This program will touch upon the following topics:

- Understanding the Causes of Joint Pain
- Treatment Options
- What Joint Replacement Surgery Involves
- Realistic Expectations After Joint Replacement
- Recent Advances in Surgical and Anesthetic Technique, Implant Materials, and Rehabilitation
Your Hip Joint

A joint is formed by the ends of 2 or more bones. The hip must bear the full force of your weight and consists of two main parts:

- A ball (femoral head) at the top of your thigh bone (femur)
- A rounded socket (acetabulum) in your pelvis

Normal hip joint, showing healthy articular cartilage
Your Knee Joint

Femur – thigh bone
Cartilage – tissue between bones that provides cushioning
Patella – knee cap
Tibia – shin bone
Synovium – tissue that provides lubricating fluid to joint
Ligament – flexible tissue that holds knee joint together
Osteoarthritis, Rheumatoid Arthritis, Post-traumatic Arthritis, Avascular Necrosis

- **Osteoarthritis**
  Slippery contact surfaces wear out

- **Rheumatoid Arthritis**
  Membranes or tissues lining the joint become inflamed

- **Post-traumatic Arthritis**
  Irregularities lead to more wear on the joint

- **Avascular Necrosis**
  Bone may collapse and damage the cartilage
Osteoarthritis
Osteoarthritis
Did you know?

Nearly 21 million Americans suffer from osteoarthritis, a degenerative joint disease that is a leading cause of joint replacement surgery.

*Nothing* in this world lasts forever, including people.
Everything and everyone wears out. The trick is to get things to last as long as we need them to.

More on that later in the talk.

Source: [www.arthritis.org](http://www.arthritis.org)
OA Symptoms

- May develop suddenly or very slowly
- Arthritis can cause pain and stiffness
- Some types of arthritis may cause swelling
- Simple tasks may be difficult to do
Joint Degeneration

Pain from arthritis and joint degeneration can:
- Be constant
- Come and go
- Occur with movement
- Occur after a period of motionlessness
- Be located in one spot
- Be located in many parts of the body
- Be worse during certain times of the day
- Be worse after certain activities
- Hurt in a different location than the damage (referred)
The Orthopedic Evaluation
Medical History

A thorough medical history includes:

- A list of all medications you are currently taking
- Information on prior surgeries and/or treatments
- Prior diagnoses
- Family history

The information that the surgeon gathers during the medical history usually suggests the possibility of several different diagnoses.
The Orthopaedic Evaluation
Physical Examination

The physical examination enables your surgeon to evaluate important aspects of your joints, including:

- Size and length
- Strength
- Range of motion
- Swelling
- Reflexes
- Skin condition
The Orthopaedic Evaluation

X-ray Evaluation

X-Rays help show how much joint damage or deformity exists

An abnormal X-ray may reveal:

- Narrowing of the joint space
- Cysts in the bone
- Spurs on the edge of the bone
- Areas of bony thickening called sclerosis
- Deformity or incorrect alignment
The Orthopaedic Evaluation
Additional Diagnostic Tests

Occasionally, additional tests may be needed to confirm the diagnosis. These may include:

- Blood tests
- Urine analysis
- Analysis of joint fluid
- Magnetic Resonance Imaging (MRI)
- Bone scan
Treatment Options

The first question to be asked: Is this bothering me enough to do anything about it?

Most people aren’t interested in ANY surgery, PERIOD!

Yet, there is quite a bit of research showing that many people who could benefit from joint replacements don’t have them. They tend to minimize the benefits, and focus on issues with recovery and risks of the procedures.

But there are plenty of other options, and reasons to see exactly what is wrong, and where you stand.
Treatment Option # 1: Do Nothing!
Reasons to Get Things Checked Out

- Relief of Worry About Severity
- Possibility of Something of More Concern
- Other Treatment Options to Discuss
- Developing a Game Plan
- Wear That Compromises Results
Treatment Options After Sorting Things Out

- Do nothing - Plan A
- Medication
- Physical therapy
- Arthroscopy – taking care of specific issues
- Joint fluid supplements and steroid injections (providing temporary pain relief in knees)
- Partial joint replacement – primarily knees
- Total joint replacement
Medications

- Aspirin-free pain relievers—acetaminophen
- Nonsteroidal anti-inflammatories (NSAIDs)
- For patients whose joint pain does not improve with oral medications, "joint grease" injections may provide temporary relief. The joint is injected with a joint fluid supplement that acts as a lubricant for the damaged joint.
- Corticosteroids— injection/pill form
  - Quick, effective pain relief
  - Only use a few times a year; they can weaken bone and cartilage
Physical Therapy

- Passive range-of-motion exercises may help:
  - Reduce stiffness
  - Keep joints flexible
- Isometric (“pushing”) exercises help build muscle strength
- Isotonic exercises (“pulling”) further increase muscle strength and preserve function
- Daily walking, using a cane or other assistive device
Arthroscopy

What is arthroscopy?

Arthroscopy is a surgical procedure used to visualize, diagnose and treat problems inside a joint.

