

# **It's a Pain Getting Old!**

## **An Update on the Causes, Symptoms, and Treatment of Hip and Knee Osteoarthritis**

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March 4, 2023



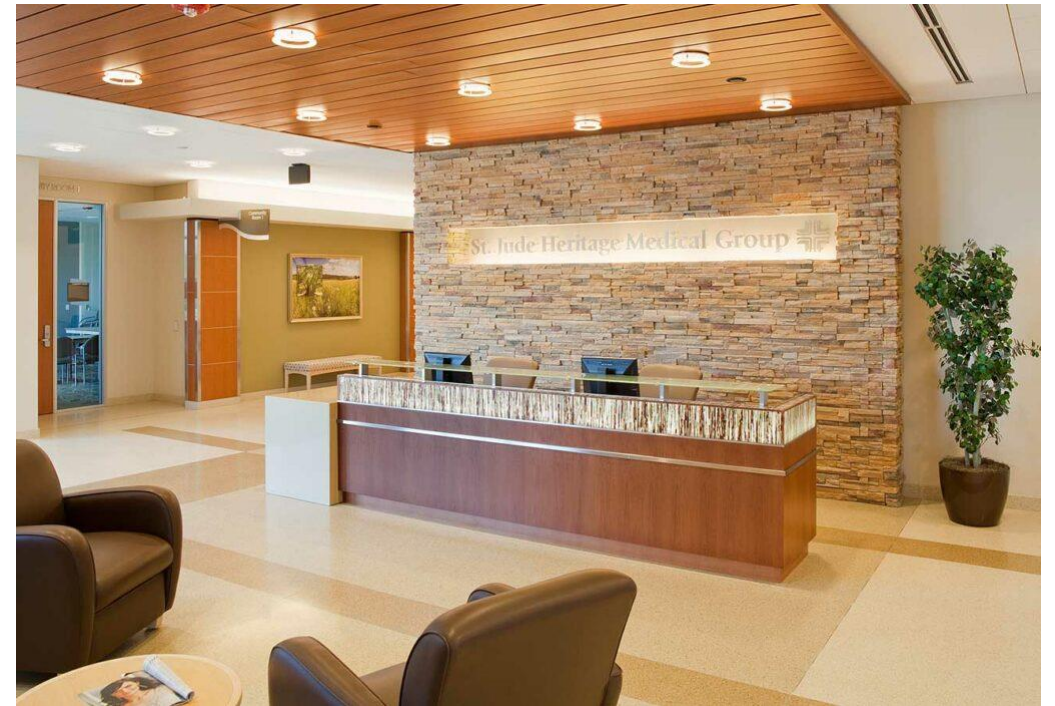
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4300 Rose Drive, Suite A



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# What is Osteoarthritis or OA?

- The most common form of arthritis and often called the “wear and tear” arthritis.
- Joint lining becomes pitted, eroded, uneven...and painful.
- Bone spurs, or osteophytes, often form around the joint.
- The common activities of daily living become limited by frequent pain.
- Most of the people who have symptomatic osteoarthritis are older than age 45



