



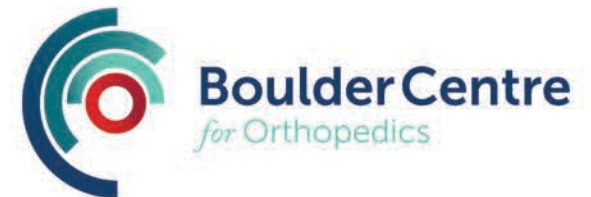
**Boulder Centre**  
*for Orthopedics*

# Relieving Hip Pain

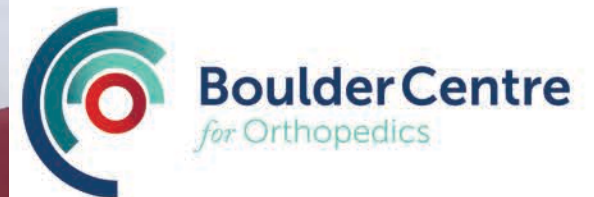
Austin W. Chen M.D.

# A little bit about me...

- From Pittsburgh, PA
- Undergrad at U. of Notre Dame
- Medical School and Orthopaedic Surgery Residency at U. of Illinois Chicago
- Sports Medicine Surgery fellowship at Taos Orthopaedic Institute, Taos, NM
- Comprehensive Hip Surgery fellowship at the American Hip Institute, Chicago, IL



# U.S. Ski Team

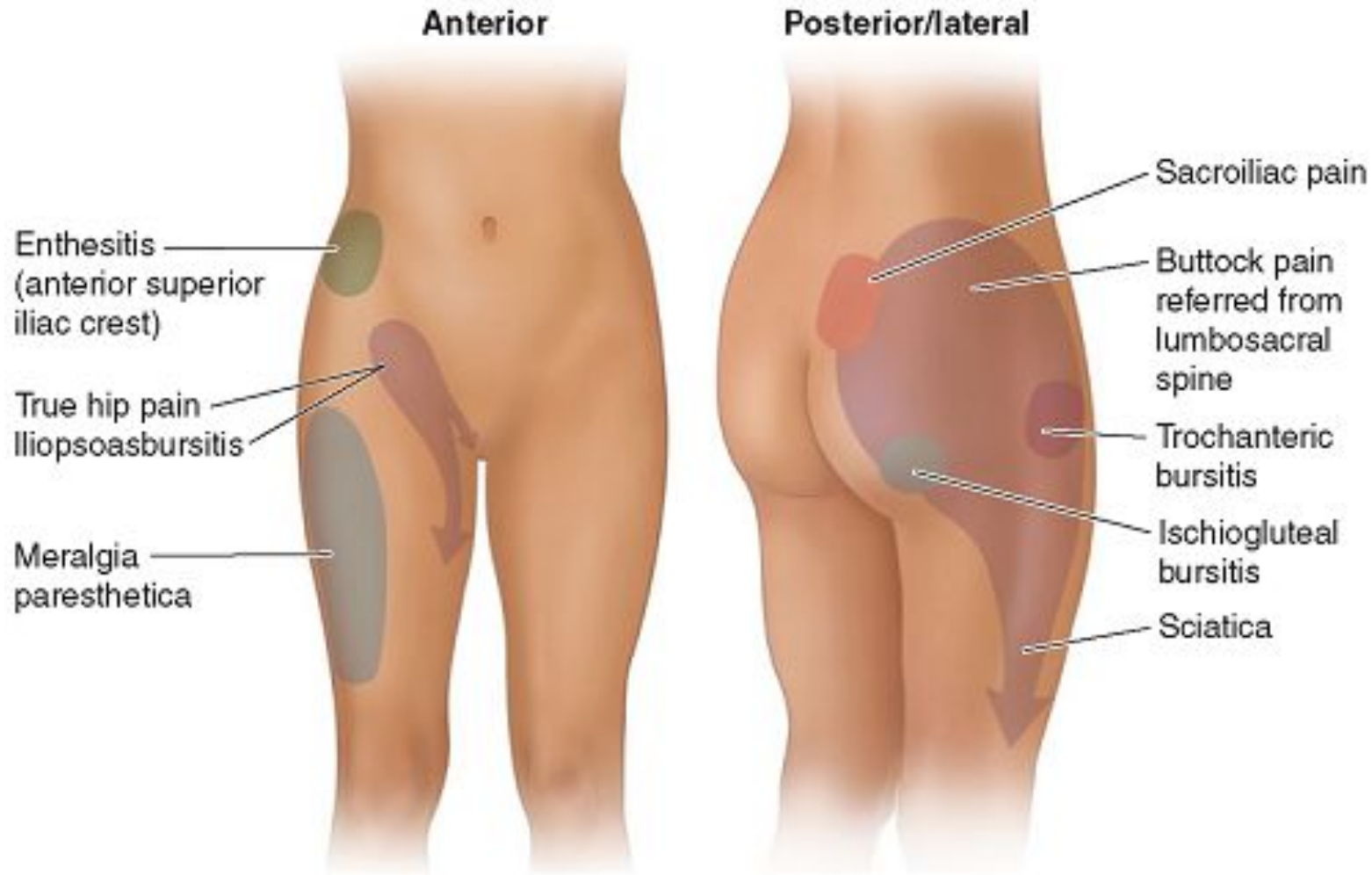


# Why Hips?

- Happy patients. Hip replacements one of the most successful surgeries ever –  $\sim >95\%$  patient satisfaction.
- Room for discovery. Hip preservation/arthroscopy has only been done in high volume for  $\sim 15$  yrs.
- Challenging diagnosis. Deep joint. Hip joint crossed by 30+ muscles. Close proximity to the spine.

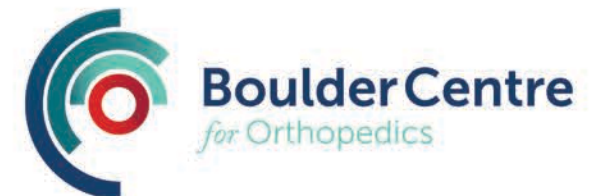


# Where is the pain? Is it really your hip?



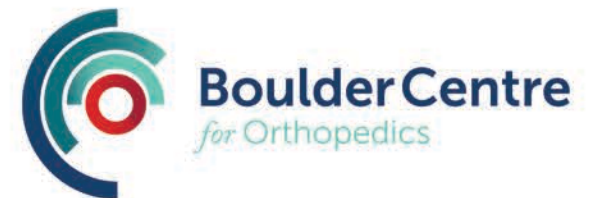
**TABLE 1.** Differential diagnosis: Causes of hip and groin pain.

<b>Childhood disorders</b>	<b>Infectious conditions</b>
<ul style="list-style-type: none"><li>• Congenital dysplasia</li><li>• Legg-Calve-Perthes disease</li><li>• Slipped capital femoral epiphysis (SCFE)</li></ul>	<ul style="list-style-type: none"><li>• Septic arthritis</li><li>• Osteomyelitis</li><li>• Psoas abscess</li><li>• Hip pyarthrosis</li><li>• Urinary tract infection</li></ul>
<b>Traumatic conditions</b>	<b>Inflammatory conditions</b>
<ul style="list-style-type: none"><li>• Subluxation/Dislocation</li><li>• Fractures of the femoral head</li><li>• Stress fractures</li><li>• Loose bodies</li><li>• Acetabular labral tears</li><li>• Contusions</li><li>• Femoral or inguinal hernia</li><li>• Athletic pubalgia</li></ul>	<ul style="list-style-type: none"><li>• Rheumatoid arthritis</li><li>• Juvenile arthritis</li><li>• Ankylosing spondylitis</li><li>• Bursitis</li><li>• Tendonitis</li><li>• Pelvic inflammatory disease</li><li>• Prostatitis</li><li>• Crohn's disease</li><li>• Psoriasis</li><li>• Reiter's syndrome</li><li>• Systemic Lupus Erythematosus</li></ul>
<b>Degenerative joint disease</b>	<b>Neurologic conditions</b>
<ul style="list-style-type: none"><li>• Osteoarthritis</li><li>• Osteolysis</li></ul>	<ul style="list-style-type: none"><li>• Radiculopathy</li><li>• Local nerve entrapment (ilioinguinal, genitofemoral, or lateral femoral cutaneous)</li></ul>
<b>Vascular conditions</b>	<b>Metabolic conditions</b>
<ul style="list-style-type: none"><li>• Osteonecrosis/avascular necrosis</li></ul>	<ul style="list-style-type: none"><li>• Gout</li><li>• Metabolic bone disease</li></ul>
<b>Neoplasms</b>	<b>Other causes</b>
	<ul style="list-style-type: none"><li>• Referred pain</li><li>• Corticosteriod use</li><li>• Alcoholism</li><li>• Psychosocial</li><li>• Gynecologic</li></ul>

