

## PATIENT INFORMATION: TOTAL HIP and TOTAL KNEE REPLACEMENT

*Thomas J. Parr, MD, PA*  
14090 Southwest Freeway, Suite 130  
Sugar Land, Texas 77478  
281-491-7111

**INTRODUCTION** — Total joint replacement, or total joint arthroplasty, is one of the most commonly performed orthopedic procedures. It is a surgical procedure in which parts of the joint that have been damaged, usually by some form of arthritis, are replaced with artificial parts (prostheses).

The hip is a "ball and socket" joint, in which the top of the femur bone (ball) fits into a part of the pelvis called the acetabulum (socket), allowing the joint to move smoothly in multiple directions. Any condition that affects the ball or the socket can lead to deterioration of the joint, causing pain and loss of function.

A normal knee functions as a hinge joint between the upper leg bone (femur) and lower leg bones (tibia and fibula). The knee joint has three compartments: lateral (outside) and medial (inside), where the femur and tibia cartilage surfaces meet, and a patellofemoral surface between the kneecap and femur. Total knee replacement means replacing all three of the knee's compartments.

The most common condition that causes joint deterioration is simple "wear and tear, or osteoarthritis. Other causes include inflammatory arthritis (e.g., rheumatoid or psoriatic arthritis), hip disorders of infancy and childhood, trauma, neoplasms (cancer), and osteonecrosis (death of the bone cells).

**REASONS FOR SURGERY** — Total joint replacement may be considered when more conservative methods of treatment have failed to relieve severe pain and loss of function.

Total joint replacement is performed on people of all ages. Because the prosthetic parts can deteriorate over time, we recommend that this procedure be delayed until it is absolutely necessary.

**BEFORE SURGERY** — When preparing for total joint replacement, it is important to perform a preoperative evaluation, including the following:

*History* — We will discuss your symptoms, other medical or surgical problems you may have, any medications you take, and allergies.

*Physical examination* — We will observe the hip area, watch how you walk, check the hip motion, look for other possible sources of hip and thigh pain, and examine the surrounding skin.

*Imaging studies* — Generally, "plain" x-rays of the affected joint are all that are necessary. Occasionally, other studies, such as an MRI or nuclear bone scan are needed.

Laboratory studies — May include blood count, electrocardiogram, chest x-ray, urine culture, and other lab tests. We will often ask that you see your primary care physician or cardiologist to obtain preoperative “clearance” in order to ensure your safety during the surgery.

Discussion of risks and benefits of the procedure — No surgical procedure is risk free, and total joint replacement has its own associated risks. All joint replacement patients have the right to fully understand the goals of surgery as well as potential complications.

## **THE PROCEDURE**

**ANESTHESIA** — The surgery is performed in an operating room after the patient receives general, spinal, or epidural anesthesia. Total knee replacement can also be done with regional anesthesia, in which the anesthesiologist places local anesthesia through a catheter around nerves in the thigh and buttocks to provide pain relief without affecting the spinal cord.

With general anesthesia, the patient is given medications through an intravenous injection and by inhalation to induce sleep. The patient is unable to feel anything during the operation, and will not remember the procedure afterwards.

Spinal and epidural anesthesia are both forms of regional anesthesia, in which an injection of anesthetic in the lower back temporarily numbs the lower part of the body. With spinal anesthesia, the anesthetic is injected directly into the cerebrospinal fluid (CSF) surrounding the spinal cord; with epidural anesthesia, it is injected into the epidural space below the level of the spinal cord. An anesthesiologist will discuss the advantages and possible disadvantages of each type of anesthesia with the patient prior to surgery.

**PROSTHETIC PLACEMENT** — The surgeon removes the damaged bone and cartilage, and replaces them with prosthetic parts. The type of prosthesis and the method and location of the incision depend upon the needs of the particular patient and the surgeon performing the procedure.

The joint replacement may be *cemented* (in which the prosthetic parts are fastened to healthy bone with a special cement) or *uncemented* (in which the prosthetic parts have a porous surface that allows the patient's bone to hold the new parts in place). The components can be made of combinations of metals and metal alloys, a special grade of plastic, and even ceramic materials. Different designs of total joint replacement components can permit flexibility in meeting the needs of each patient.