## A “Tired” Analogy for Arthritis

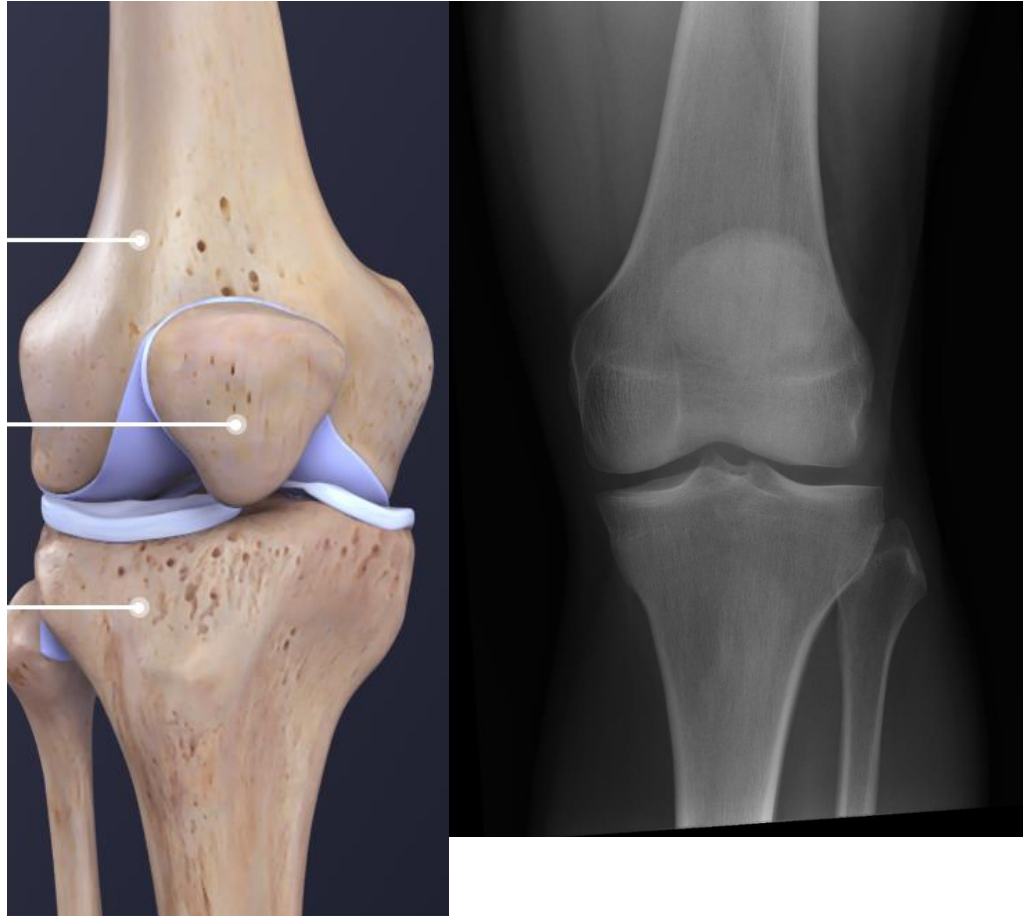


Healthy cartilage, well-lubricated, full motion and pain free 😊

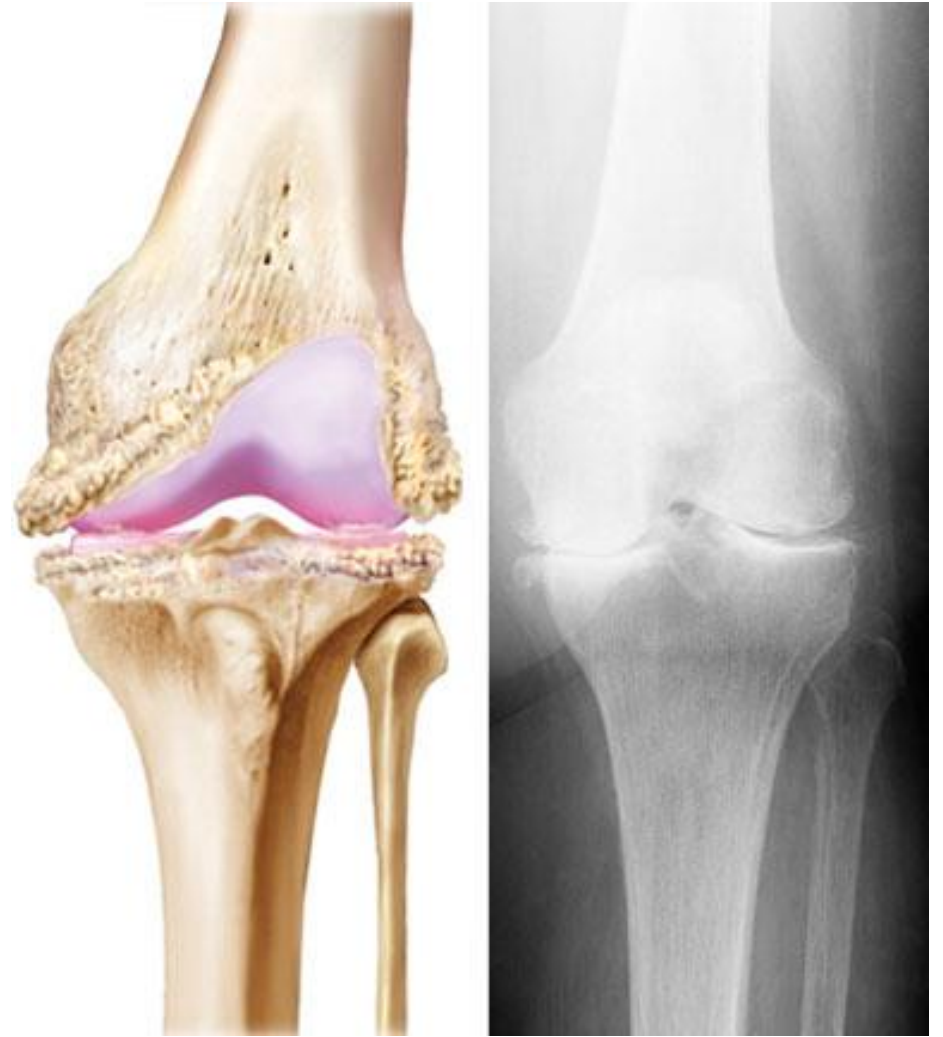


Damage to cartilage, loss of lubricating mechanism, decreased motion and increased pain ☹️

# Osteoarthritis: it's all about the cartilage



Healthy cartilage = space on XR  
Bones are “hovering”



Loss of space = pain

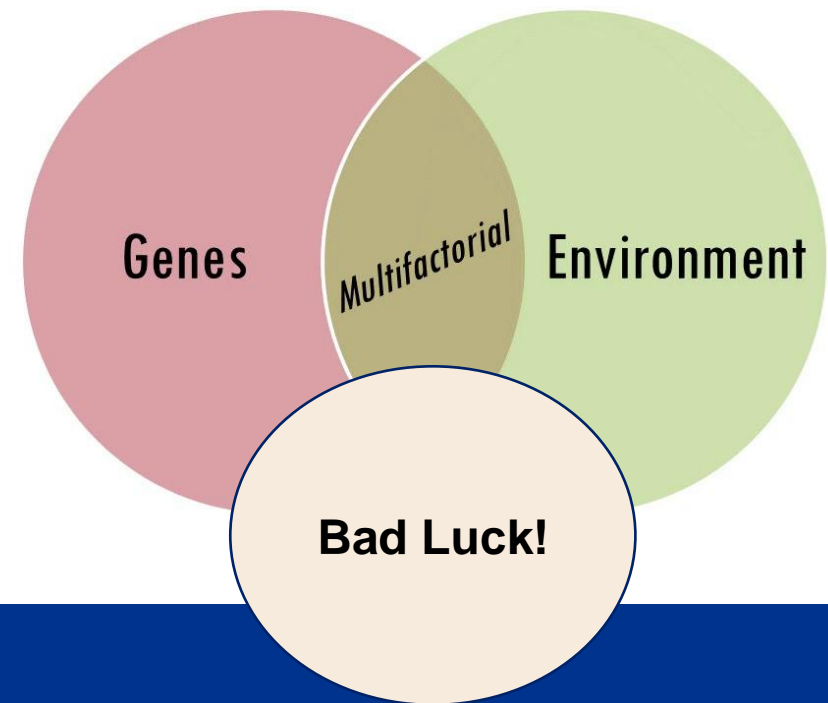


# Causes of Osteoarthritis

- **Excessive wear on the joints (overuse)**
- **Joint injuries from sports and other high-impact activities**
- **Age (not always)**
- **Obesity, especially with osteoarthritis of the knee**
- **Genetic link in families:**
  - Pre-existing deformity of the bones
  - Hip dysplasia (shallow socket)
  - Knock knees



# Causes of Osteoarthritis



# Symptoms of Osteoarthritis

- **The main symptom of is PAIN.**
  - Both with movement and at rest
  - Night pain
- **Stiffness**
  - Loss of ROM
- **Swelling**



Interfere with Life and Sleep



Treatment Options:

Non-surgical



# Non-Surgical Treatment Overview

- **Lifestyle**
- **Oral meds**
  - Pain relievers
  - Supplements
- **Injections**
  - Steroids (cortisone)
  - Viscosupplementation (gel)
  - PRP
  - Stem cells?



## LIFESTYLE Changes

- Exercise
  - Aerobic
  - Body weight strength training
  - Exercise decreases pain, improves flexibility and helps maintain weight

## Weight Loss

- Easier said than done but **Crucial**
- More severe OA: diet based more important
  - Painful exercise cannot burn enough calories
- Physical therapy
  - Good for early to mid- OA
  - Can't "therapize" out of bone on bone





# Oral Medications: NSAIDs Non-Steroidal Anti-inflammatory Drugs

- Cochrane review: 16 double blind RCT, 8 medications

## No clear winner\*

- physician preference; patient preference
- Serious GI side effects 2-4% (chronic)
  - **Risk reduction 50% w/ COX-2 inhib = Celebrex**