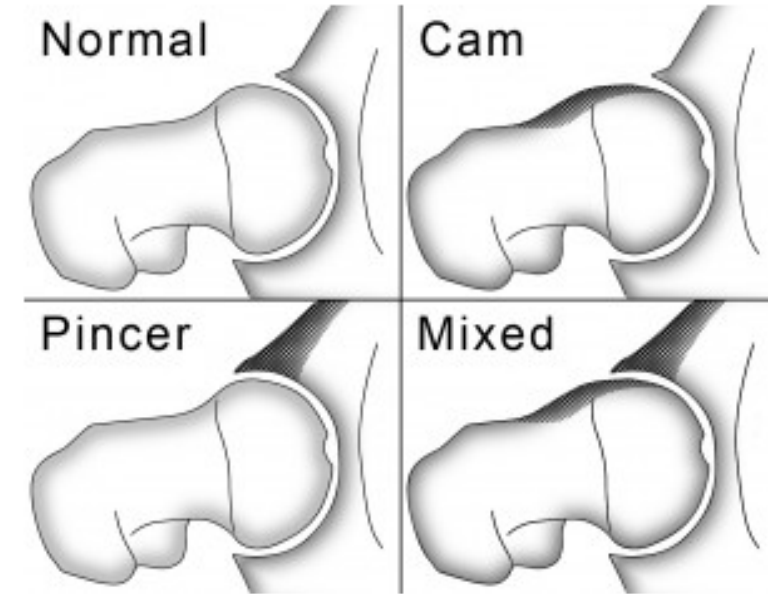


# Common causes of hip pain:

1. Hip (femoroacetabular) Impingement (FAI)
2. Instability/Dysplasia
3. Labral tear
4. Snapping hip
5. Greater Trochanteric Pain Syndrome
  1. Trochanteric Bursitis
  2. Abductor (gluteus medius/minimus) tears
6. Arthritis



