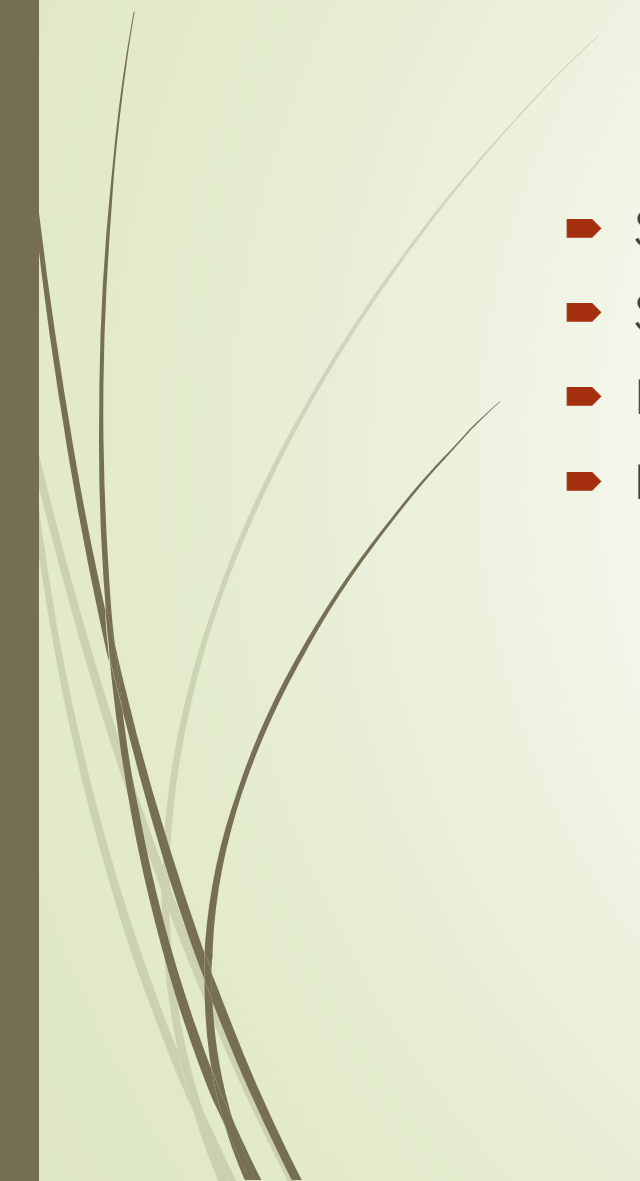


Hip vs Lower Back

- Can cause referred pain to the knee
 - But the pain usually does not radiate past the knee
 - If complaining of pain radiating into the foot, likely lower back pathology
 - If knee x-rays look benign, it is helpful to look at the pelvis
 - Diagnostic injections helpful
- 

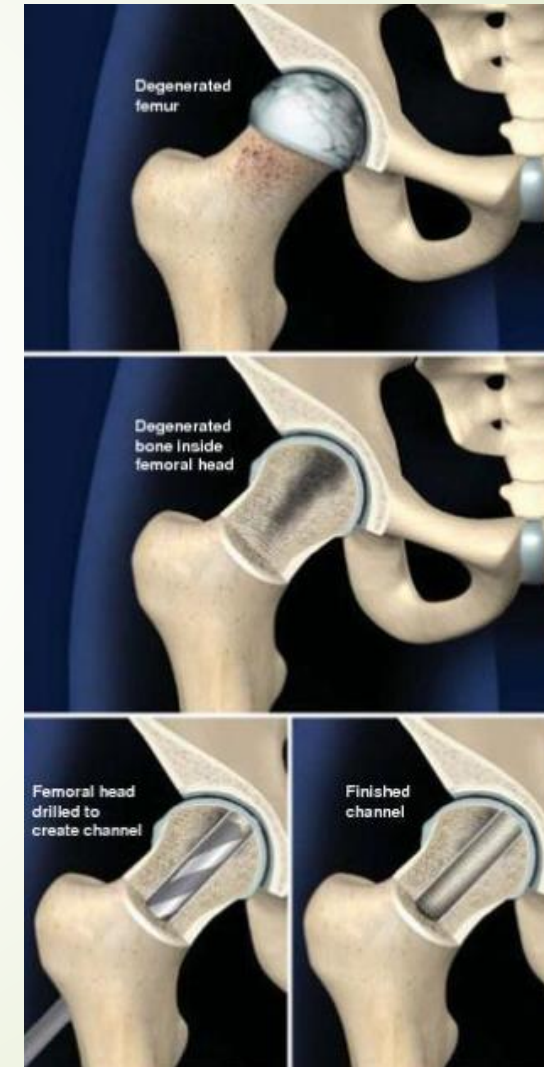
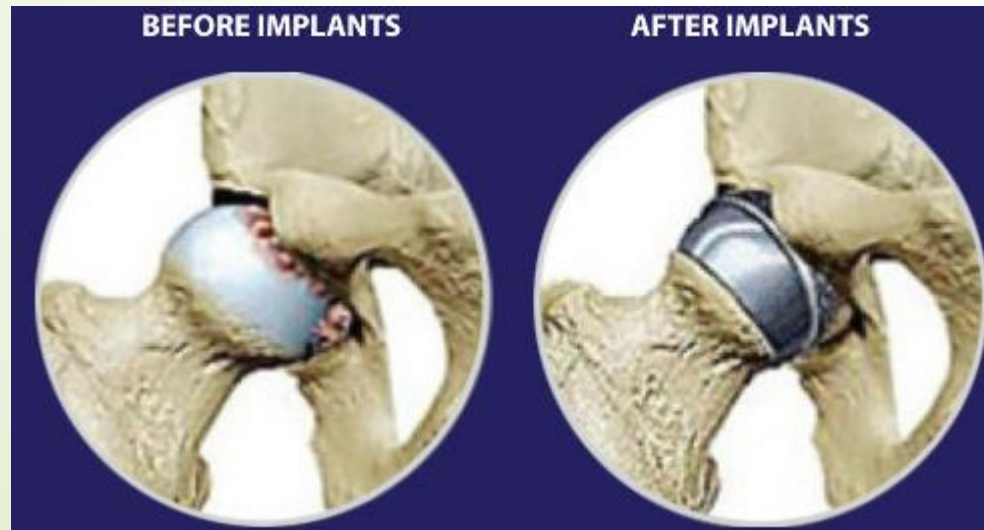


