New Trends in Orthopedics

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  1. Journal of Arthroplasty
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  3. Orthopedic Knowledge Online
Common Causes of Pain

• Possible causes of hip pain
  • Back pain/neurologic symptoms
  • Femoroacetabular impingement (FAI)
  • Chondral lesion
  • Greater trochanteric bursitis
  • Iliopsoas tendinitis
  • Inguinal hernia
  • Sports hernia
  • Osteonecrosis/AVN
  • Tumor
  • Infection

• Possible causes of knee pain
  • Hip pain
  • Chondral lesion
  • Chondromalacia patellae-
    • Patella-Femoral pain syndrome
  • Meniscal pathology
  • IT band syndrome
  • Pes anserine bursitis
  • Baker’s cyst
  • Osteonecrosis
  • Tumor
  • Infection
Snapping Hip Syndrome

- Snapping hip syndrome (iliopsoas tendinitis, Dancer’s hip)
  - Snapping sensation when hip flexed and extended
  - Felt in groin area or over greater trochanter

- Affects up to 5% of population
- Most common between ages of 15-40 years
- Females slightly more affected
Snapping Hip Syndrome

- Treatment options
  - Activity modification (avoid high intensity sports)
  - Stretching exercises (IT band stretching)
  - Steroid injections (often painful, require fluoroscopy for iliopsoas)
  - Surgical treatment (recommended for confirmed intra-articular causes)
Trochanteric Bursitis

- Common cause of lateral sided hip pain
  - Peaks in 4th – 6th decade
  - Incidence 180/100,000 (similar to OA incidence)

- Caused by inflammation of greater trochanteric bursa

- Etiology
  - Leg length discrepancy
  - IT band syndrome
  - Abductor weakness
Trochanteric Bursitis

- Unlike osteoarthritis, pain is located laterally and does not involve the groin
  - **Patients often state it is uncomfortable to lie on affected side**
  - Pain on palpation of greater trochanter

- Diagnostic imaging of little value
  - MRI or ultrasound may occasionally demonstrate inflamed bursa
Trochanteric Bursitis

- Treatment options
  - Rest (emphasize activity modification over bed rest)
  - NSAIDs
  - Physical therapy
  - Steroid injections
IT Band Syndrome (Knee)

- Most common cause of lateral sided knee pain
  - Pain on outside of knee
  - Swelling (may be minimal)
- Seen in up to 10% of runners
  - Professional athletes and military recruits have incidence as high as 20%

![Iliotibial Band Syndrome (ITBS)](image)

Inflammation of the iliotibial band (ITB) causes outer knee pain and possible pain in the hip.
IT Band Syndrome

- Sliding of IT band over femoral condyle
  - Snapping sensation with palpation over femoral condyle
  - Several recent studies have questioned this mechanism

- Patients commonly report pain with knee flexion and when walking down stairs

Figure 1
IT Band Syndrome

- Treatment options
  - Rest/activity modification
  - IT band stretching exercises
  - Abductor strengthening
  - Injection
  - Surgical lengthening of IT band (controversial)
Femoroacetabular (hip) Impingement (FAI)

- Size/shape mismatch between femoral head and acetabulum leads to cartilage damage

- FAI refers to abnormal morphology of the femoral head and acetabulum
  - Femoral head: aspherical head that is too big for acetabulum in certain hip positions
    - “Cam” lesion
  - Acetabulum: rim that is too big or acetabulum that is too deep → acetabular rim will touch femoral neck in certain hip positions
    - “Pincer” lesion

Most patients will have a combination of both
FAI- Physical Exam

- Anterior impingement test: flex hip 90; internal rotation
- Posterior impingement test: extend hip; external rotation
Diagnosing “Silent” arthritis

- Pain is not always present
- Middle-aged patients may have **stiffness without pain**
  - Early cartilage softening

- Signs of early osteoarthritis:
  - Loss of external rotation (hip)
  - Buckling (hip and knee)
  - Patients unconsciously modify their lifestyle
What is Arthritis?