## Minimize/avoid NSAIDs

GI ulcers/reflux  
Blood thinners  
Heart disease  
Kidney disease



Ibuprofen (Advil)  
Naproxen (Aleve)  
Meloxicam

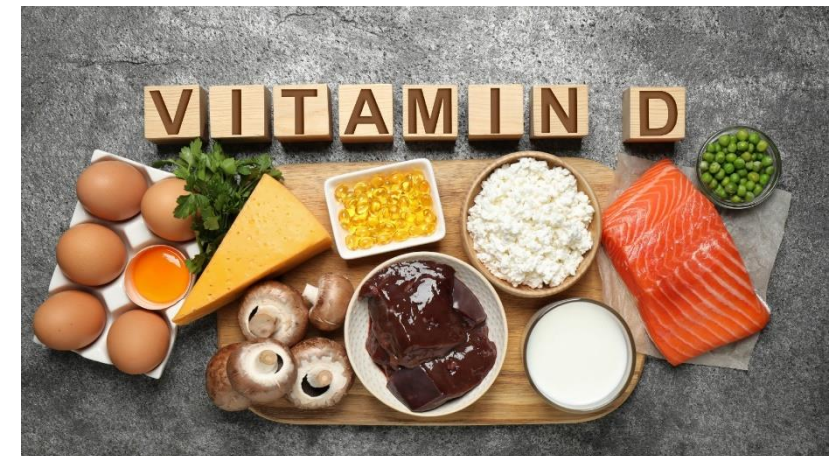
**\*Celecoxib (Celebrex)**

**\*Voltaren Gel = Less Risk**



# Supplements for Arthritis

- **All over the place; Profit- driven**
  - Most not worth the \$(and hope)
- **Scientifically supported (kind of...)**
  - Glucosamine/Chondroitin Sulfate
    - Joint building blocks
  - Turmeric
    - Anti-inflammatory spice
  - Vitamin D
    - Especially women, get lab test
  - Multivitamin
    - Often overlooked



# Corticosteroid Injections ("cortisone")

Cochrane Review

**28 trials (1,973 pts) level I/II**

**"Few side effects have been reported"**

**"Generally superior to placebo"**

**"Short-term benefit well established"**

**3 weeks to 3 months**

**Severe pain or "special occasions"**

**Usually not for "bone on bone"**





# Viscosupplementation “gel” Injections

“Rooster comb cartilage”

1960’s

Racehorses

Gel injection

Lubricant

WD-40 for your joint



# Viscosupplementation “gel” Injections

Various manufacturers all the same

**FDA-approved for knee only**

**NOT endorsed by the AAOS**

**Some level I studies: no better than saline**

May work in the right patient

**Mild to moderate OA**

**Failed other treatments**

**No down time, less invasive**

**Every 6 months**



# Biologic Injections

**PRP**

**Stem Cells**





# PRP

## Platelet-rich Plasma

Concentrate of your own blood with high levels of platelets

### Bioactive proteins--5x

- PDGF, FGF, VEGF, TGF- $\beta$

Attractive option for some patients

**Safe (own blood)**

**Biologic (growth factors)**

**Easy to get**

Cost variable

**~\$500-1,000**

**Not covered by insurance: "experimental"**



# PRP Preparation

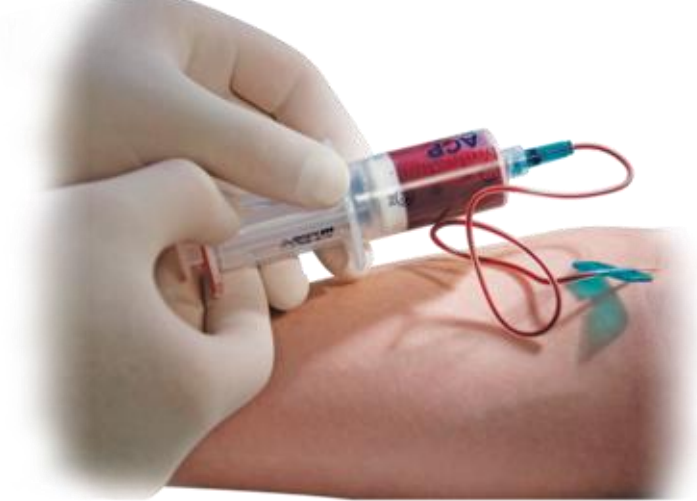
Commercially available “kits” and centrifuge

Draw blood 20-60cc

Centrifugation

**Separate platelet rich layer**

- **Injection: Final volume 2-6 mL**
- **Start to finish about 30min**



# PRP: Clinical use

Does it really work?

Depends...

In my practice:

**Failed everything else**

**Non-surgical patient**

**Ultrasound-guided injection**

- Knee or hip arthritis
- Tennis elbow
- Patellar tendinitis





# Stem Cells

Are they for real?



# Stem cell preparations: USA

Adipose-derived

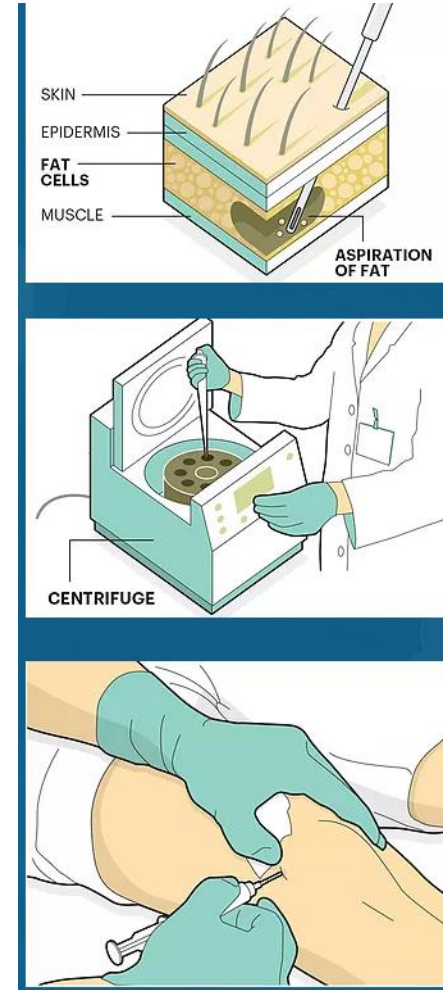
**Liposuction**

**Same-day laboratory preparation**

**Small number of stem cells**

**Strict FDA rules\***

- Minimally manipulated
- Inject back into the same person (Knee most common)



# Stem Cells: The Potential is There

Clinicaltrials.gov

## **Stem cells are effective for arthritis**

- Multiple small trials
- Improved pain scores
- Improved PROs
- Improved MRI appearance
- Bone marrow, adipose, synovial
- Manipulated, expanded
  - Very expensive
  - Advanced laboratory techniques



Weinberg et al  
JBJS Rev  
2017



# Direct to Consumer Advertising

**Google Search Results:**

Google stem cell orange county

Regenexx® Injection Procedure | The Art & Science of Regenerative Medicine

Ad www.regenexxca.com/

A complete injection treatment protocol, backed by

Map showing locations in Orange County, CA: Long Beach, Huntington Beach, Two Harbors, Catalina Island Essential Fish Habitat.

Rating Hours

SoCal Regenerative Medical Clinics

Ad 4.9 ★★★★★ (16) · Doctor

West Covina, CA · (626) 506-2304

OC Advanced Stem Cell Treatment

No reviews · Surgical center

San Clemente, CA · (949) 369-6993

Open · Closes 5PM

OC Wellness Physicians Medical Group

4.9 ★★★★★ (55) · Medical Center

Westminster, CA · (866) 303-9355

Open · Closes 6PM

"Got to learn about stem cell treatment as well as a comparison with..."