Associated Conditions

- Sciatica - PT, NSAIDs, injection
 - SI dysfunction - Same
 - Pubic Symphysis - Same
 - Iliopsoas Tendonitis - Same
- 

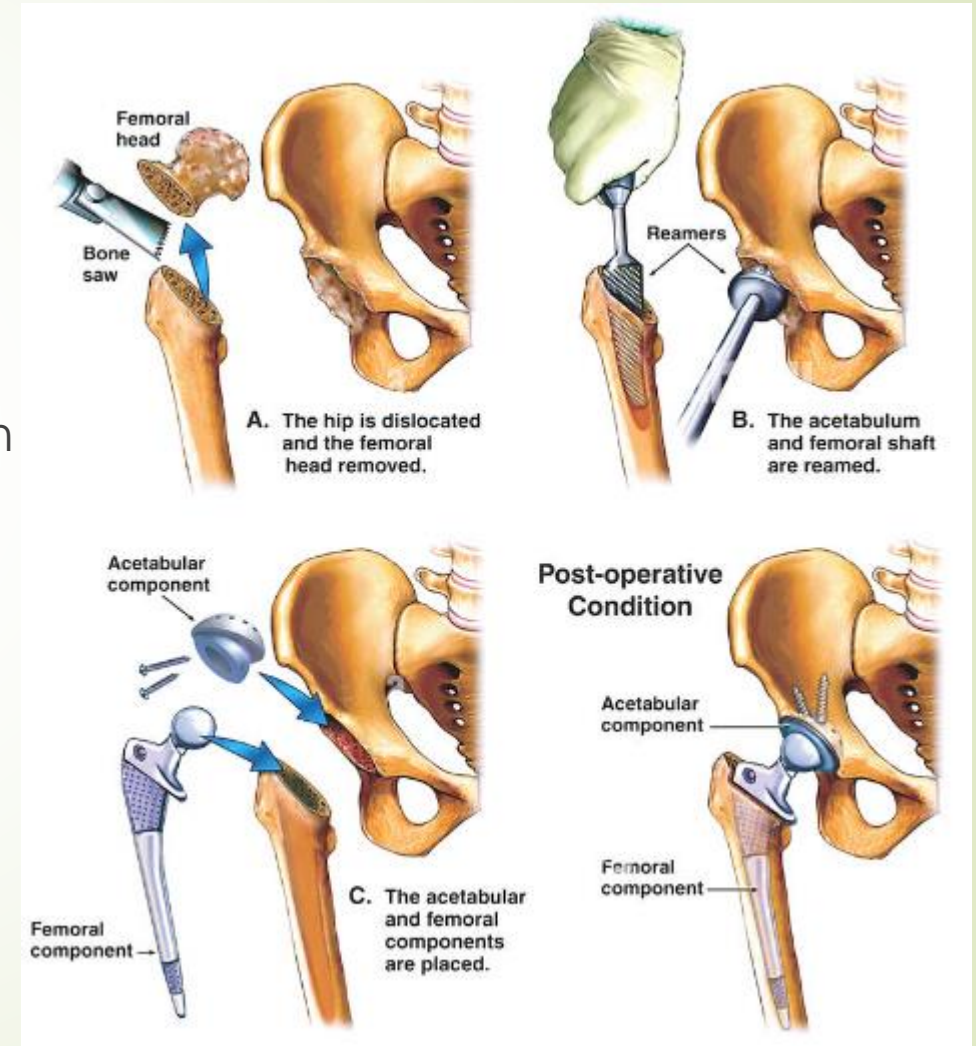
Treatment - Surgical

- Core Decompression
 - only AVN pre-collapse
- Hip resurfacing
- THA



Introduction

- Hip replacement vs reconstruction vs arthroplasty
- Aim is to restore anatomy, motion and function to reduce/relief pain
- Arthritic joint replaced by metal and plastic to allow for congruence and fluid motion
- It is the most commonly performed surgery in orthopedics
- Hemi vs total hip arthroplasty



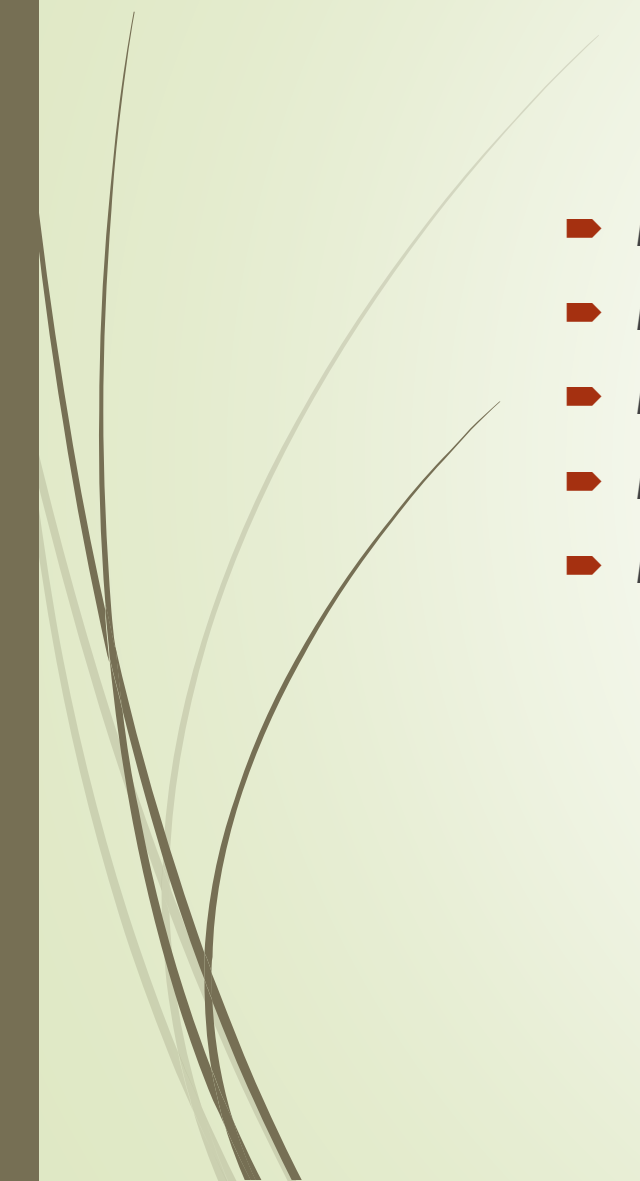
History

- Sir Charnley
- 3 main contributions:
 - Low friction torque
 - Acrylic cement for implant fixation to bone
 - Highly dense poly as bearing material