# Hip (Femoroacetabular) Impingement - FAI



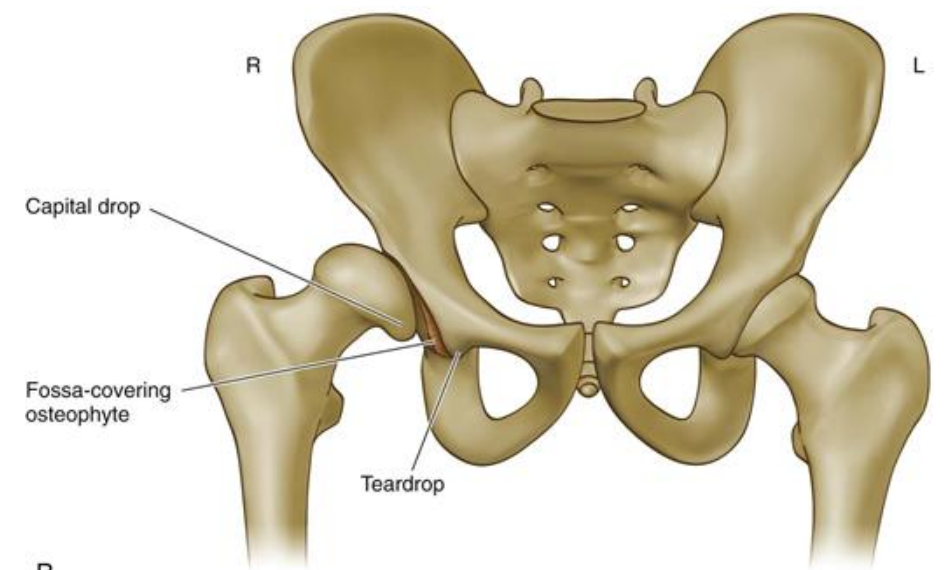


# Hip Micro-instability

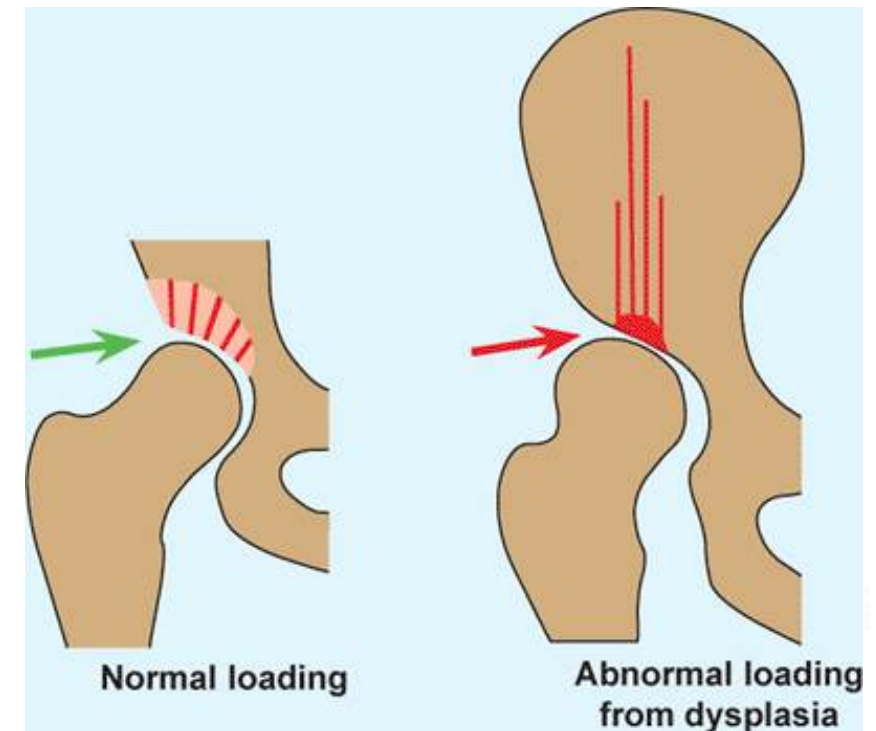


Ligamentous  
Laxity

Dysplasia

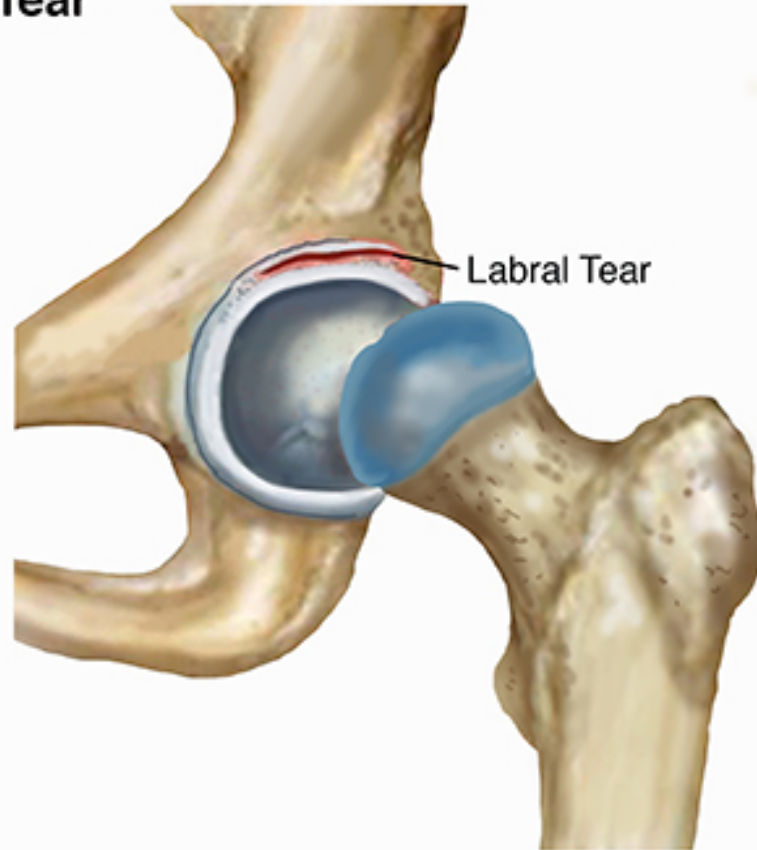
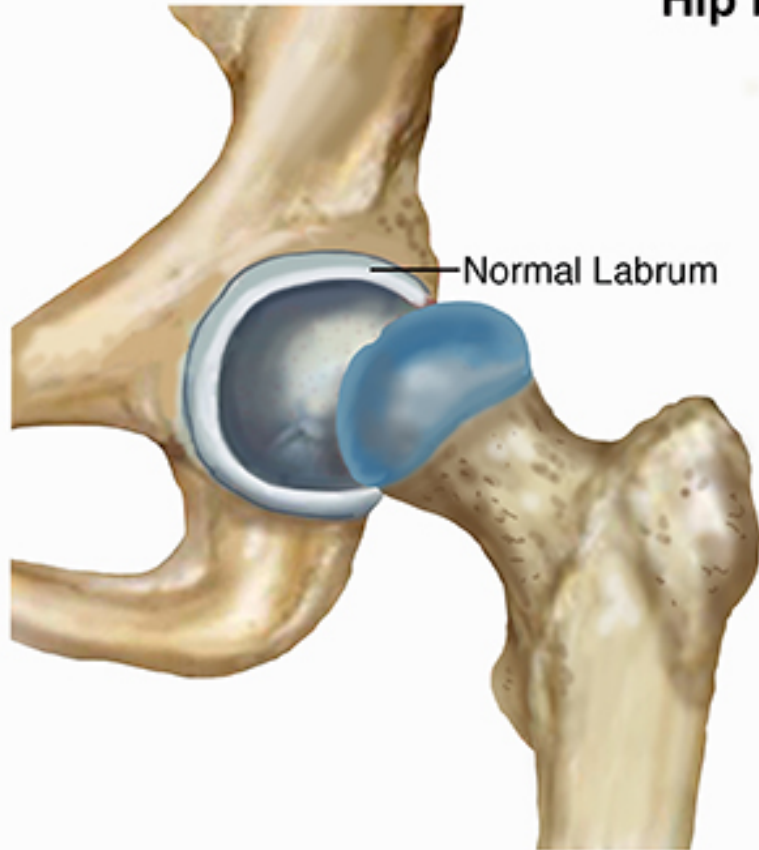


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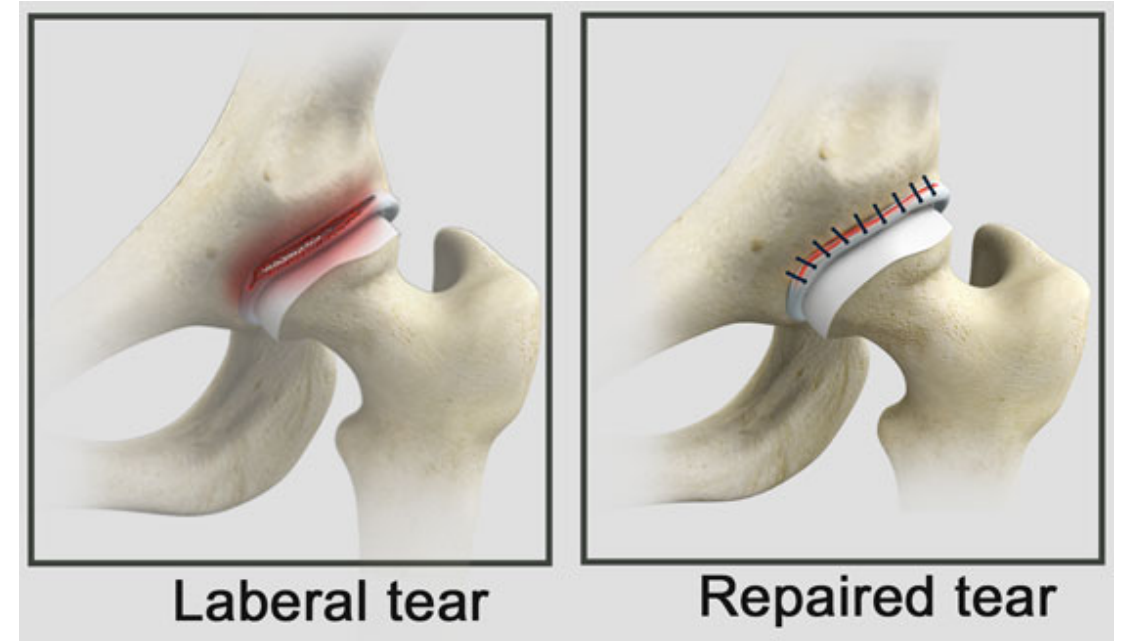
# Hip Labral Tear