- Cartilage covering joints deteriorate
- Degenerative Process
- “Bone on Bone”
What is Arthritis?

- Inflammatory Response
- Stiffness
- **Pain**
Osteoarthritis
Osteoarthritis

Unicompartmental Osteoarthritis
Arthritis

30 million cases

Expected to double within next 20 years

Knee arthroplasty: >400,000 procedures/year
Hip arthroplasty: >300,000 procedures/year
Symptoms

• Pain
  – Inflammation (Irritation)
  – Dull Ache
  – May Flare with Activity
  – May be worse in morning
  – Weather/Barometric pressure
Symptoms

• Stiffness
  – Loss of Motion
  – Smooth Bearing Surface Gone
Symptoms

- Grinding or Clicking
- Weakness
- Giving way
Risk Factors

• Injury Or Trauma

• Obesity

• Family History
Is Obesity Just a Mechanical Problem?

• Obese patients have \( \uparrow \) rates of OA in non-weight bearing joints as well

• Adipose tissue-related cytokine release may play important role in chronic inflammation

• Adipokines have been implicated in cartilage damage
Effect of Extra Weight

• Force on knee = 2 to 3x body weight
• Average person takes 2,000 steps per day
• IF, 33# overweight) = extra 100# on each knee per step
• (100 extra pounds per step) x (2000 steps per day) x (1 ton per 2000 pounds) = 100 extra tons on each knee per day
• Conclusion:

Extra weight can have a dramatic effect on knee osteoarthritis
Weight Loss as Prevention

- Structured program with continuous reinforcement associated with ↑ participation and clinical success
  - >50% reduction in osteoarthritis incidence
Treatment in Stages

- Dependent upon Severity
- Aimed at the stiffness, pain, and inflammatory response
- Activity Modification
- Weight Reduction
Non-operative Management
Activities
Shoe Modifications

Well-cushioned shoes

Lateral heel wedge
“Unloader” Knee Brace

- Separate the tibial and femoral condyles at heel strike
- Reduce pain
Life Style Modifications

- Exercise
  - Stretches
  - Become limber
  - Muscular Strength
  - Bone Strength
  - Weight Loss
Treatment: NSAIDS vs. Acetaminophen

- Meta-analysis of 5 studies
- Tylenol is often as effective as NSAIDS
- Fewer adverse reactions than NSAIDS
- Conclusion: Use Tylenol first with non-pharmacological management

Wegman et al. J. Rheum. 2002
ALTERNATIVE THERAPIES

- Pine bark extract
- Devil's claw
- Cat's claw
- Thunder God Vine
- Borage oil
- Boswellia
- Gin-soaked raisins
- Evening primrose oil
Patient Perspective Study: Alternative Therapies

- 164 patients
- 45% use alternative therapies
- 30% don’t tell their physicians
- 30% combine alternative and traditional
- Alternative methods superior: 51%
- Traditional methods superior: 5%
- No preference: 44%

Mont et al 2002
Alternative Treatments

• Acupuncture
  – Balance of energy restore
  – Gait Pain Control Mechanism

Annals of Internal Medicine
Treatments

• Massage
  – Energy Transfer
  – Increase Blood Flow
Treatment

• Topical Agents

• Stimulate Skin
Combination Pain Cream

To provide patients with effective, safe, and cost efficient pain treatment.

Problems with Per-oral Treatment
• Per-oral pain treatment can be effective, but the side effects can leave patients incapable of completing day to day tasks.
• There is a high rate of addiction which leads to inadvertent drug abuse with patients dealing with chronic pain using per-oral treatment.
• Patients are also placing their liver and kidneys at risk through continual use of narcotics orally.