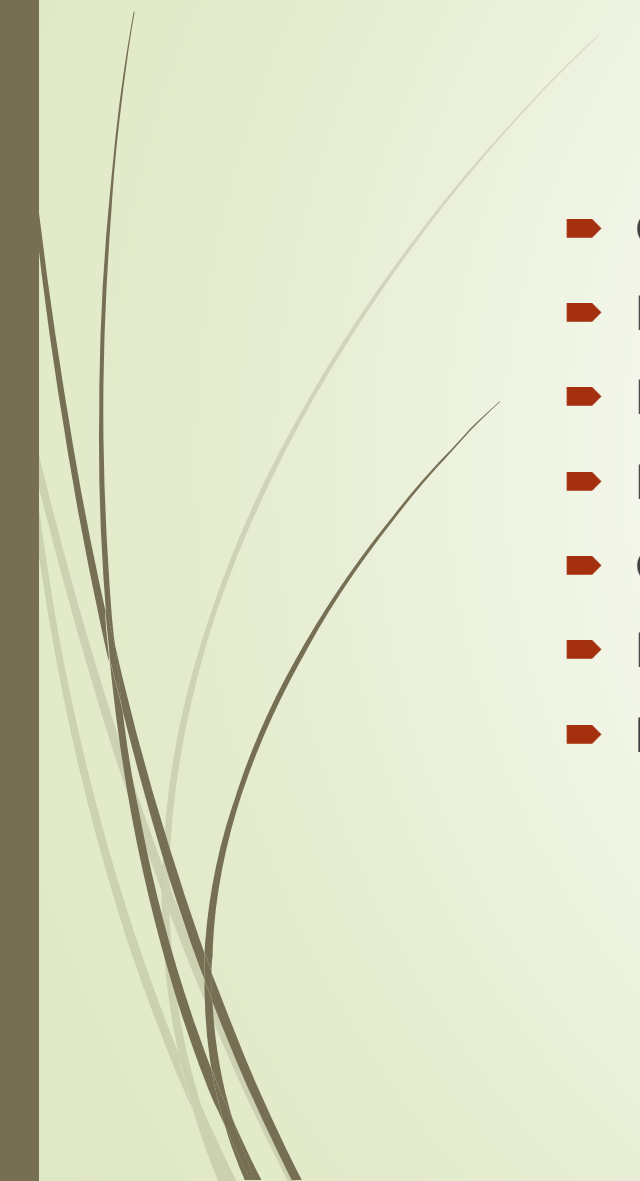


Principles and Considerations

- Must be durable
 - Must provide for very, very, very low friction environment
 - Must be predictably fixed to skeleton/bone
 - Must be inert; cannot be seen as foreign by our body
 - Must fit patient anatomy
- 



Indication

- Constant, unrelenting pain not responding to conservative measure
 - History and imaging
 - Fractures
 - Failed previous fracture fixation
 - Congenital disease
 - Pathologic disease
 - Instability
- 



Contraindication

- Septic Arthritis
- Age?
- Activity level?
- Weight/BMI?
- Deformity?



Approaches to THA

- Anterior aka DA
- Anterolateral
- Lateral
- Posterior or PL or Kocher etc
- Super PATH
- Other minimally invasive approaches

➤ **NONE SUPERIOR TO THE OTHERS**

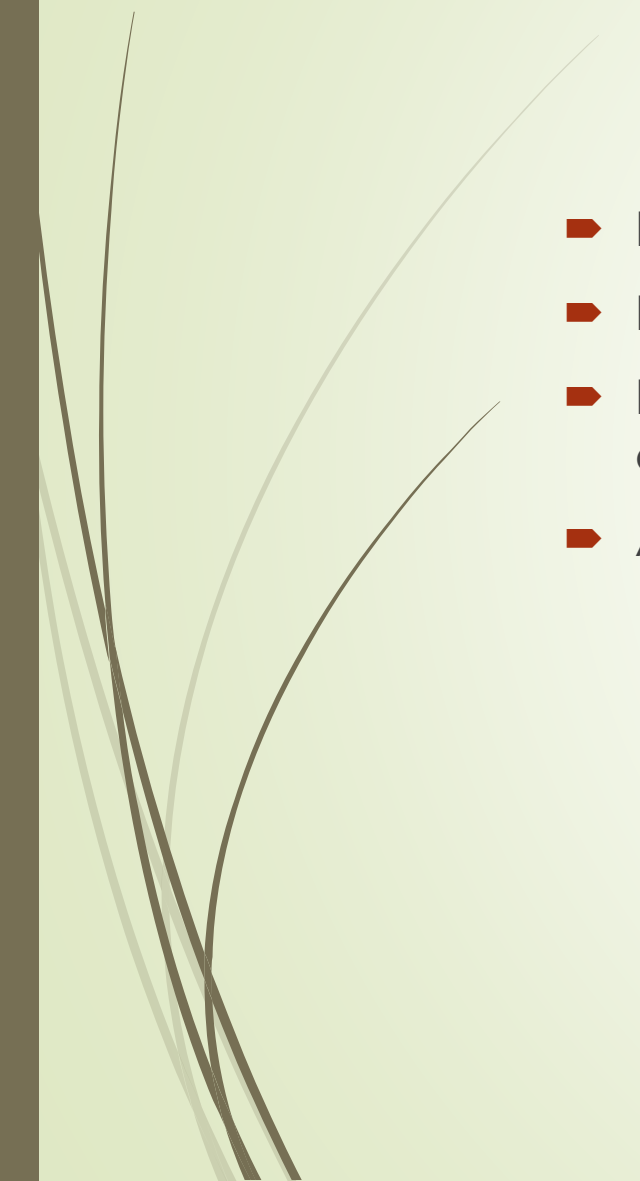


THA for ME

- Failed Conservative measures
- Advanced disease preventing ADLs
- Weight loss? Typically very difficult to obtain measurable weight loss
- **No BMI cutoff**
- Work on healthy living/diet
- Referral to dietician or weight loss surgery