Hip Labral Tear

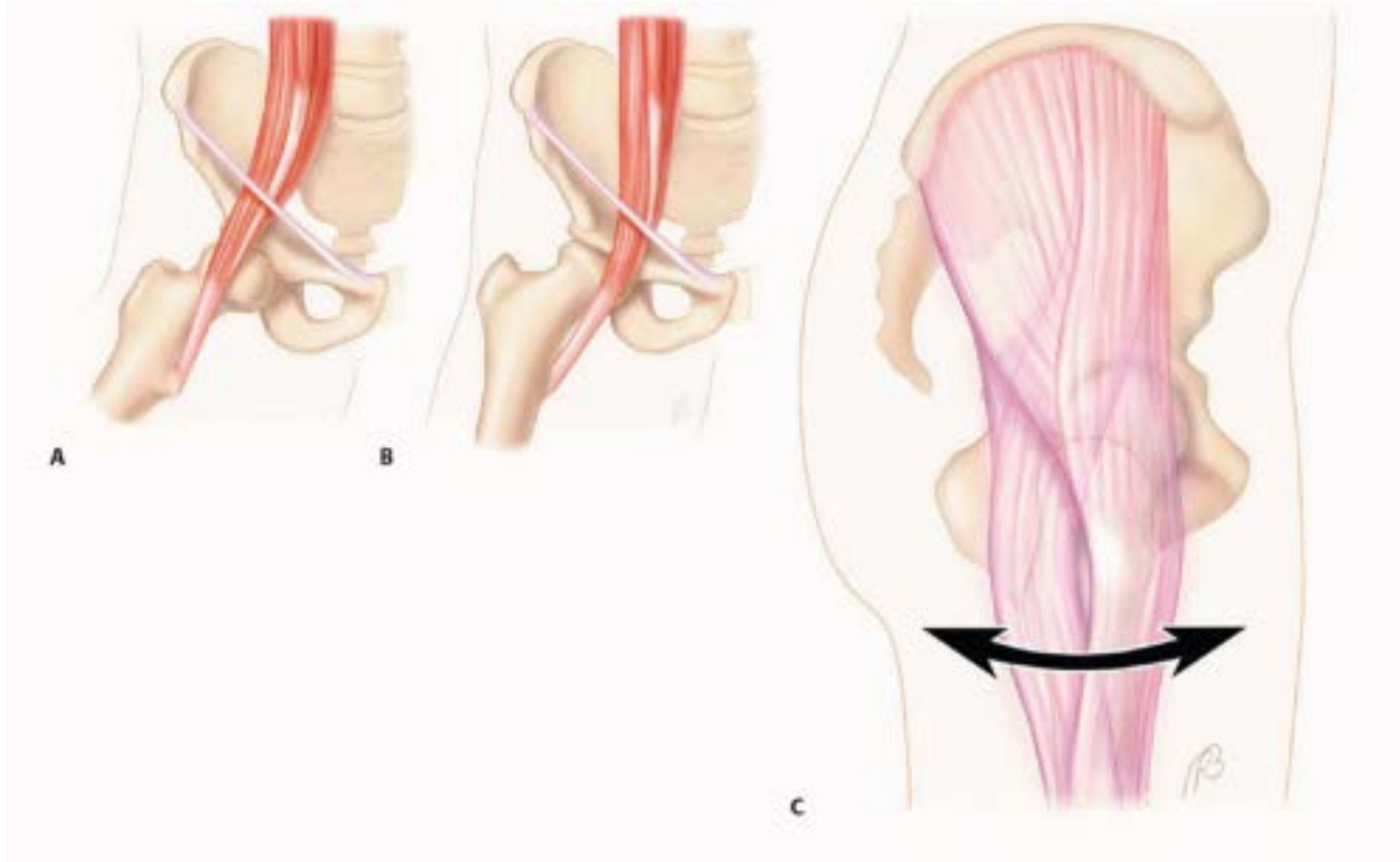


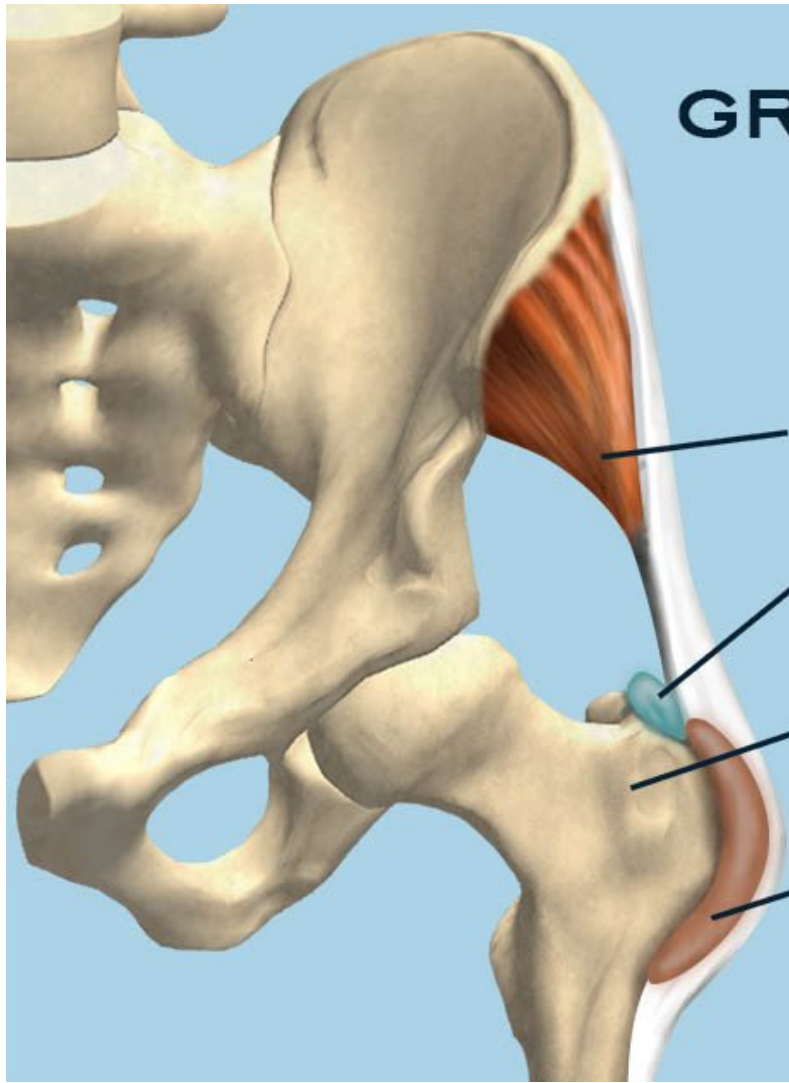
# Importance of the Labrum

- Labrum increases...
  - Articulating surface by 22%
  - Acetabular volume by 33%
- Regulates fluid lubrication
- Joint stability
- Load bearing
- Suction seal of hip joint