In an arthroscopic examination, an orthopaedic surgeon makes a small incision in the patient's skin and then inserts pencil-sized instruments that contain a small lens and lighting system to magnify and illuminate the structures inside the joint.

Controversy over utility in cases of simple wear and tear.
Joint Replacement

Joint replacement is a treatment option when:

- Pain is severe and interferes with daily activities and/or work
- There is enough wear to compromise a good result
- You conclude: “This is stupid”

This is a decision that should include:

- You
- Your primary care provider
- Your orthopedic surgeon
Total Knee Joint Replacement

- End surface of femur replaced with metal
- End surface of tibia replaced with metal
- Plastic liner is inserted between femur and tibia to reduce wear
- Patella is resurfaced with plastic
Total Knee Replacement
Total Hip Joint Replacement

- A stem is placed in the femur
- A metal or ceramic ball is placed atop the stem
- A metal socket is placed in the bony socket
- The metal socket is filled with a metal, ceramic, or plastic socket

Post-operative hip joint with prosthesis in place
Recovery: When I will I get back to “normal”?

It very much depends on where you want to put the finish line, and is tremendously variable from person to person.

Is it:

When I stop taking pain medicine?
When I stop using any assistive devices (e.g. cane)?
When I stop noticing a difference month-to-month?
When I completely forget about it?
Recovery

Every individual is different and every treatment plan is different. The length of hospital stay after joint replacement varies and depends on many factors including age and physical ability.

Estimated Recovery Schedule:

- In-hospital Recovery: 2 – 5 days
- Significant Functional Improvement: 6 weeks – 3 months
- Maximal Improvement: 6 – 12 months
Recovery

Lets talk about the hospital stay

- In-hospital Recovery: 2 – 5 days

I have my Big 5 for comfort and safety:

- Taking pain pills with good relief-comfortable
- In/out of bed with minimal assistance-safe
- On/off a commode-safe
- Up/down a few stairs-safe
- Walking 30-40 yards-safe
Recovery
Rehabilitation

Following joint replacement the physical therapist begins an exercise program to be performed in bed and in the therapy department. The physical therapist or another member of the staff works with the patient to help the patient:

- Regain muscle strength
- Increase range of motion
Realistic Expectations
Physical Activities
After joint replacement, acceptable physical activities should:

- Not cause pain – including pain felt later
- Not jar the joint – running and jumping should be avoided
- Not place the joint in the extremes of its range of motion
When will I be able to go back to a normal daily routine?

This is a decision only you and your surgeon can make. Every patient’s experience is different.

However, there are some general guidelines your doctor may give you:

- You'll practice stair-climbing in the hospital and should be able to do this by the time you leave

- You should have no restrictions on leaving your home as long as your safety and comfort are assured. Just don’t tire yourself out; a good balance of exercise, rest, and relaxation is best for helping your body heal and gain strength

- When to resume driving a car, going to work, and/or participating in sports activities are all highly individualized decisions. Be sure to follow your doctor’s or orthopedic surgeon’s advice and recommendations
After Surgery

Limitations

Athletic activities that place excessive stress on the joint replacement will need to be avoided. Examples of these activities include:

- Skiing (snow or water)
- Basketball
- Baseball
- Contact sports
- Running
- Frequent jumping
Joint Replacement and What’s New?

Total joint replacement is a surgical procedure in which certain parts of an arthritic or damaged joint are removed and replaced with a plastic or metal device or an artificial joint. The artificial joint is designed to move just like a healthy joint.

New in Knees: Extent (Partial vs. Total), MIS, and Plastic

New in Hips: MIS and Bearing Surfaces (Plastic, Metal, Al)
Recent Improvement for Total Knees

Return of Uni-condylar or Partial Replacements
Knee Replacement Options

“Uni-”

“Total”
Uni-Condylar Replacements

- First done in the 1970’s, and associated with inferior results compared to Total Knees at the time.
- A significant improvement in the instrumentation and design in the last few years.
- Many people wear unevenly, and are thus candidates.
- Not as durable, and probably best viewed as a “bridge” to a Total Knee.
- Specific indications must be followed: Weight, wear pattern, etc.
Uni-compartmental Knee Replacement
Recent Improvement for Hips & Knees

MIS
What is ‘Minimally Invasive Surgery’?

- MIS is a general term used to describe a surgical procedure that often utilizes a smaller incision(s) than conventional surgery. In these cases ‘MIS’ more accurately describes “Mini Incision Surgery”

- Other MIS procedures reduce the amount of soft tissue (muscles and tendons, etc.) that are disrupted during surgery. In these cases ‘MIS’ more accurately describes “Minimally Invasive Surgery”
What is ‘Minimally Invasive Surgery’?

- Traditional replacements have had lengthy incisions. This allowed excellent exposure using traditional techniques and tools.
- Improvements have included: New techniques in handling soft-tissue, new approaches, and improved instruments have all lead to the ability to work through smaller incisions.
- The “best” approach is still in the eye of the beholder, but most surgeons are working through smaller (even MUCH smaller) incisions than even 5 years ago.
What are the potential benefits of MIS Hip Surgery?