Infection

- 
- Devastating
 - Lifelong risk
 - Prophylactic antibiotics prior to invasive procedures i.e. dental, colonoscopies, endoscopies
 - Any procedure that can cause bleeding or damage to protective linings

Antibiotic Prophylactic Regimens for Dental Procedures

Regimen – Single dose 30 to 60 minutes before procedure

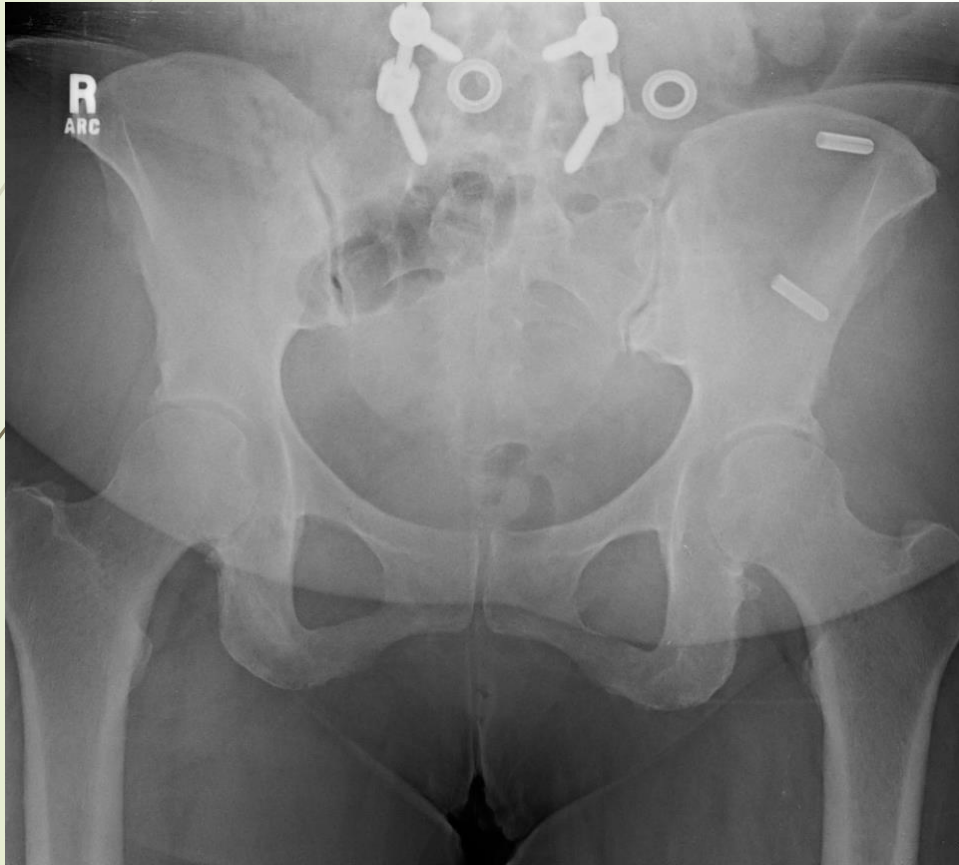
Situation	Agent	Adults	Children
Oral	Amoxicillin	2 g	50 mg/kg
Unable to take oral medication	Ampicillin OR	2 g IM or IV	50 mg/kg IM or IV
	Cefazolin or ceftriaxone	1 g IM or IV	50 mg/kg IM or IV
Allergic to penicillins or ampicillin—oral regimen	Cephalexin*	2 g	50 mg/kg
	OR		
	Azithromycin or clarithromycin	500 mg	15 mg/kg
	OR		
	Doxycycline	100 mg	<45 kg, 2.2 mg/kg >45 kg, 100 mg
Allergic to penicillin or ampicillin and unable to take oral medication	Cefazolin or ceftriaxone†	1 g IM or IV	50 mg/kg IM or IV

Clindamycin is no longer recommended for antibiotic prophylaxis for a dental procedure. IM indicates intramuscular; and IV, intravenous.