# Snapping Hip





# GREATER TROCHANTERIC PAIN SYNDROME

GLUTEUS MEDIUS MUSCLE

DEEP TROCHANTERIC BURSA

GREATER TROCHANTER

INFLAMED TROCHANTERIC BURSA

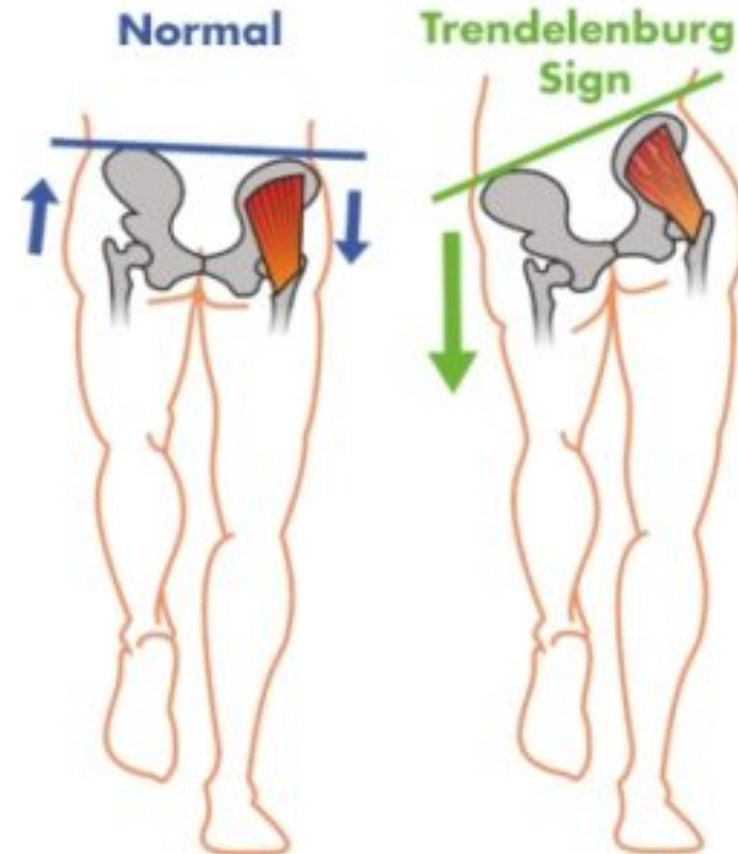
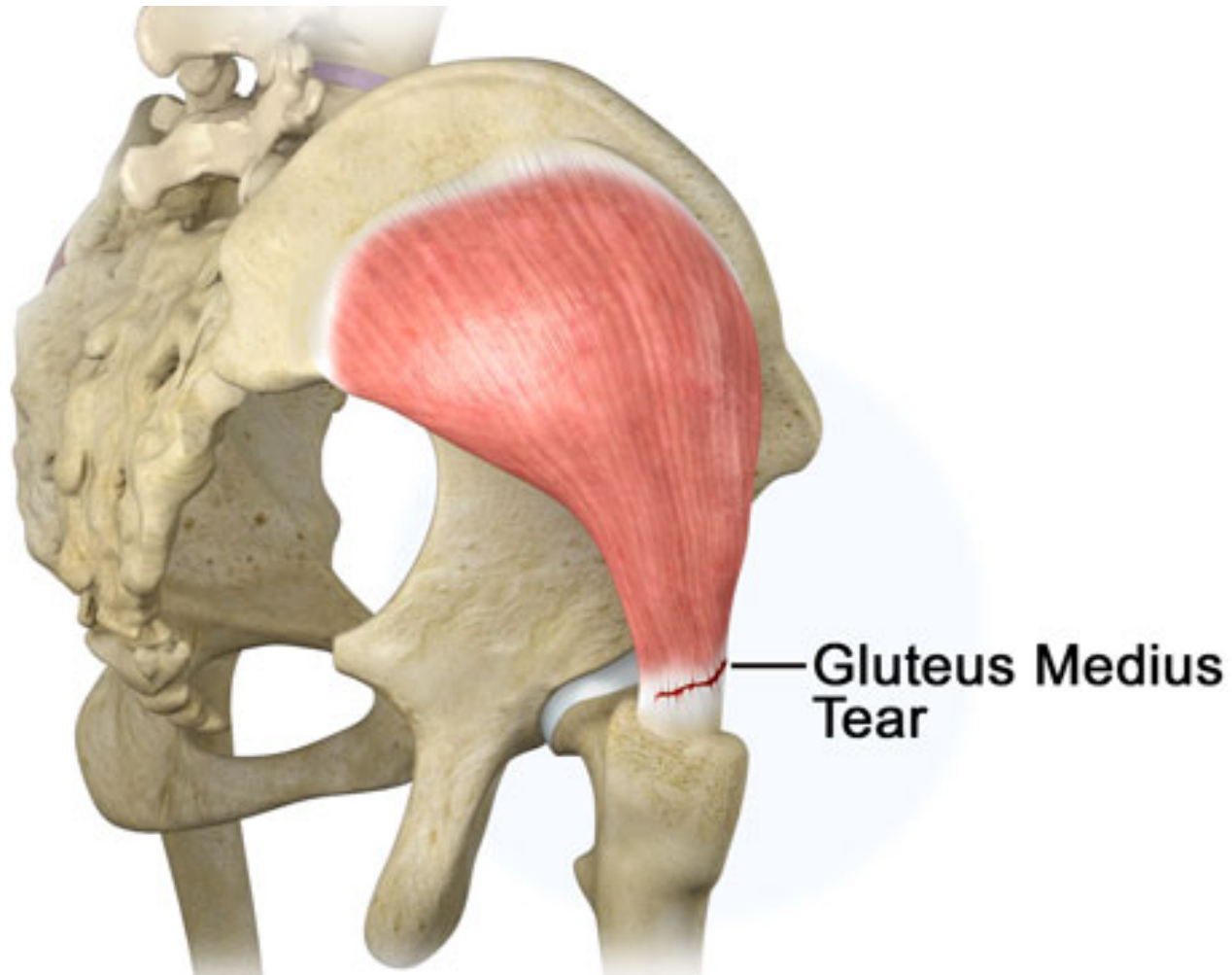
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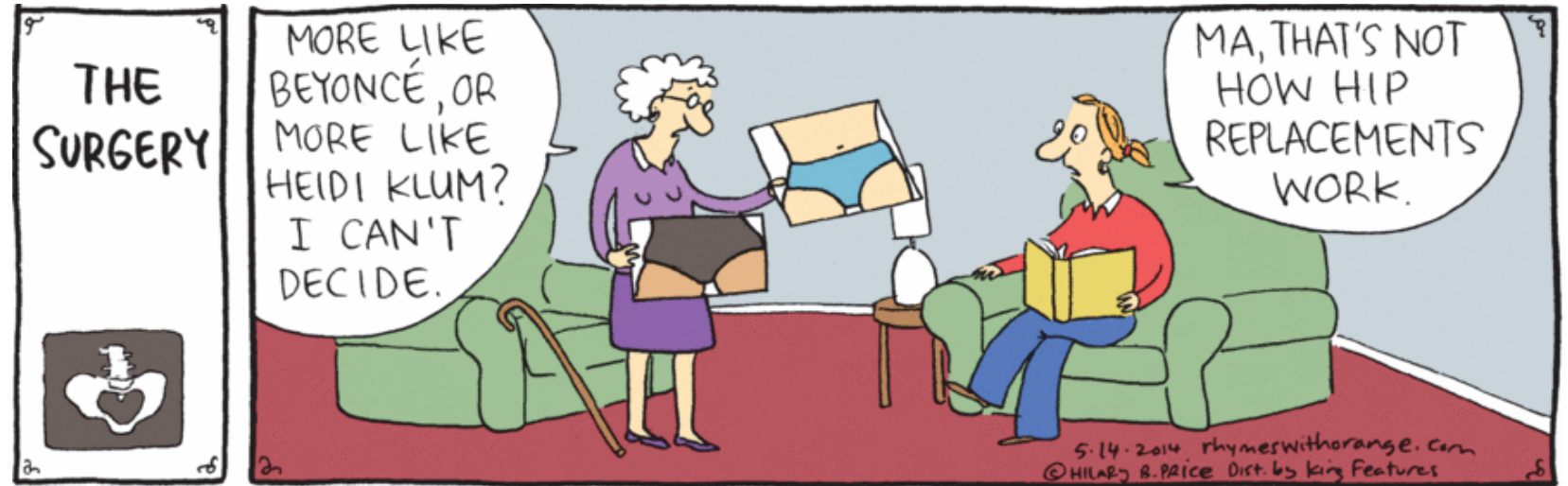
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# Gluteus Medius/Minimus Tears “Rotator Cuff Tears of the Hip”



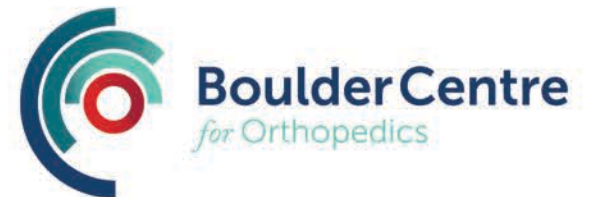
# Treatments

- Observation
- Physical Therapy
- Injections
  - Steroid
  - Biologics
- Surgery
  - Preservation/Arthroscopy
  - Replacement



# Observation

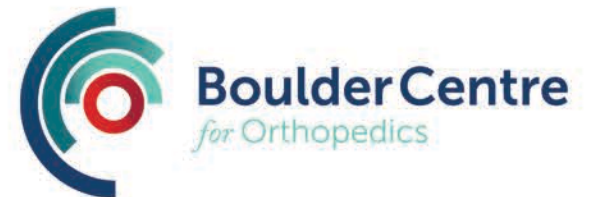
- Getting a diagnosis is not always bad!!
  - Mind is a powerful tool...
- Not cancer - will not kill you
- How much do your symptoms affect you?
- My job is to get you back to doing what you need/want to do





# Hip Health

- Low Impact >> High Impact
  - Hiking, Biking, Swimming better than Running/Jumping
  - No breast stroke
- Your hip is a ball and socket – it has a mechanical end point. Don't try to stretch past it!
  - Good stretch vs. Bad stretch
- Let pain be your guide