- Less soft tissue disruption
  - Faster discharge from the hospital
  - Quicker rehab and recovery
- Less blood loss
- Reduced pain
- Smaller scar

Minimally Invasive Knee Surgery

Potential benefits of MIS (versus traditional surgery):

- Shorter hospital stay
- Faster recovery
- Reduced pain
- Smaller scar

What are the potential risks?

- Results may vary from patient to patient
- Surgery time may be extended
- Risk factors relating to anatomy, weight, and prior joint replacements
- Risks which are normally encountered in conventional THA/TKR remain
Is MIS Total Hip Arthroplasty for everyone?

No, patient limitations include:

- Obese, high BMI
- Muscular males
- Pre-existing conditions
MIS Knee Joint Replacement

- Smaller incision: 3 to 6 inches versus 8 to 12 inches
- Different incision location: inner side of knee versus front of knee
- Smaller cut of quadriceps muscle
- Less tension put on muscles and tendons
MIS Options

Uni-knee replacement:
- Surfaces are replaced only on one side of knee
- Suitable if only one half of the knee is diseased

Patello-femoral replacement:
- Surfaces are replaced only on the patella and patella contact region of the femur
- Suitable if arthritis is limited to patella

MIS total knee joint replacement:
- Surfaces are replaced on both sides of the knee and patella
- Suitable for more severe knee disease
Realistic Expectations
Longevity of Joint Replacement

It is impossible to predict in individual cases how long a joint replacement will last. Many factors determine the outcome including:

- Age
- Weight
- Activity level
- Bone strength

So what can be done to extend the durability?
Recent Improvement for Total Hips & Knees

Improved Bearing Surfaces
**Hip Implant Options**

**Conventional Hip Implants**
- Acetabular shell
- Plastic insert
- Metal femoral head
- Femoral stem

**Ceramic Hip Implants**
- Acetabular shell
- Ceramic insert
- Ceramic femoral head
Improvements in Polyethylene

- Superior wear performance in laboratory testing
- Even the “routine” plastics have 90% less wear
- Even better with some of the “specialty” inserts
- Durability approaches “lifetime” even in younger patients
- An excellent alternative for both hips and knees
Ceramic in Hip Replacement

- Superior wear performance in laboratory testing
- Excellent biocompatibility
- Long clinical history
- Provides smooth surface with low friction
- Extremely hard
  - Its hardness is second only to diamond
Recent Improvement for Total Hips & Knees

Anesthesia and Pain Management
Things That Matter in the Speed of Recovery

- Incisional size, extent of dissection, and muscle and tendon management
- Promptness, frequency, and persistence of PT with a dedicated staff
- Anesthetic techniques

In our experience, these ALL seem to matter, but most of the questions I get in the office have been on the size of the incision. There is a lot more to it, and the importance of comprehensive pain management can’t be overstated.
Pain Management Techniques

- General vs. Spinal vs. Epidural or combination
- After General or Spinal anesthetic, we usually use patient-controlled IV pain medication, with good result
- With Epidurals, we can continue to use the catheter for several days after, with good relief
- A combination, with a spinal for the surgery, and a single-shot, long-acting (40-48 hour) epidural analgesic (Depodur) has been a huge boon for us. Little or no additional pain medication needed during that time. A real breakthrough for us
The Search for the Latest and Greatest...

- There have been many recent substantial advances, some subtle, but substantial (e.g. Depodur)
- The dilemma of the latest, newest, cutting-edge that also has a long track-record (Teflon)
- There are things that are still being sorted out, including Uni-spacers, Hip Resurfacing, Uncemented Knees, and Alternative Bearings for knees, where early results are promising, but where there have been historical failures or reason to be cautious. Easy to pick fights....
- Patients want state-of-the-art, but they really want reproducible, long-lasting, and effective (e.g. carbon-fiber polyethylene, Uncemented tibias, metal-backed patellas, etc.)
Testimonials, Anecdotes, and Variability

“I can only say that my experiences at your hospital were nothing short of marvelous.”

“From the moment I was anesthetized, up to the writing of this letter, I have experienced zero (0) pain from my surgery…”

“Can I use a leg-press machine at the gym?” (7 weeks after THR)

“When can I play handball?”

These are all from our patients in the last 2 months! But this is NOT what I tell people to expect. There is all sorts of variability, and you should plan on that, with happy surprises.
Evening Summary

- Hip and Knee Anatomy and Common Causes of Arthritic Pain, along with Common Symptoms
- Steps in the Evaluation and Non-operative Options, including Medications, Injections, and Arthroscopy
- Steps Involved in Hip and Knee Replacement
- Normal Timelines and Person-to-Person Variability in Recovery
- Solid Improvements in Surgical Techniques, Bearing Surface Materials, Rehab, and Anesthesia
Questions and Answers

Swing away!!

Brian McCardel, MD
3394 E. Jolly Rd.
Suite A
Lansing, MI
517 394 3200
www.eloaortho.com