OC Stem Cell Center

No reviews · Medical Center

Irvine, CA · (714) 299-3006

More places

**U.S. STEM CELL CLINIC**

Home Services Testimonials

Call us to schedule your appointment today: 954-

Diagram illustrating the fat harvesting process:

- SKIN
- EPIDERMIS
- FAT CELLS
- MUSCLE
- ASPIRATION OF FAT

Fat harvesting: While the patient is under local anesthesia, doctors perform a mini-liposuction and remove fat tissue from the waist, hip or side of the body.

Diagram illustrating the cell preparation process:

- CENTRIFUGE

Cell preparation: The fat is spun in a centrifuge to separate stem cells from the tissue.

Diagram illustrating the stem cell treatment process:

- Stem cell treatment: The stem cells are returned to the patient's body through an intravenous infusion or an injection directly into the joints, tendons or ligaments. Depending on the condition, other deployment processes can be done.

**STEMCELLARTS**

The Art & Science of Regenerative Medicine

AN AFFILIATE OF NATIONAL SPINE AND PAIN CENTERS®

ABOUT US REGENEXX PROCEDURES AREAS TREATED OUTCOMES

StemCell

REGENEXX PROCEDURES HAVE A SUCCESS RATE OF 90%.

ough I went from zero to 100%.

do it over, I would have saved

Judy Go Wong

"I tried everything, and nothing worked."

# Stem cells: Summary

Advertised outcomes

Average actual outcomes

A lot of hype (and \$\$)

Very limited scientific  
evidence

Not recommended for  
patients as of 2022

“NOT ready for Primetime”

# Treatment Options:

## Surgical

- Knee
  - Knee arthroscopy
  - Knee replacement
- Hip
  - **Hip arthroscopy\***
  - Hip replacement
    - **Direct anterior\***





# Knee arthroscopy

- Meniscus and cartilage “clean up”
  - Partial menisectomy
  - Chondroplasty
  - Debridement
  - Synovectomy
  - Removal of loose bodies
- 30min outpatient surgery
  - 4 week recovery
  - Low risk
  - Limited to early arthritis