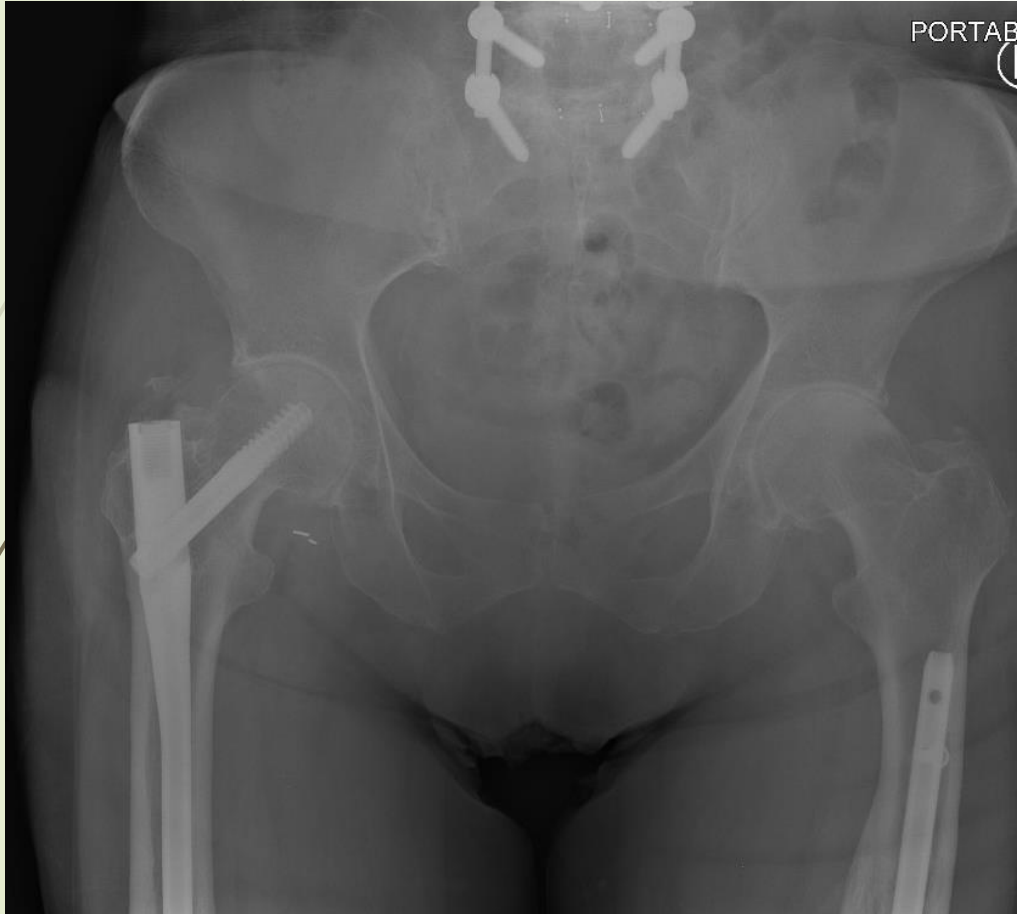
* Or other first- or second-generation oral cephalosporin in equivalent adult or pediatric dosing.

† Cephalosporins should not be used in an individual with a history of anaphylaxis, angioedema, or urticaria with penicillin or ampicillin.