X-rays of the new prosthetic joint allow the surgeon to confirm and document the correct performance of your surgery. Sometimes x-rays are used during the surgery to assist in “fine tuning” of the implant. These films can also be used to compare with future x-rays.

## **AFTER SURGERY**

**MANAGEMENT** — Postoperative management includes controlling pain with intravenous or oral medication. Many joint replacement patients are given "patient-controlled analgesia". This gives pain medication through an intravenous line (IV) in the hand or arm. By pushing a button, patients are able to control, within preset limits, when a dose is given. Patients are also given an antibiotic (generally, just before the surgery begins and for up to 24 hours following surgery) to prevent infection. Interestingly, antibiotics given for more than 24 hours following surgery actually increase the risk of infection!

An anticoagulant medication such as low molecular weight heparin (Lovenox®, given by injection), dabigatran (Pradaxa®, a pill), warfarin (Coumadin®, also a pill), and sometimes aspirin will be given to help prevent blood clots in the legs, and will be continued for about a month after surgery. Compression boots (devices that are worn around the legs and inflate periodically) or special support stockings are often used to prevent blood clots. The support stockings are usually worn for several weeks following surgery.

Most patients are able to try standing and walking, with the help of a physical therapist, as early as the day of the procedure.

**REHABILITATION** — Physical therapy is an important part of the recovery process, with the goal being to regain strength and motion.

Most patients spend three days in the hospital, during which they work with a physical therapist to develop an exercise and rehabilitation program. Some patients continue their therapy at home under the supervision of a physical therapist, while others stay in a rehabilitation facility and continue PT until they are able to independently perform daily activities.

The rehabilitation program includes exercises to improve range of motion and strengthen the muscles surrounding the joint, as well as training in activities of daily life (such as stair climbing, bending, walking, bathing).

**POST SURGERY CONSIDERATIONS** — Patients can usually resume their normal activities within three to six months, although some patients can gradually return to work sooner after obtaining permission and limitation instructions from the surgeon.

After several months of rehabilitation, patients are encouraged to maintain an active lifestyle. While high-impact sports such as running or contact sports should be avoided, patients can typically walk, cycle, play racquet sports, and swim for fitness. I will permit my patients to downhill and cross-country ski—with caution—but I discourage water skiing after hip replacement, because of the risk of dislocating the hip.

Most total joint replacements last 15 to 20 years or longer, and patients are generally very satisfied with the outcome. However, up to 5% of patients with joint replacement will be very unhappy with the outcome, because of some complication.

**COMPLICATIONS** — Complications can occur during surgery, in the immediate postoperative period, or many years after surgery. It is important to understand these potential risks before deciding to undergo hip replacement. For most patients, the benefits of reduced pain and improved function outweigh the risk of complications.

During the surgery, potential complications include fractures around the implants, injury to the surrounding nerves or blood vessels, and a drop in blood pressure during the insertion of a cemented prosthetic femoral stem. Most of these complications can be treated during the course of the surgery.

*BLOOD CLOTS IN THE LEGS (THROMBOEMBOLISM)* — Persons who undergo hip and knee replacement are at increased risk for developing blood clots after surgery. These clots can break free and travel to the lungs—a potentially fatal complication. Even with appropriate preventive treatments (e.g., anticoagulation and foot or leg compression devices), approximately 1 percent of patients will develop a thrombosis (blood clot in a vein) or embolus (a thrombosis that travels to the lung or other vital organ). These risks are much greater if the surgeon and patient do not take the measures to prevent thrombosis.

*EXCESSIVE BLEEDING* — The medications employed to prevent blood clots in the legs can cause excessive bleeding into the wound, leading to prolonged wound drainage. Sometimes, we have to return to the operating room to drain this large collection of blood, to relieve pain and prevent a wound infection.

*INFECTION* — Infection following joint replacement occurs between 0.5 and 1.5 percent of the time. Patients are routinely given antibiotics just before and for a short time following surgery to help prevent infection. Prompt medical attention is needed if these problems develop. Infection is much more common in patients who smoke, who are obese, and who are poorly controlled diabetics. If a patient's Hemoglobin A1c is over 6.5 before the operation, the infection rate is 10 times higher than in non-diabetic patients!