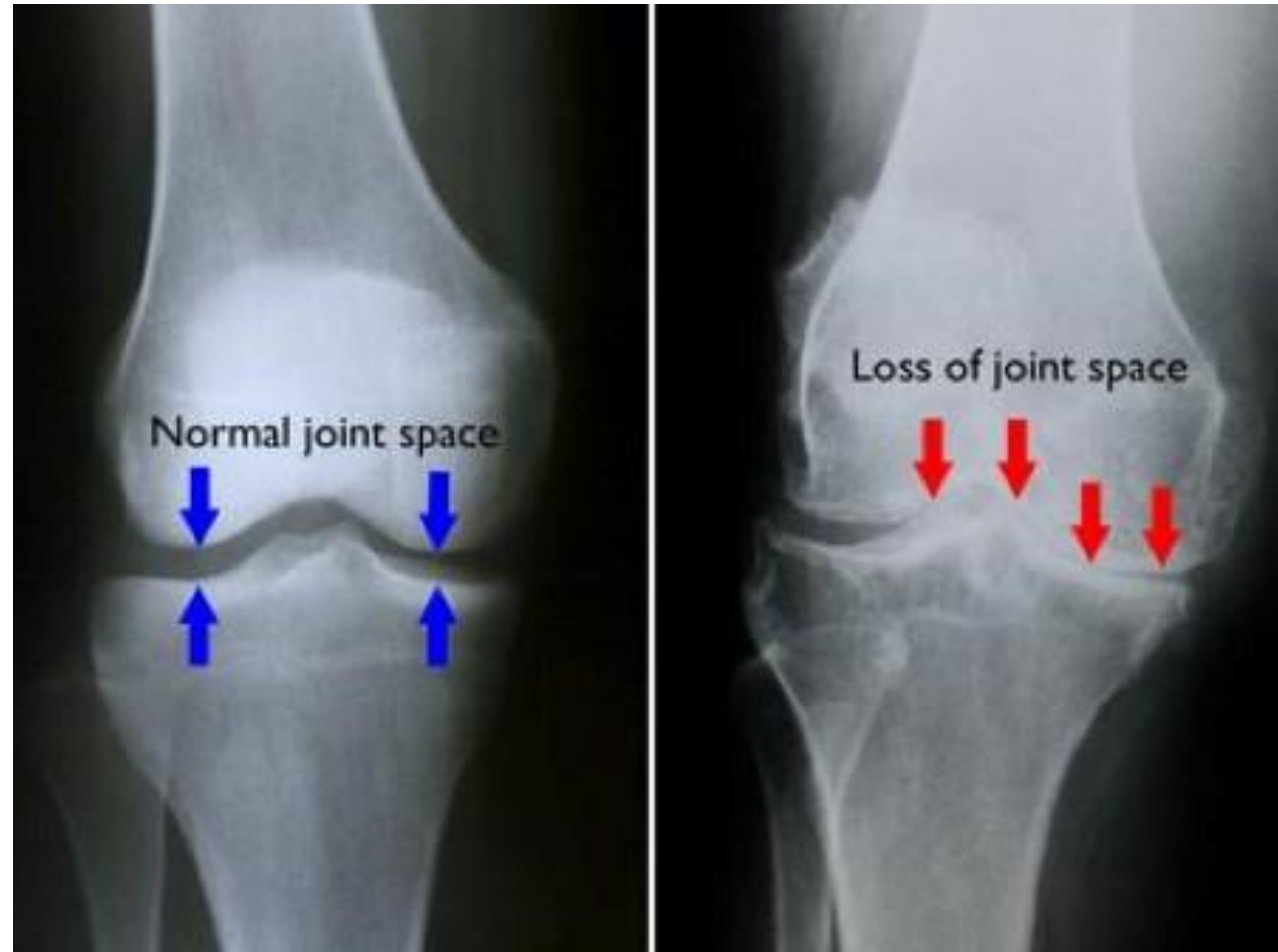
**#1 most common ortho surg**



# Total Knee Replacement: Bone on Bone Knee OA



Degenerative knee



# Total Knee Replacement



Degenerative knee



Cuts



Implant components



Implanted

# Spectrum of knee implants



The Uni



The DEUCE



The PFJ



Total Knee Replacement

Knee Revision





# Hip Arthroscopy

Minimally Invasive

**Diagnostic; Therapeutic**

Arthroscopy - less post-operative down-time than open surgery

**Earlier return to high-functioning lifestyles**

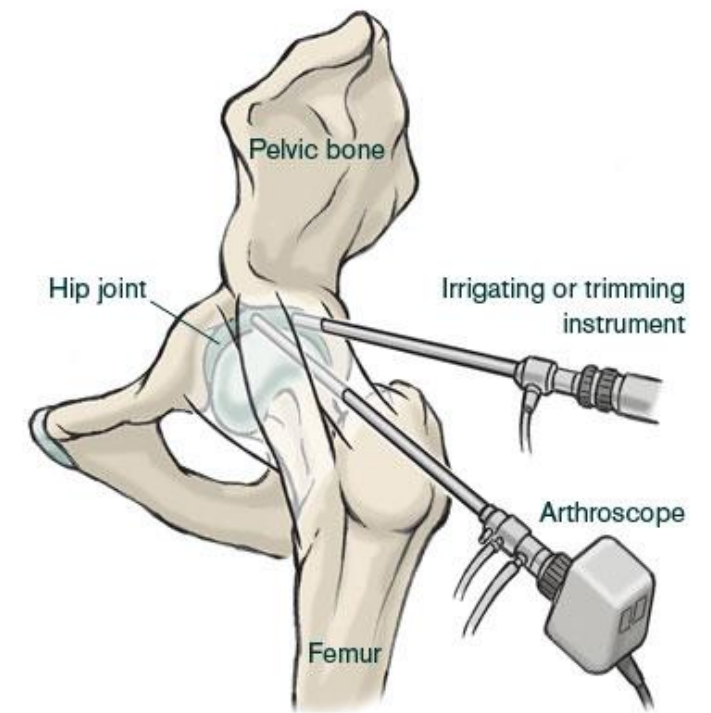
Treatment of a variety of hip problems

**Hip impingement**

**Labral Tears**

**Capsular Laxity**

**GT bursitis**



# Hip Arthroscopy:

## Hip Preservation Surgery

Goals:

### Improving clearance for hip motion

- Alleviating femoral abutment on acetabulum (impingement)
  - Reshape the ball and socket

### Prevent/slow degeneration of hip



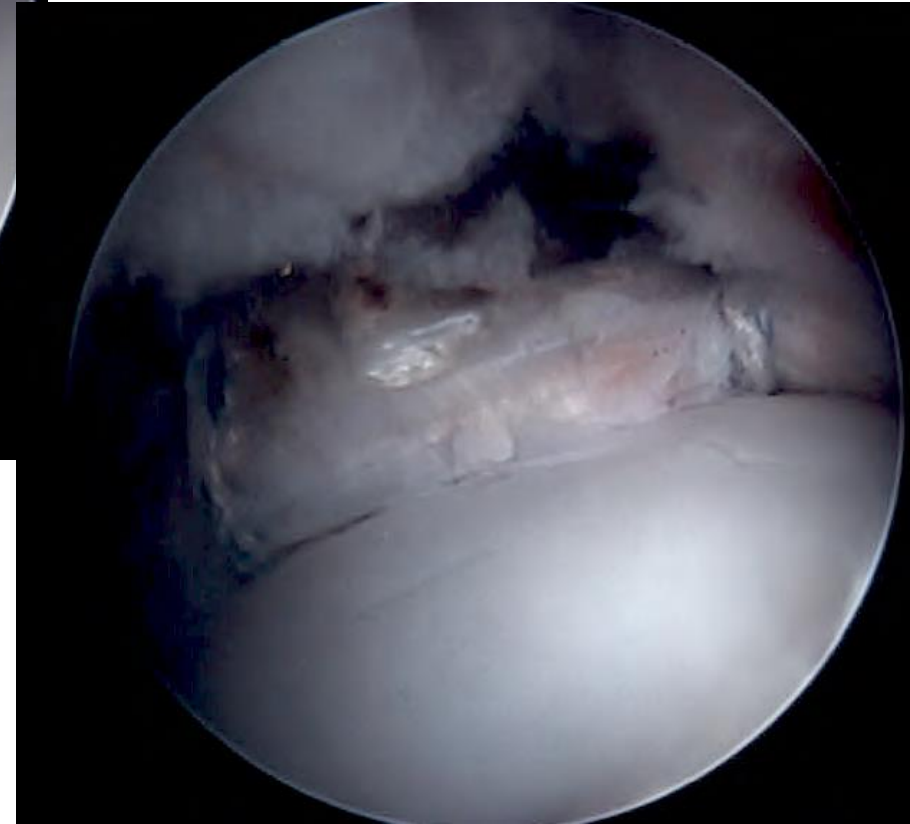
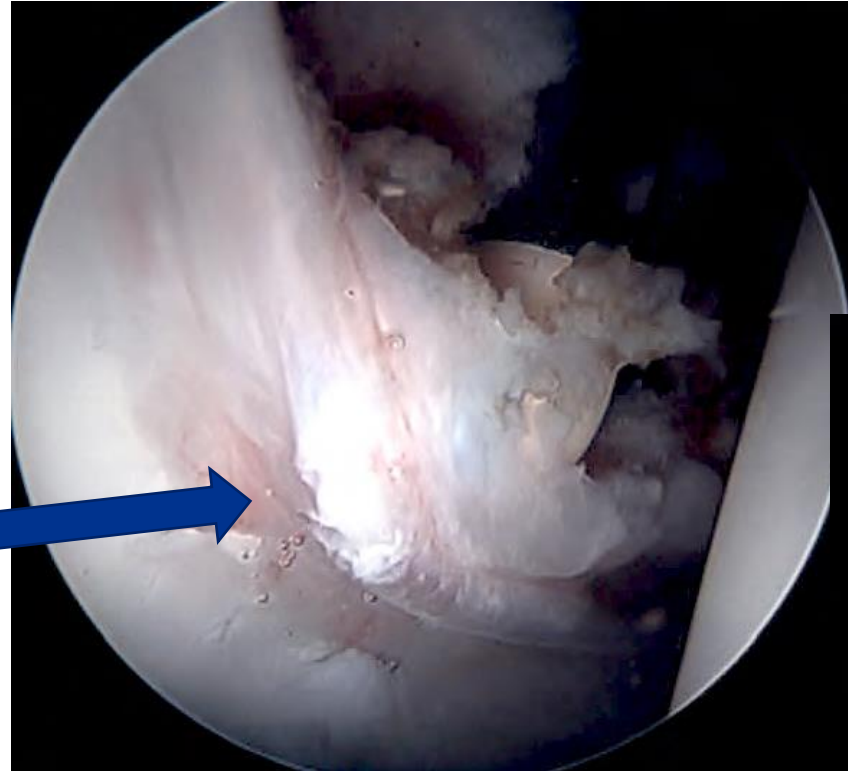
# Hip Arthroscopy: Acute injury repair