# Physical Therapy, Acupuncture, Dry Needling

## Muscles Crossing the Hip Joint



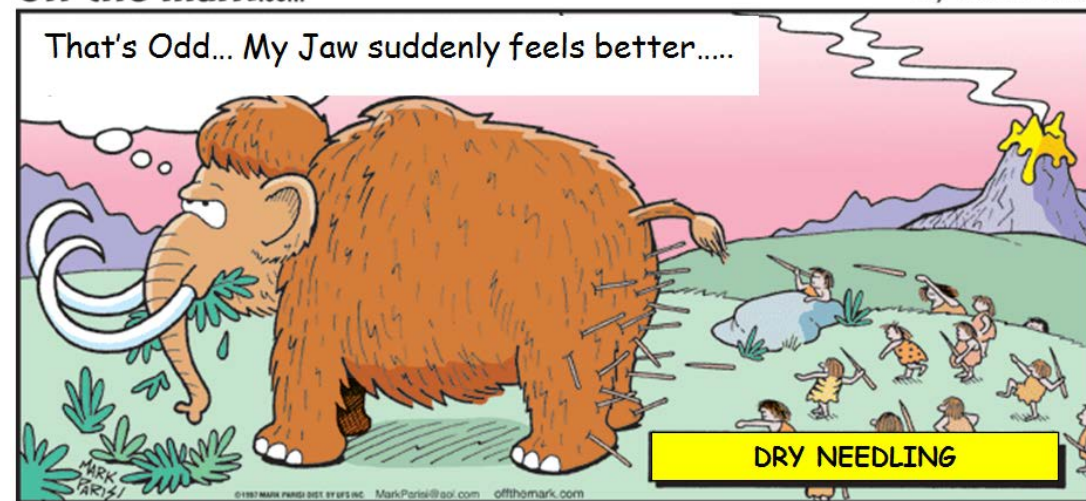
(d) Posterior superficial and deep view

Figure 11.20d Tortora - PAP 12/e  
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- The ball-and-socket hip joint permits flexion, extension, abduction, adduction, circumduction, and rotation
- The muscles for these movements are most powerful
- Movement of thigh at the hip joint is by muscles anchored to the pelvic girdle – the iliopsoas, tensor fasciae latae and rectus femoris
- Iliopsoas are the iliacus and psoas major
- Quadriceps femoris has 4 heads
  - Rectus femoris crosses hip
  - All insert into quadricep tendon
  - all act to extend the knee
- Adductor muscles
  - bring legs together
  - cross hip joint medially

off the mark.com

by Mark Parisi



# Injections



- Steroid

- Commonly avoided in younger pts, athletes, pt with good cartilage due to potential harmful chondral effects with repeated injections
- More efficacious in arthritis, less in FAI (Chandrasekaran et al. JHPS 2015)

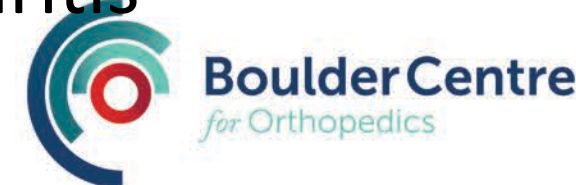
- Hyaluronic Acid (HA) aka “Gel shots” aka “Rooster shots”

- (+) Evidence for improved pain, NSAID consumption and hip scores at 6 and 12 months compared with baseline (Chandrasekaran et al. JHPS 2015)
- (-) Not FDA approved for any joint other than knee

# Injections – Platelet Rich Plasma

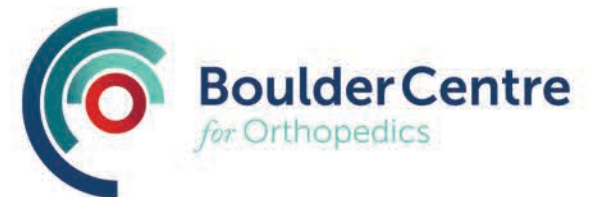


- Rationale: local delivery of growth factors released from platelets to facilitate and enhance the healing of injured tissue
- *Reality*: mechanism of action seems to be through immunomodulation and anti-inflammatory mediators rather than direct modification of the cartilage (re: knee arthritis)
- Current evidence best supports its use in knee arthritis



# PRP in the Hip

- 3 Level 1 (highest level) research studies demonstrate improvement in hip arthritis vs other injections – all performed as a series of 3 injections, 1 week apart.
- Improves symptoms, MAY have reparative effect on cartilage, NOT proven to increase joint space

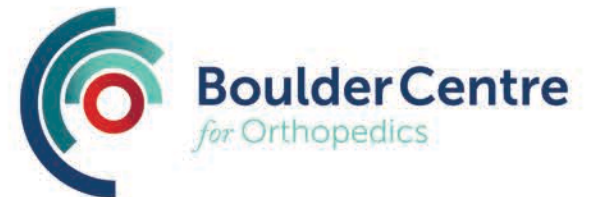


# Injections – Stem Cells

- Want it to be our “magic wand”
- Safe but questionable efficacy for knee OA
- No evidence for hip arthritis or FAI
  - Few small studies for femoral head death (osteonecrosis/avascular necrosis – AVN)



# If Conservative Treatments Fail...



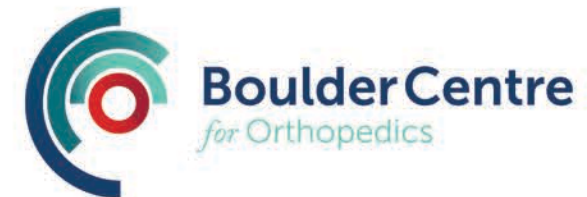
# Surgery – Hip Preservation/Arthroscopy

- 3-4 “key hole” size incisions
- Indications: Impingement/FAI, Labral tears, Some cases of instability and painful snapping
- **\*\*Minimal to NO arthritis!**
  - 98.1% hip survivorship 2yrs after hip arthroscopy for 30yo or younger
  - 82.7% for 50yo or older
- “There’s probably no surgery that will make your hip perfect, but if we can make it better, that’s a win.”



Outcomes of Hip Arthroscopy in Patients Aged 50 Years or Older Compared With a Matched-Pair Control of Patients Aged 30 Years or Younger

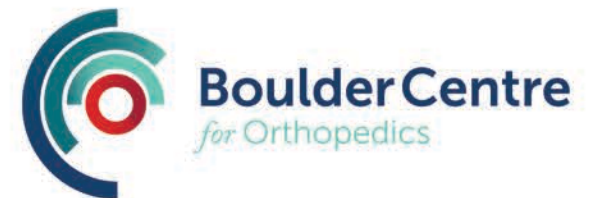
Benjamin G. Domb, M.D., Dror Linder, M.D., Zachary Finley, B.S., Itamar B. Botser, M.D., Austin Chen, M.D., Joseph Williamson, B.S., and Asheesh Gupta, M.D., M.P.H.



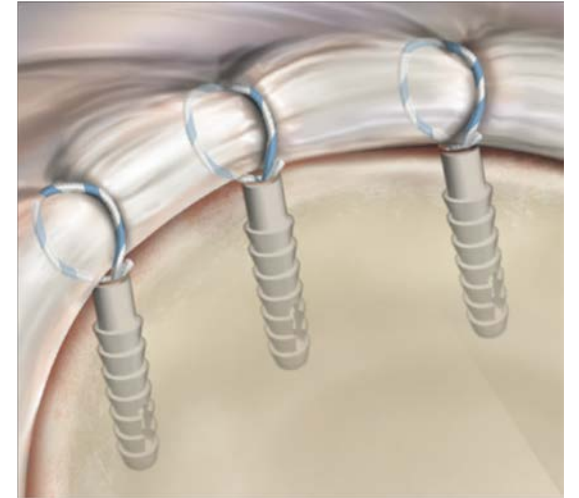


# Hip Arthroscopy Goals

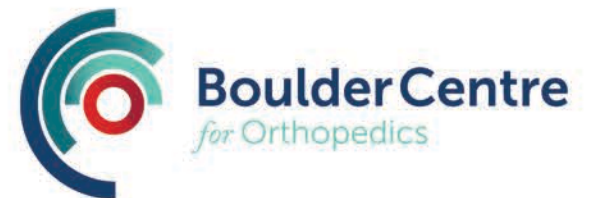
- Remove impingement
  - Trim rim of deep sockets
  - Re-shape femoral head
- Re-establish labral function
  - Repair
  - Reconstruction with tendon graft
  - Debridement
- Remove painful snapping
  - Lengthen the hip flexor muscle/tendon unit by releasing the tendon portion
- Address stability
  - Release ligaments/capsule for hip stiffness
  - Tighten ligaments/capsule for hip instability