52 yo F failed extensive cons mgt

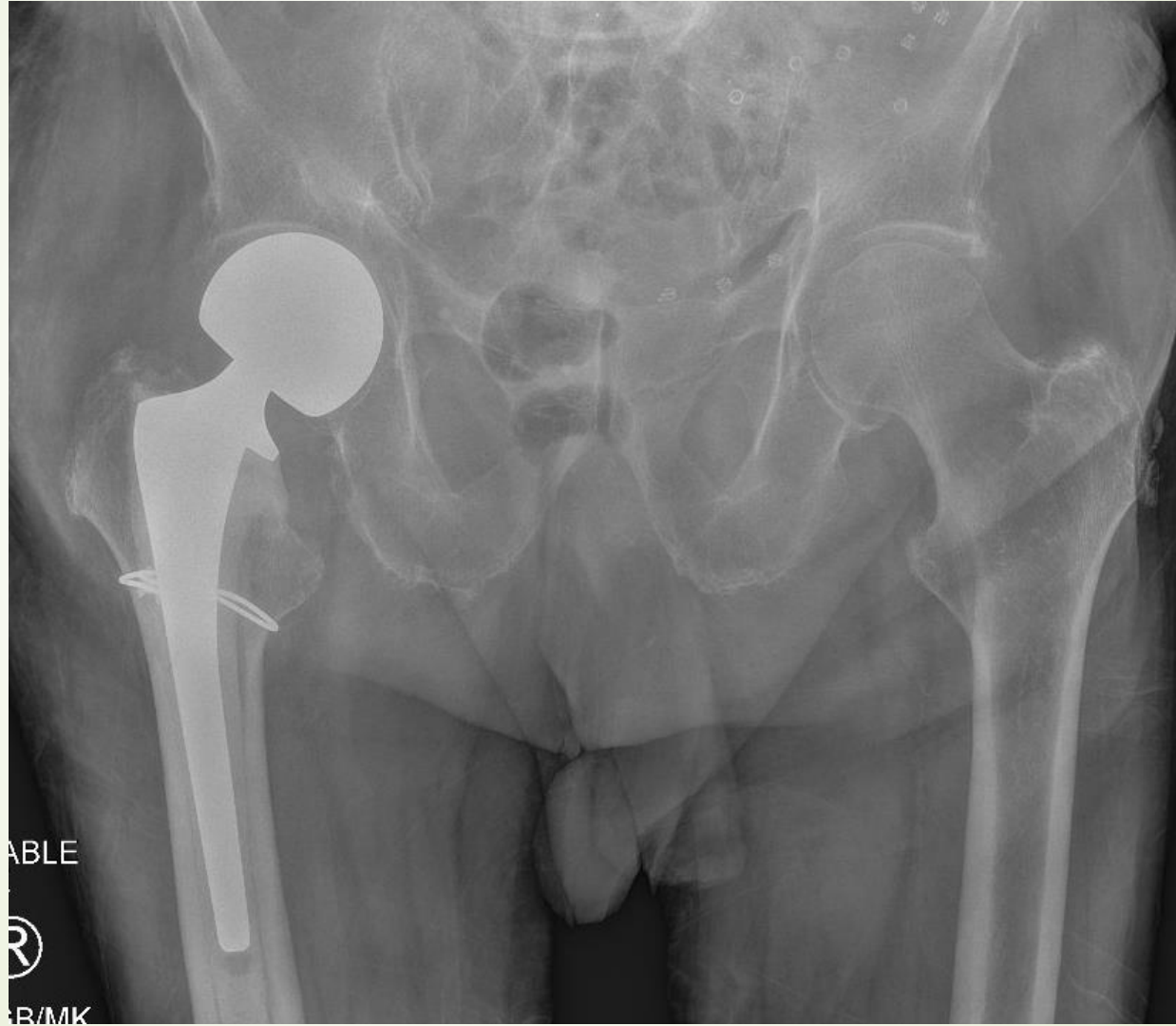


76 yo F debilitating L hip OA

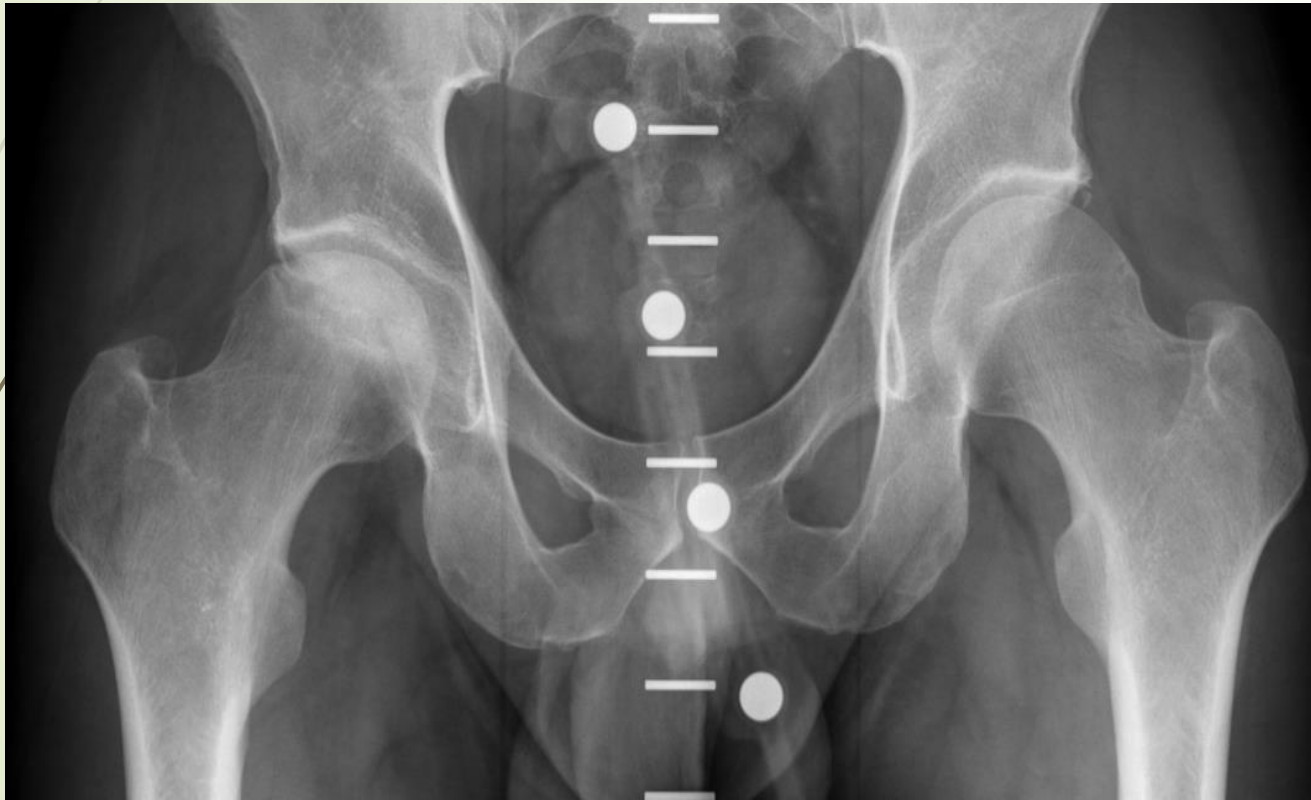


86 yo M working on car and falls





38 yo w AVN