Usually athletic injuries

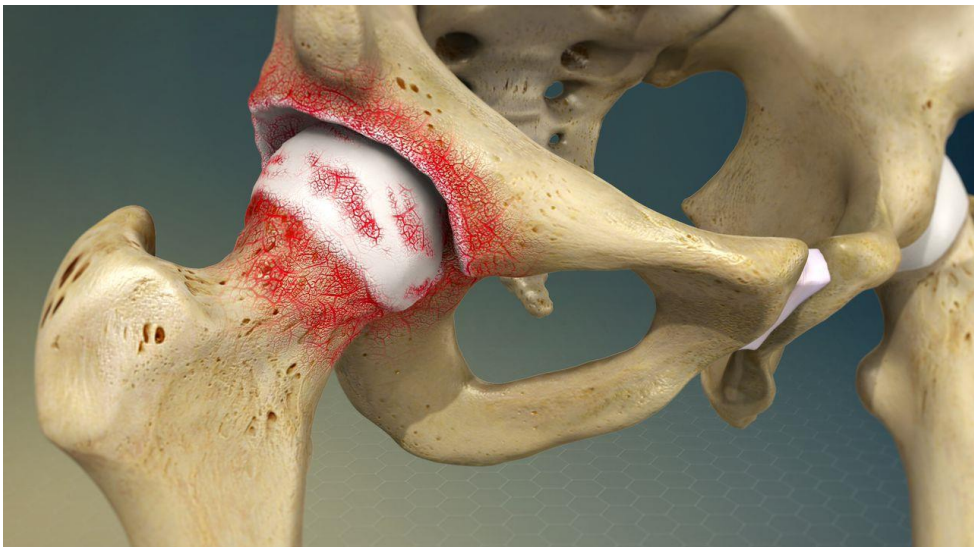
#1 Labral tears

Loose bodies

Hip dislocation



# Total Hip Replacement: Bone on Bone Hip OA





# Total Hip Replacement

Cuts



Implant components



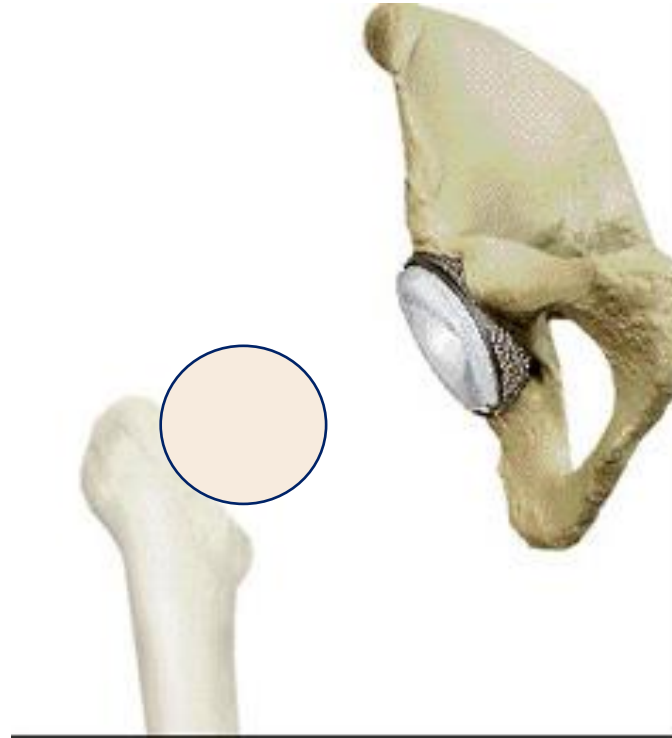
Implanted



©Google images

# Total Hip Replacement

- The uppermost portion of the femur (the ball) is removed.
- The acetabulum, or socket, is prepared and replaced by a metal cup. A smooth plastic liner is inserted into the cup.
- The end of the femur is reshaped to allow the metal “hip stem” to fit onto it.



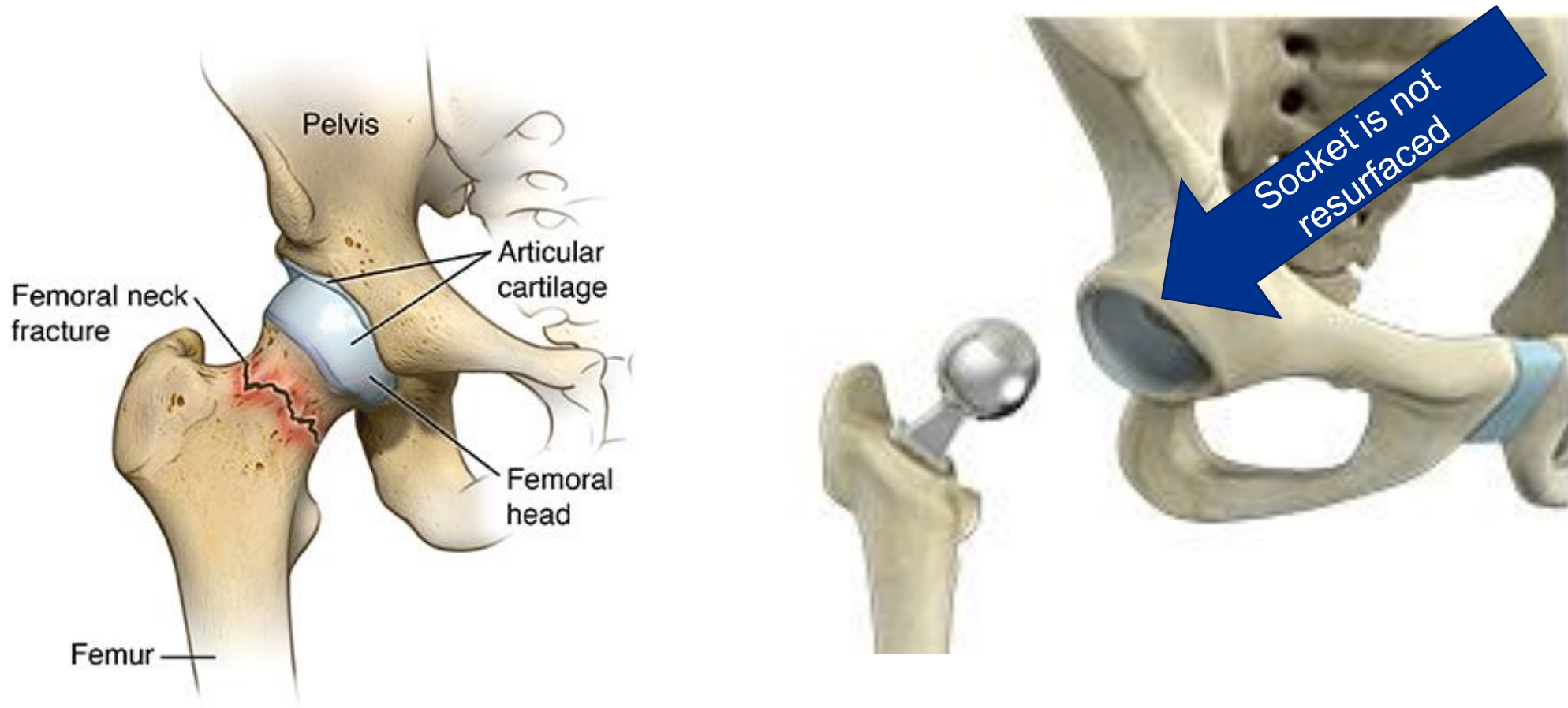
# Total Hip Replacement

- A femoral ball is placed on top of the stem.
- This ball makes contact with the plastic liner to replicate the original ball and socket hip joint.



