Evaluation of the Patient with Hip Pain

Ted Parks, MD
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, ×5000).
“…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
Traditional vs. New Poly

![Wear Rate Comparison](image)

<table>
<thead>
<tr>
<th>Material</th>
<th>Wear Rate (microns/year)</th>
</tr>
</thead>
<tbody>
<tr>
<td>CoCr/Polyethylene</td>
<td>200</td>
</tr>
<tr>
<td>CoCr/Crossfire Polyethylene</td>
<td>20</td>
</tr>
</tbody>
</table>
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
HIP REPLACEMENT LAWYERS
HELPING VICTIMS OF DEFECTIVE HIP IMPLANTS NATIONWIDE
Trace metal elevation compared to normal people

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

(Jacobs, 1996)
Ceramic Head Fracture
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
Hip Resurfacing

Old (1940s) →

New (2006)
Minimal Incision Hip Replacement

Anterior

Posterior

Mini Single Incision Sites
The Future...
HIP PAIN

Common cause #2: Greater Trochanteric Bursitis
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 (negative windshield wiper test)
- 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 PREs and Stretches
2 - 3x/wk + HEP x 4 wks

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
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HIP PAIN

Uncommon cause #1:

Avascular Necrosis Of the Femoral Head
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
Core decompression operation

Drilling into the femoral head
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
Maximal internal rotation position
Hip Pain

Tender over Trochanter?

Yes

Bursitis

Stretches, Injection

No

X-Ray: Arthritis?

Yes

Conservative Rx

Surgery

No

Back Pain, Radicular Findings?

Yes

Lumbar Spine eval & Rx

No

Hip MRI (with intra-articular contrast)
(R) Hip MRI Arthrogram
R/O Labral Tear

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Hip Fractures:

- Common orthopaedic problem
- Poorly understood
Anatomy

- Femoral Head
- Intertrochanteric Region
- Femoral Neck
- Femoral Shaft
Types of Hip Fractures

Intertrochanteric Fracture

Femoral Neck Fracture
Treatment of Hip Fractures: SURGERY
Goals of Treatment

• Decrease mortality
• Preserve ability to ambulate
• Decrease pain
Types of Hip Fractures

- Intertrochanteric Fracture
- Femoral Neck Fracture
Blood Flow: the key to determining type of surgery
Intertroch fx  Femoral neck fx
Intertroch fx: osteosynthesis

Femoral neck fx: Hip replacement

Living Bone

Dead Bone

Intertrochanteric Fracture

Femoral Neck Fracture
Fracture Table
Osteosynthesis
(for intertrochanteric fxs)
Intertroch fx: osteosynthesis

Femoral neck fx: Hip replacement

Living Bone

Dead Bone

Inter-trochanteric Fracture

Femoral Neck Fracture
Example Cases

Tips:
1) Look for the “hour glass” of the femoral neck
2) If it’s on the border, it’s an intertrochanteric fracture
How Does a Bone Scan work?
How Does an MRI Work?
Living Bone
Intertrochanteric Fracture

Dead Bone
Displaced Femoral Neck Fracture

Living Bone
Non-Displaced Femoral Neck Fracture
Thank You!

Ted Parks, MD