Infection can occur even several years following surgery, but the greatest risk occurs during the first two years after the operation. During these first two years, then, we will ask you to take antibiotics just before and for up to 12 hours after any invasive dental, gastrointestinal, urologic, and abdominal surgery procedures. After 2 years following the joint replacement surgery, we generally do not require you to take antibiotics for most routine dental procedures.

*DISLOCATION* — Dislocation of the artificial hip joint can occur if the ball becomes dislodged from the socket. It occurs in less than 2 percent of patients. It is more likely to occur in obese patients, in females or the elderly, and in those who have had previous hip procedures. In most cases, an orthopedic surgeon can manually move the joint back into place while the patient is sedated. Dislocation following knee replacement is not common, but can occur.

*OSTEOLYSIS* — Osteolysis is a process in which the bone around the prosthesis is reabsorbed by the body. This usually occurs years following surgery, and can cause the joint to become weakened and unstable. It is difficult to estimate the percentage of patients who develop osteolysis due to the wide variety of surgical techniques and prosthetic devices. Generally, osteolysis must be treated surgically, although nonsurgical options are being developed.

*ASEPTIC LOOSENING* — Loosening of the joint implant—in the absence of infection—is most often caused by wear of the prosthetic components. Other causes include poor initial stability of the implant; poor implant design, patient factors (e.g., age, weight, activity level, underlying diagnosis), and failure of the prosthetic to remain attached to the bone. Loosening is often painful, in contrast to osteolysis which is typically painless. Aseptic loosening is the most common long-term problem associated with total joint replacement, although the incidence is decreasing as improvements in prostheses are made. This is treated by surgery to change the prosthesis.

*PERIPROSTHETIC FRACTURE* — A periprosthetic fracture is a fracture that occurs in a bone near the implant. This occurs in less than 1 percent of joint replacement patients. This type of fracture may be treated nonsurgically (in less severe cases) or surgically (if the fracture is unstable or the prosthesis has failed).

*IMPLANT FAILURE/FRACTURE* — Breakage of the implant itself usually results from accumulated stress and wear on the prosthesis, often over the course of years. Older implants are more likely to fracture, while newer prostheses are stronger and more durable. Less than 0.5 percent of patients experience implant failure or fracture.

*LEG LENGTH DISCREPANCY* — Before, during, and after hip replacement surgery, a surgeon carefully measures the length of the patient's legs in an attempt to make them equal length. However, in some cases, the procedure results in one leg being slightly longer than the other. One possible cause is weakness in the muscles surrounding the hip joint. In this case, the inequality may be resolved by strengthening the muscles with physical therapy. Some patients with a significant discrepancy in leg length find that wearing a lift in one shoe is helpful. Limb length inequality in knee replacement patients is not common. Malrotation—in which the foot points inward or outward more than the other side can occur in both types of joint replacement.

*HETEROTOPIC OSSIFICATION* — Heterotopic ossification (HO) is a process by which the soft tissues around the joint harden into bone. This complication is more common in hips than in knees, and in males than in females. It more often affects patients with other muscle or bone diseases or abnormalities. Patients with HO may experience hip stiffness, or may feel no discomfort at all. Patients who are known to be at high risk for HO may be given medications or radiation therapy after surgery to prevent HO from occurring.

**ALTERNATIVE TREATMENT OPTIONS** — While total hip replacement can be helpful under the right circumstances, it should only be considered after a discussion of the risks, benefits, and alternatives with your doctor. Candidates for total hip replacement should have x-ray evidence of advanced damage to the hip

- **NON-SURGICAL TREATMENT** — The following non-surgical treatment methods are required before offering surgery for patients with hip arthritis problems, because they can provide significant pain relief and restoration of function:
  - Weight reduction or maintenance of a healthy weight.
  - Physical therapy and/or a home exercise program for a minimum of 12 weeks.
  - Use of an assistive device (such as a cane or walker).
  - Oral anti-inflammatory medications, or a steroid injection into the painful joint
  - Patients with inflammatory arthritis (such as lupus or rheumatoid arthritis) may benefit from a treatment regimen of antirheumatic and/or other medications.
  