# Partial Hip Replacement = Hemiarthroplasty

Almost always for broken hips, not arthritis





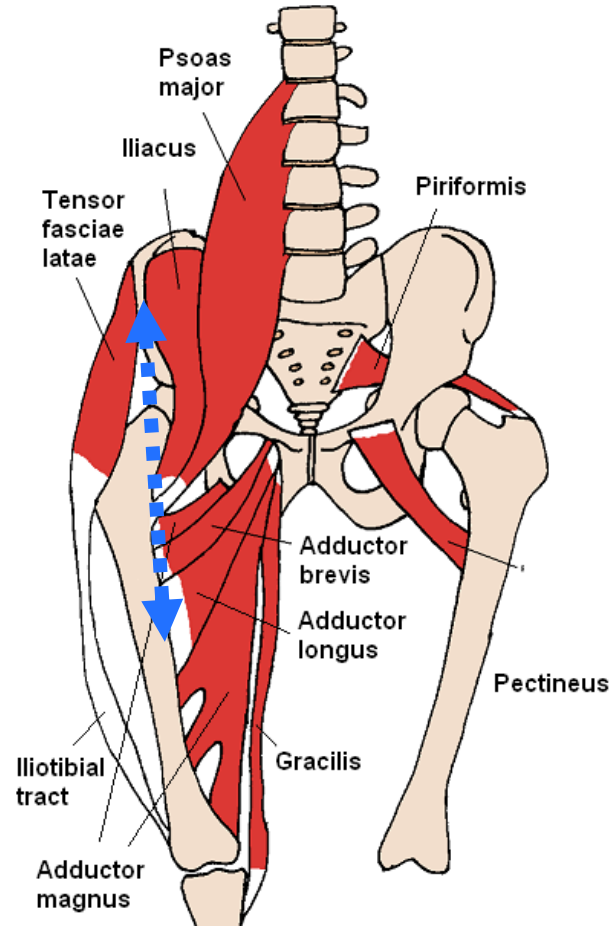
# Direct Anterior Total Hip

- **Muscle sparing surgery for hip replacement**
- **Incision is made on the front of the hip (anterior) rather than the back (posterior)**
  - Access to the joint through natural interval between muscles
- **Less surgical trauma**
  - No violation of gluteal muscles that attach to the pelvis and femur
  - Cut less = Better post-op stability
  - Fewer post-op dislocations

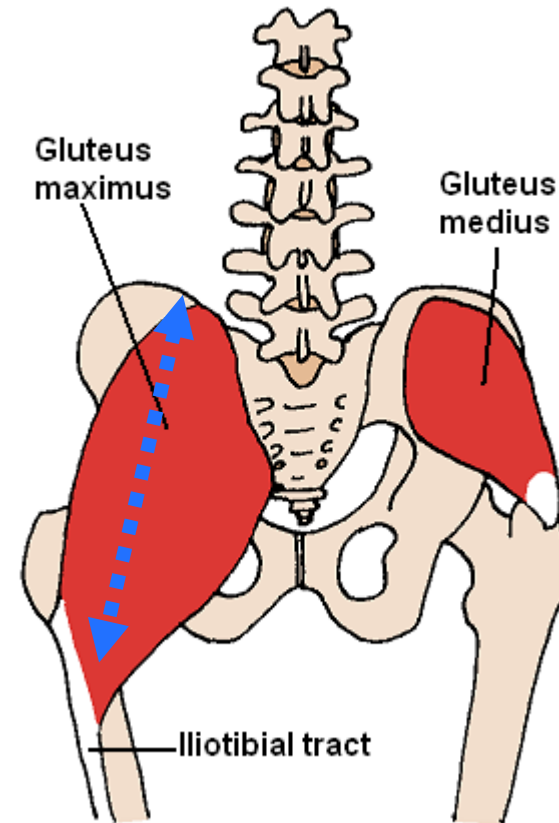


# Direct Anterior Total Hip

Front - Anterior

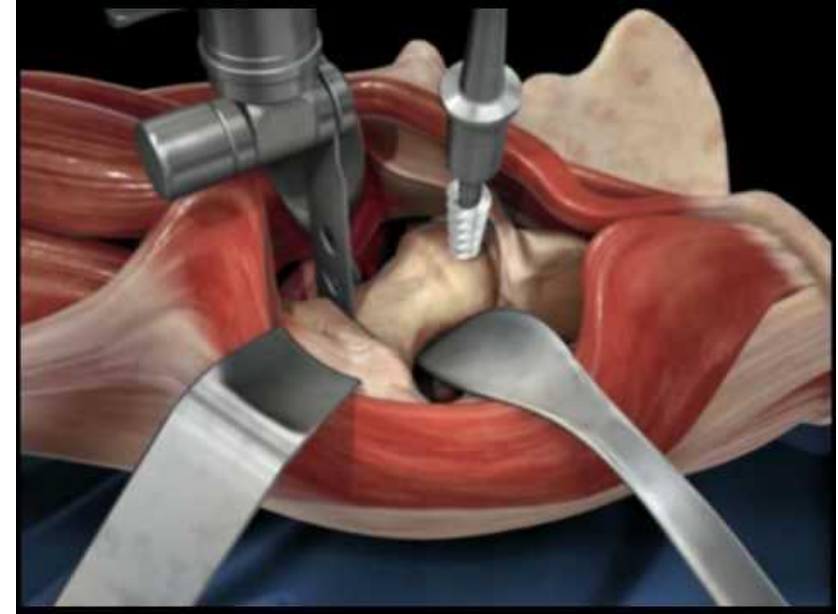


Back - Posterior



# Direct Anterior Total Hip

- Fewer issues concerning leg length (positioning)
- Faster physical rehabilitation
  - Less time on a cane/walker
- Faster return to normal activities
- On average, faster recovery compared to traditional hip replacement
- Short term benefit
- Enhanced patient satisfaction
- No long term difference between approaches\*\*
- Learning curve (popularized 10-15y ago)
- DA total hip requires special table and retractors