# Hip Arthroscopy Labral Repair

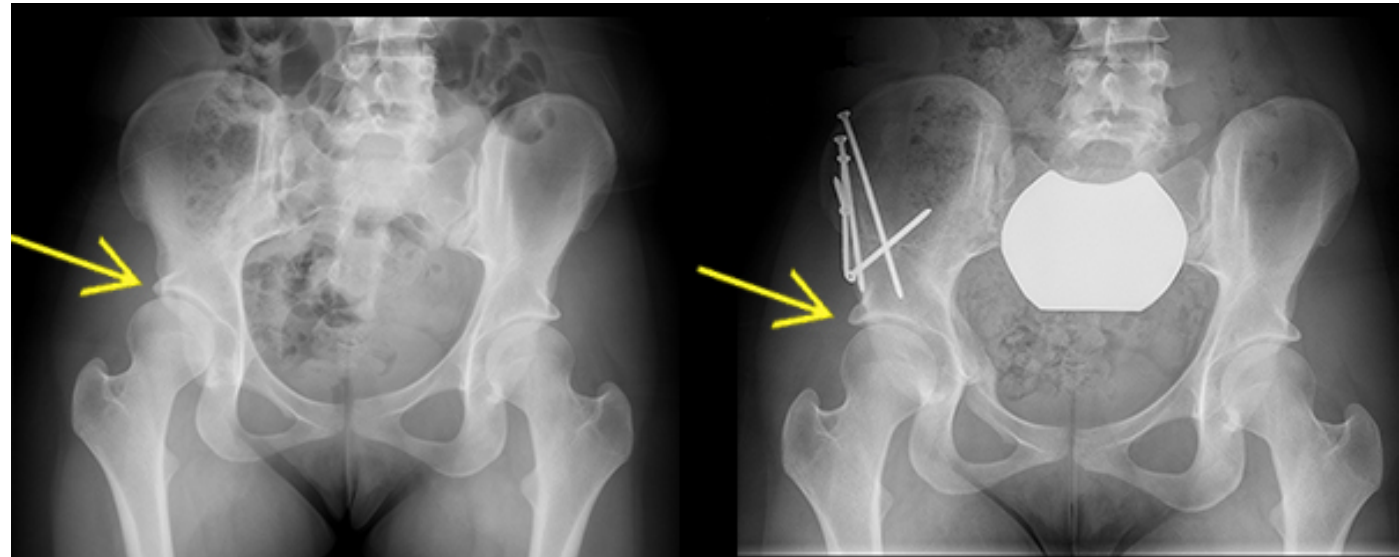


# Hip Arthroscopy Labral Reconstruction w/ Graft



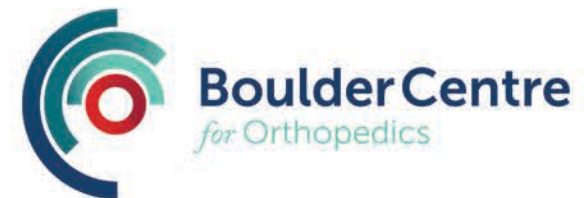
# What Can NOT Be Done Arthroscopically?

- Deepening of shallow sockets (dysplasia)
  - Requires open procedure – usually periacetabular osteotomy (PAO)
  - Arthroscopy can be done in combination with PAO to address labral tears
- Replace missing or damaged cartilage
  - This is why joint replacements exist...



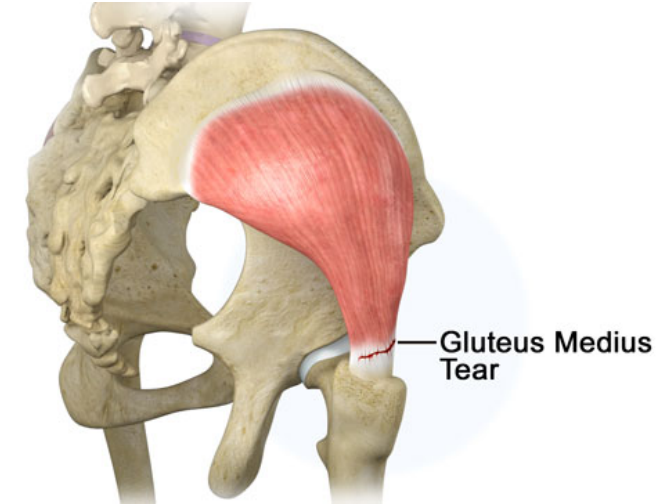
# Recovery from Hip Arthroscopy

- Typical
  - 2 weeks on crutches – foot-flat weight bearing with a brace
  - Start PT 1-2 days after PT
- Occasional (labral reconstruction with tendon graft, gluteus medius repair)
  - 6 weeks on crutches with a brace
  - Delay PT for 6wks
- Rare
  - 8 weeks on crutches, but discontinue brace after 2 weeks
  - Delay PT for 6 wks
- All followed by 3 months of PT
  - Longer than hip replacement



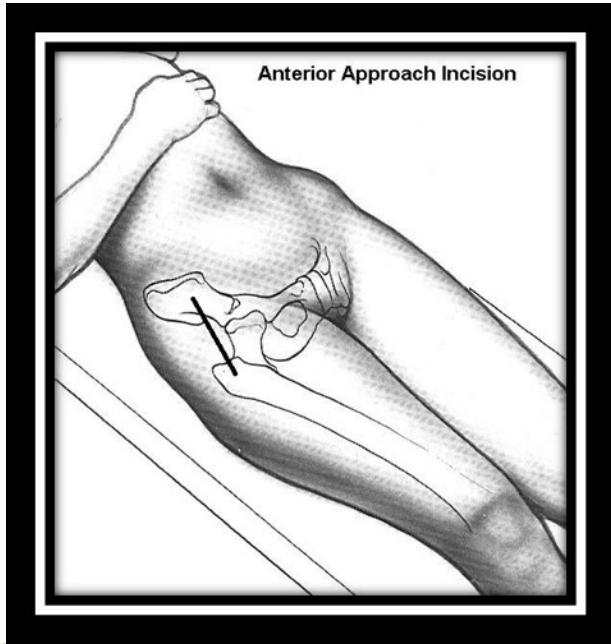
# Abductor (Gluteus Medius/Minimus) Repairs