Current Treatment

The Future

Compounding pharmacies provide transdermal pain creams that are more effective, safer, and cheaper than per-oral pain treatment.
Supplements

-Naturally Occurring Substances

-Not all the same

-Not regulated by the FDA
Oral Chondroprotective Agents

Glucosamine sulfate
Chondroitin sulfate
How I Use Them

Use for 2 months. Then withdraw for 2 weeks and determine whether pain worsens.
Corticosteroid Injections

- Can be used every 3-4 months
- May need to be repeated up to a total of 4 times per year
- Not much systemic absorption
Hip Injections

- Corticosteroid injection: useful treatment for hip osteoarthritis
Injections

- Viscosupplementation
- Thickens Joint Fluid
- Series of Injections
Hyaluronans

- Synvisc, Hyalgan, Euflexxa, Orthovisc, Supartz, Gel one
- 1-5 injections
- Improvements in pain, function for 6-12 months

**BENEFITS**

- restore concentration of HA
- viscoelastic properties
- analgesic
- anti-inflammatory
Surgery?

• Last Resort

• Will differ for individuals

• Don’t Need to Suffer
Hip, Knee, Shoulder Arthroscopy

• “House Cleaning”
• Remove Debris
• Trim Cartilage
• Cartilage Repair/Replace (NOT for arthritis)
Microfracture

- Tiny fractures are made in the subchondral bone plate

- Goal:
  - **Stimulate growth** of new fibrocartilage by creating new blood supply

- Indications:
  - Young patients  single lesions and healthy subchondral bone
  - Low post-op demands
OATS / Mosaicplasty

• Technique
  – Transfer autologous osteochondral plugs with viable hyaline cartilage from non-weight periphery of femoral condyle
  – Single plug or multiple (mosaicplasty)
  – Restorative procedure

• Indications:
  – Optimal for symptomatic lesions < 2.5 cm²
    • Femoral condyle
    • Patellofemoral
Autologous Chondrocyte Implantation

• Two-step procedure
  – Healthy cartilage is removed and grown
  – Implantation of cells into defective area

• Indications:
  – Younger patients
  – Single defect > 2 cm

• Pros – no danger of tissue rejection
• Cons – takes several weeks to complete
Newer Treatment Methods

• Future directions
  – Juvenile Cartilage Graft
  – Tissue-engineered cartilage
  – Micronized Cartilage
MORE INVASIVE
Minimally Invasive
Total Knee Arthroplasty

Potential Benefits:

• Less soft tissue damage
• Reduced post-operative pain
• Shorter hospital stay
• Improved recovery time
• Greater extensor strength
• Better functional outcomes
Late-Stage Osteoarthritis
Knee Options

Partial Knee Resurfacing

A Resurfaced Knee

- Femur (thigh bone)
- Artificial Knee Implant
- Tibia (shin bone)

Total Knee Replacement

A Replaced Knee

- Femur (thigh bone)
- Artificial Knee Implant
- Tibia (shin bone)
Enhancing Outcomes

- Less Dissection
- Faster Recovery
- Safe
Direct Anterior Total Hip Replacement
Anterior Approach

- Anterior approach is a new approach that has become very popular.

- Do not need to release muscle attachments as in posterior or antero-lateral/lateral approaches.
Mobile vs. Fixed Bearing Designs

Fixed Bearing Hip Designs
• Have demonstrated clinical success\(^1\).
• However, potential issues such as dislocation and iliopsoas tendon impingement can still exist.
Patient Specific Knee Replacement

- Innovative technique to fit and position knee implants based upon your unique anatomy.
- Software uses MRI or CT data to create a 3-D model of your own individualized custom knee replacement.
My Order Of Treatment

1) Non-pharmacological approach
   - weight loss
   - physical therapy/activity modification
   - core strengthening/stretching

2) Acetaminophen

3) NSAIDs

4) Cox-2 Inhibitors

5) Chondroitin, Glucosamine

6) Injections
   - Corticosteroids vs. hyaluronans or both

7) Surgical procedures
Thank You