# Advanced Bearing Surface Options





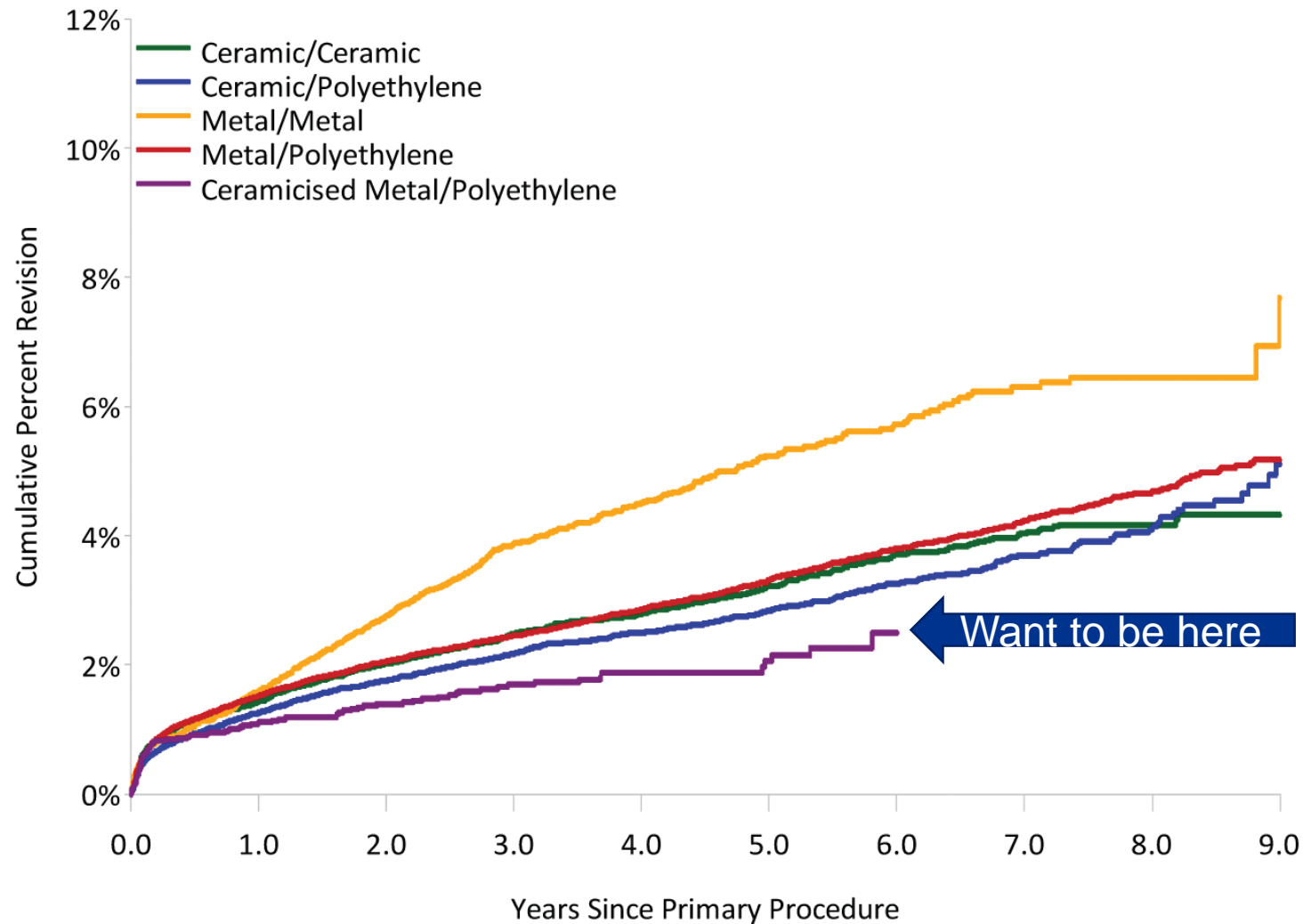
# Longevity of the Implant

## OXINIUM™ Oxidized Zirconium

- May extend the life of the implant due to wear
- Weighs 20% lighter than same-sized implant made from cobalt chrome
- Safe for patients with metal allergy
- Appropriate for physically active adults



# Technology for Hip/Knee Implants



# How long will the knee or hip last?

- On average:
  - 80% of total hips and knees last more than 15 years
- The longevity of an implant depends on many factors:
  - Surgical
    - Correct surgical alignment
    - Quality of the implants
  - Patient
    - Activity level
    - Overall medical health
      - Infection
      - Obesity
      - Falls, trauma

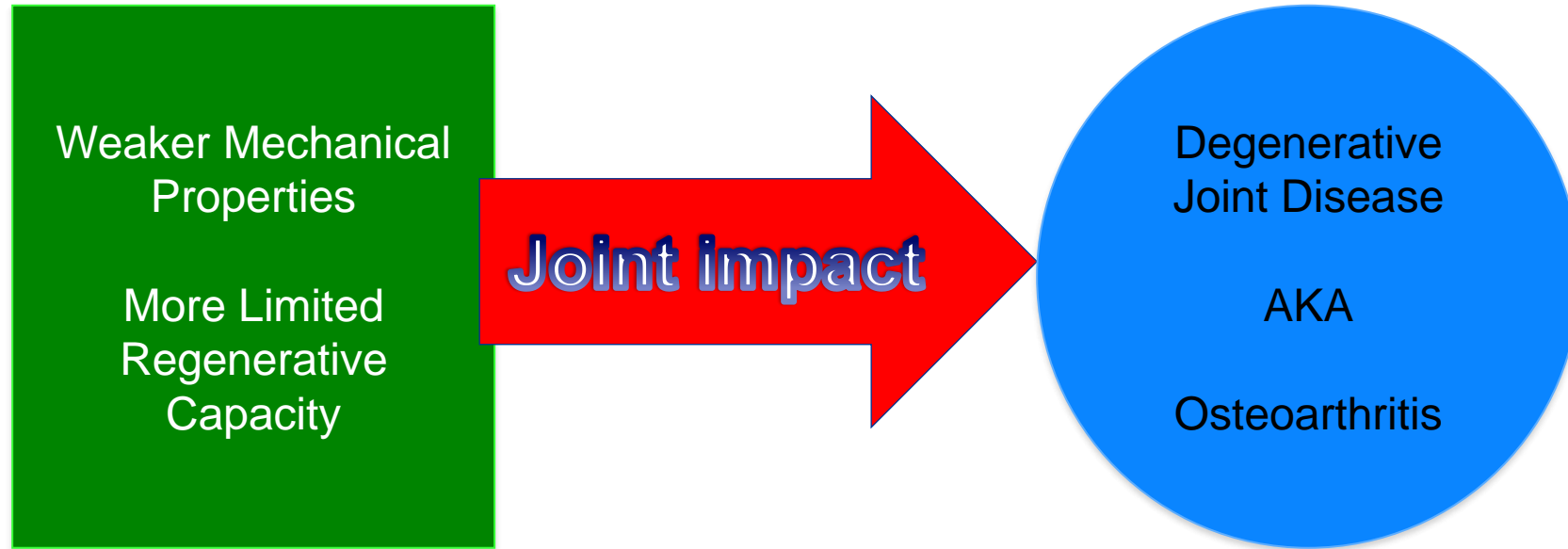


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THANK YOU!



# Age-related Changes to the Joint



# Age-related Changes

## Cartilage

Overall: elasticity and stiffness decreases

Decreased strength against physical stress  
(walking, running, jumping, stairs, etc.)

## Physical changes

- Loss of thickness: Joint space narrowing
- Focal sites of degeneration: “pot-holes”

