Evaluation of the Patient with Hip Pain

Ted Parks, MD
Disclosures:

• NONE
Causes of Hip Pain (common things)

- Arthritis
- Greater Trochanteric Bursitis
- Lumbar Spine Pathology
Causes of Hip Pain (less common things)

- Avascular Necrosis
- Femoral-Acetabular Impingement
- Labral Tears
HIP PAIN

Common cause #1: Arthritis
Hip Arthritis: Signs and Symptoms

Hx:
• Age
• Trouble getting shoes/socks on, clipping toe nails

PE:
• “Windshield wiper test”
Treatment

- NSAIDS (Aspirin, Ibuprophen, Aleve, Celebrex, etc)
- Cortisone Injection
- Nutritional Supplements
- Weight loss
- Assistive Devices (cane, crutches, walker)
- Physical Therapy
Surgical Treatment
Problems with cup arthroplasty:
1) Poor relief of socket sided pain
2) Poor bond to femur bone
Better Solution

- Resurface ball and socket
- Low friction
- Durable
- Permanently bonded to bone

Sir John Charnley
Modern Hip Replacement

• Safe, reproducible procedure with excellent patient satisfaction

• The replacement may only last 7 – 15 years
Factors Leading to Hip Replacement Failure

- Weight
- Activity Level
- Bone Quality
- Age
Wear Debris
Fig 2. Shown are polyethylene wear particles that were isolated from tissues around a metal on polyethylene resurfacing hip prosthesis and studied with scanning electron microscopy. The 0.2 μm pores of the filter on which the particles are collected, are visible in the background. The particles are either rounded granules or elongated fibrils. Many submicron sized particles are visible. (Magnification, x5000).
“…500,000 polyethylene particles generated per step taken…”

• Clin. Ortho. 311:1 1995
Polyethylene debris is what causes joint replacements to fail.
original  loose  revised
Our Current Goal in Hip Replacement Research:

- Make the hip replacement last the lifetime of the patient

Poly particles $\rightarrow$ Biological rxn $\rightarrow$ Loosening $\rightarrow$ Failure

- Limit or eliminate poly particles
Typical Crosslinking Process

Gamma Rays

PE Molecules

Schematic showing radiation process.

Crosslinking

Schematic showing crosslinked molecular structure.
Traditional vs. New Poly

Wear Rate (microns/year)

CoCr/Polyethylene

200 microns/year

CoCr/Crossfire® Polyethylene

20 microns/year
Cobalt chrome on cobalt chrome bearing surfaces transcend existing cobalt chrome on poly systems.
Metal on Metal

Wear Rate (microns/year)

CoCr/Polyethylene: 200 microns/year
CoCr/Crossfire® Polyethylene: 20 microns/year
Metal/Metal: 4.3 microns/year
Trace metal elevation compared to normal people

- Chromium in blood: 28 fold increase
- Chromium in urine: 146 fold increase

(Jacobs, 1996)
Ceramic on Ceramic

Wear Rate
(microns/year)

CoCr/Polyethylene: 200 microns/year
CoCr/Crossfire® Polyethylene: 20 microns/year
Metal/Metal: 4.3 microns/year
Alumina/Alumina: <1 micron/year
Ceramic Head Fracture
Ceramic on New Poly

Wear Rate (microns/year)

CoCr/Polyethylene: 200 microns/year
CoCr/Crossfire® Polyethylene: 20 microns/year
Metal/Metal: 4.3 microns/year
Alumina/Alumina: <1 micron/year
Alumina/X3™: 1.4 microns/year
Minimal Incision Hip Replacement

Anterior

Posterior

Mini Single Incision Sites
Hip Resurfacing

Old (1940s) →

New (2006)
The Future...
HIP PAIN

Common cause #2: Greater Trochanteric Bursitis
Hip Muscles

- Tensor fasciae latae
- Sartorius
- Rectus femoris
- Vastus lateralis

Side view

- Gluteus maximus
- Iliotibial band

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Greater Trochanteric Bursitis: History

- Pain at night
- Pain is usually lateral
- Can radiate to the knee
Greater Trochanteric Bursitis: Exam

- Full range of motion with no or minimal pain
- Pain to palpation over the greater trochanter
Greater Trochanteric Bursitis: Studies

- X-rays = Normal
Greater Trochanteric Bursitis: Treatment

- Stretches/NSAIDs
- Cortisone injection
Stretches for Hip Bursitis

- Supine cross-over
- Standing wall lean
Rx

Dx= (R) Hip Trochanteric Bursitis
Rx= ITB, Gluteal, TFL eccentric PEs and Stretches
2-3x/wk + HEP x 4wks

John Doe MD

☐ LABEL   ☐ DO NOT SUBSTITUTE
Cortisone Injection
HIP PAIN

Common cause #3: Back Problems
Hip Pain from Spine History

- Pain that radiates below the knee
- Numbness/tingling
- Back pain
Hip Pain from Spine Exam

• Normal, pain free range of motion

• No trochanteric tenderness

• Radicular findings
  - decreased sensation
  - weakness
  - reflex changes

• Hip Xrays = normal
HIP PAIN

Uncommon cause #1:

Avascular Necrosis Of the Femoral Head
AVN: Signs and Symptoms

Hx:
• Systemic Corticosteroids
• Alcoholism
• Vaso-occlusive diseases

PE:
• Positive “Windshield wiper” sign
AVN: Treatment

Early (pre-collapse) stages
• Core decompression operation
• Non-wt bearing

Late (post-collapse) stages
• Hip replacement
HIP PAIN

Uncommon causes #2&3:

Labral Tears and Femoral-Acetabular Impingement
Labral Tears

LABRUM

CARTILAGE
Maximal internal rotation position
Normal

Acetabular Impingement
Normal

Femoral Impingement
(R) Hip MRI Arthrogram
R/O Labral Tear

John Doe MD
Thank You!

Ted Parks, MD