- Endoscopic Repair
- Open Repair
- Gluteus Maximus Transfer

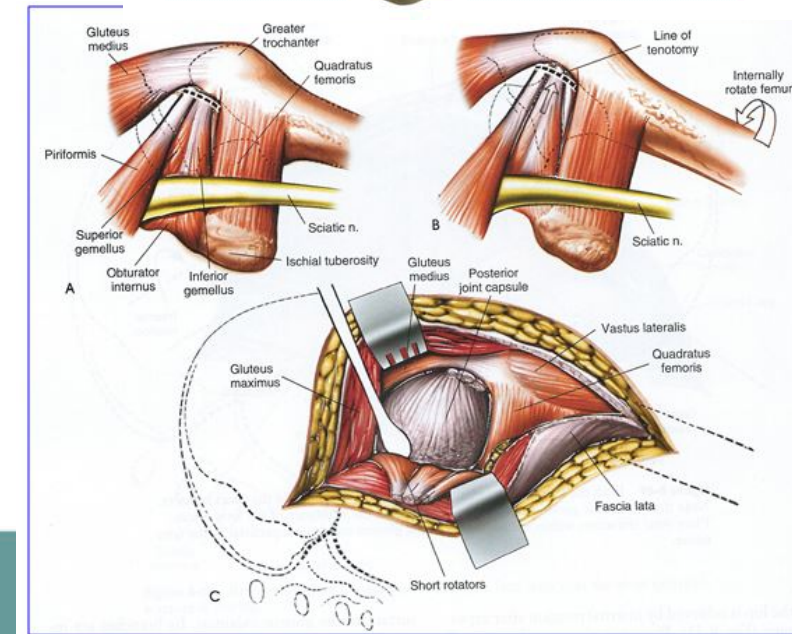
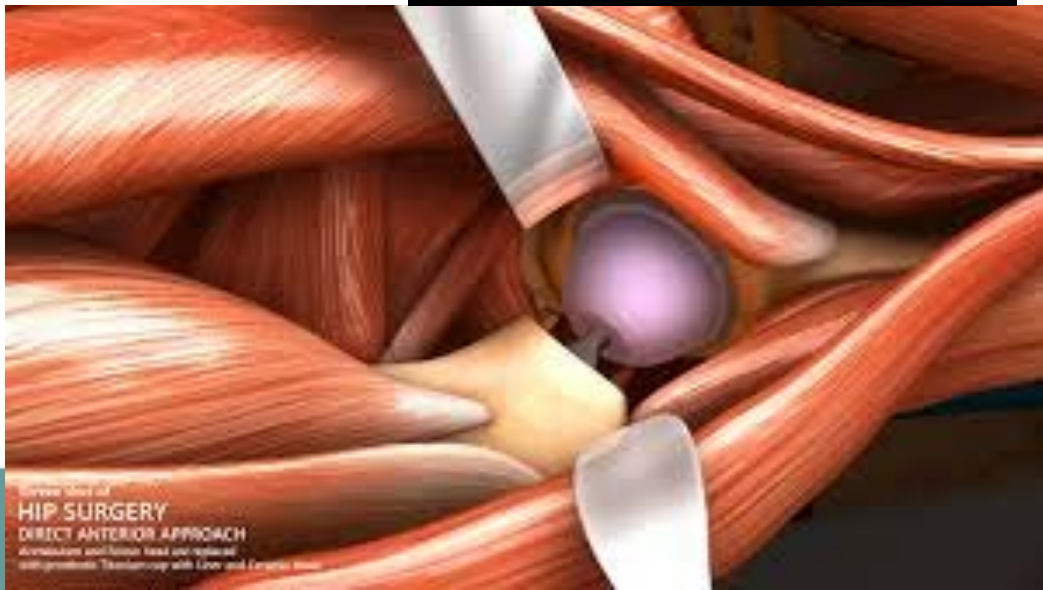
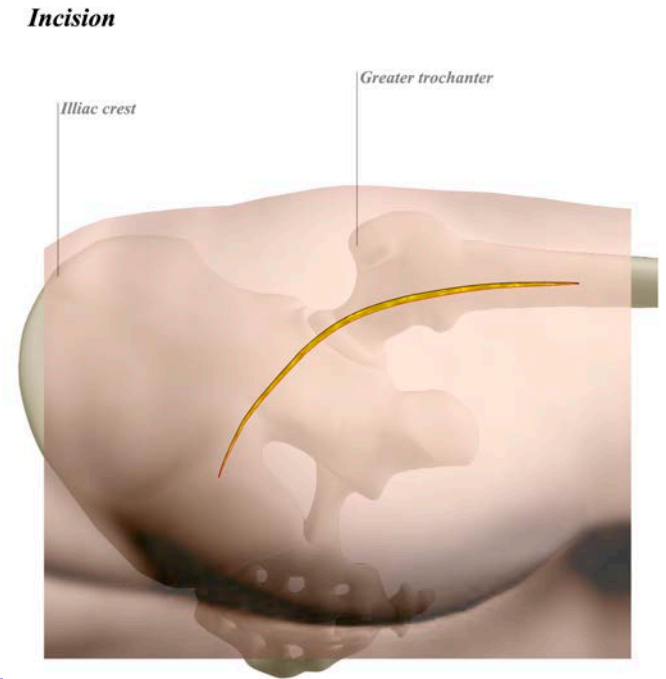


# Hip Replacement - Approach

Anterior

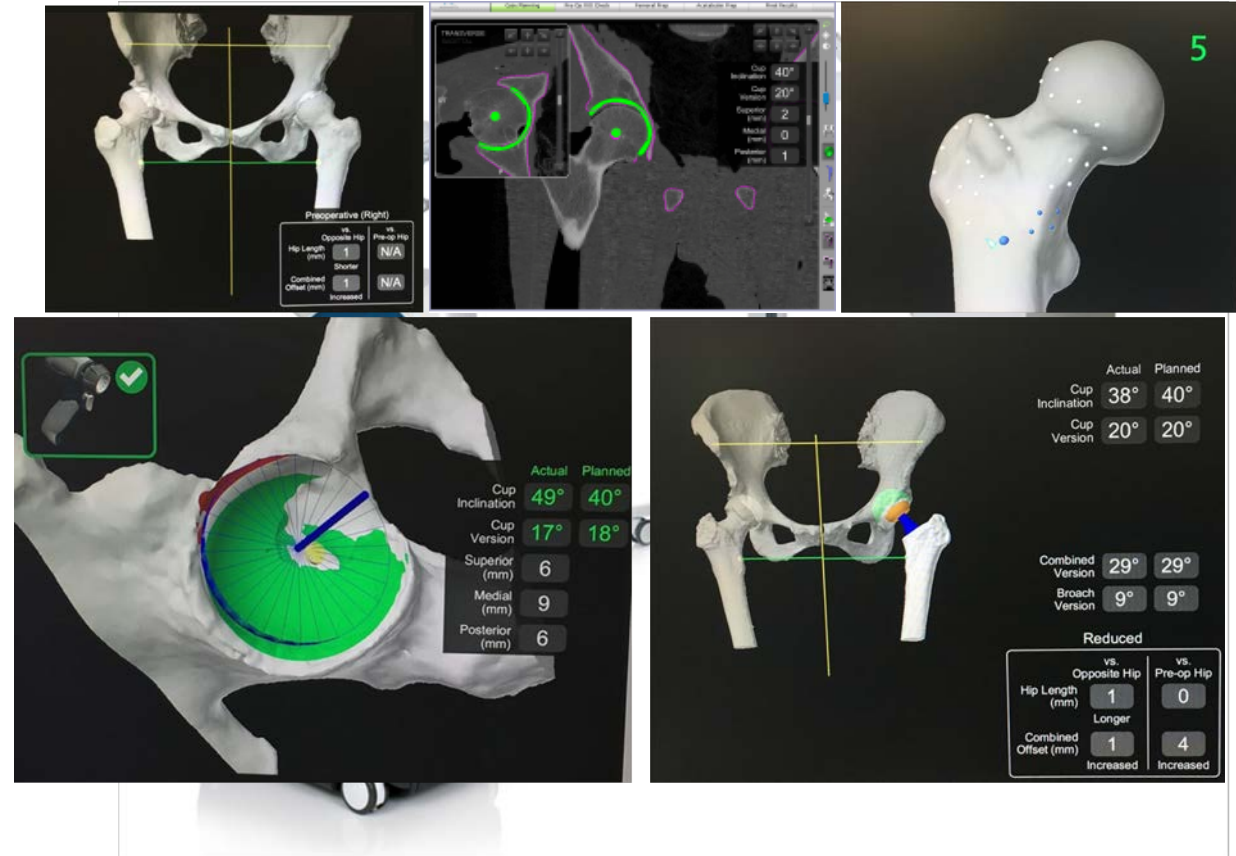


Posterior



# Hip Replacement - Robotics

- Pre-op CT
- 3-D model planning
- Intra-op registration
- Intra-op adjustment
- Haptic feedback
- → Higher implant accuracy





# Hip Replacement – Benefits of Robotics

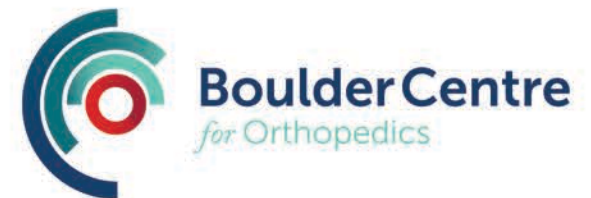
- Component malposition →

- Hip dislocations
- Poor biomechanics – mechanical loosening
- Accelerated wear
- Leg length discrepancy (LLD)
- Bone stock loss
- Hip tightness

- → 40% of Revisions



# Inpatient vs Outpatient Joint Replacement



# Hip Replacements – Bottom Line

- Anterior vs Posterior Approach
- Robotics vs Non
- Inpatient vs Outpatient