57 yo R THA in 2012 with subsidence

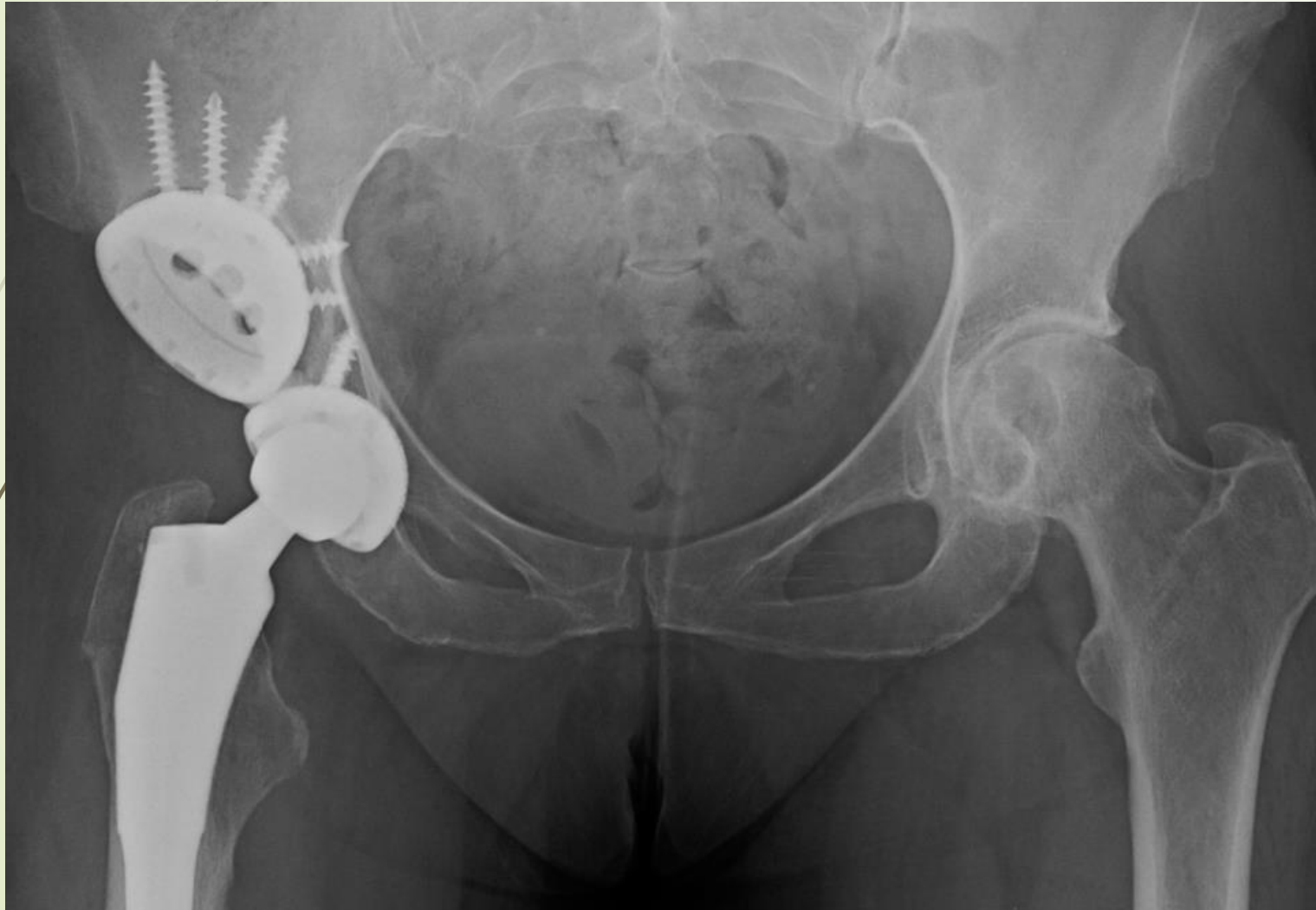


62 yo failed THA + ORIF with PJI



63 yo with normal hip and OA







Thank you!

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QUESTIONS?

Q & A



Thank you!

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Tuesday, March 28, 2023 | 6:00 PM - 7:30 PM
Current Concepts in Hip Replacement 2023

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