- **SURGICAL TREATMENT ALTERNATIVES** — Surgical alternatives to hip and knee replacement may be considered in patients who are young, in whom prosthesis may not be durable enough to last for many years or withstand an active lifestyle. The choice of a surgical procedure depends upon the reasons behind the hip joint's initial deterioration.
  - *OSTEOTOMY* — Osteotomy is a surgical option for young people, in which the femur or tibia (shin) bone is cut, realigned, and allowed to heal. It is used to shift weight from a damaged bone surface to a normal or less damaged one. It is used for persons with an abnormally formed or diseased joint that still has some cartilage remaining. Recovery from the procedure can take three to six months or more, and additional treatment may be needed later if the joint continues to deteriorate.
  - *ARTHROSCOPY* — Arthroscopy is a surgical procedure in which the affected joint is examined through small incisions using a device called an arthroscope. The arthroscope allows a camera to provide the surgeon with an image of the hip without making a large incision. Certain types of joint damage can be repaired with the arthroscope. This treatment may be considered in certain cases, including patients with disease primarily affecting the cartilage of the hip.
  - *JOINT ARTHRODESIS* — Joint arthrodesis, also known as joint fusion, is performed infrequently, and is generally reserved for patients who have severe arthritis after a traumatic injury or infection who wish to return to high impact activities or manual labor. A prosthetic joint might not be able to withstand these types of activities. In this procedure, the bones of the joint are fused together while being held in place by a metal plate or rod and screws. The fusion does not wear out the same way as a joint replacement would; however, the patient loses the ability to move the fused joint, and will walk with a limp. This procedure also places extra stresses across the low back and hip or knee on the same side as the fusion. It is not easy to convert these fusions to a total joint replacement later, after the patient assumes a more sedentary lifestyle.

## **TREATMENT FOR PERSONS WHO CANNOT UNDERGO JOINT REPLACEMENT —**

In some patients, a joint replacement procedure is not an option, usually because of past or recent infection. For these patients, other surgical procedures can decrease pain and improve function.

- *RESECTION ARTHROPLASTY* — Resection arthroplasty of the hip involves surgical removal of the femoral head to allow scar tissue to form within the resulting space. This surgery is generally performed as a last resort in patients who cannot undergo total hip replacement, including those with chronic infection of the hip and certain bone tumors. Multiple failed total knees, especially those with advanced infection, dense scar tissue, and loss of surrounding ligaments, may require an amputation above the level of the knee. Patients who undergo resection arthroplasty fusion, or amputation usually have difficulty walking following the procedure, and require an assistive device such as a cane or walker. Many are not able to walk more than a few steps, and will require assistance to move from their beds to a wheelchair or toilet.

### **WHERE TO GET MORE INFORMATION:**

American Academy of Orthopaedic Surgeons ( [www.orthoinfo.aaos.org/](http://www.orthoinfo.aaos.org/) )

The Arthritis Foundation ( [www.arthritis.org](http://www.arthritis.org) )

The National Institute of Arthritis and Musculoskeletal and Skin Diseases  
( [http://www.niams.nih.gov/Health\\_Info/Hip\\_Replacement/](http://www.niams.nih.gov/Health_Info/Hip_Replacement/) )

National Library of Medicine ( [www.nlm.nih.gov/medlineplus/healthtopics.html](http://www.nlm.nih.gov/medlineplus/healthtopics.html) )

**MEDICARE and SOME INSURANCE COMPANIES REQUIRE THIS INFORMATION  
BEORE THEY WILL PAY FOR A TOTAL JOINT REPLACEMENT**

Please complete as much as you can and bring back to Dr. Parr for your medical record.

Patient's Name: \_\_\_\_\_

**CHECKLIST:**

- Severe pain limiting activities of daily living, caused by end stage arthritis of the hip.
  - Date of onset:
  - X-Ray evidence (Joint Space Narrowing) (Subchondral Sclerosis) (Subluxation/Dislocation) (Subchondral Cysts)
  
- Weight reduction or maintenance of a healthy weight.
  - Current weight/BMI:
  - Amount of weight lost (if applicable):
  
- NSAIDS used:  Not Indicated (List Reason)
  - 1. Name and dosage:
  - Date(s)used:
  - 2. Name and dosage:
  - Date(s)used:
  - 3. Name and dosage:
  - Date(s)used:
  
- Pain Rx used:  Not Indicated (List Reason)
  - 1. Name and dosage:
  - Date(s)used:
  - 2. Name and dosage:
  - Date(s)used:
  
- Steroid injection into the painful joint.
  - Medication(s) and Date(s) used:
  
- Physical therapy and/or a home exercise program for a minimum of 12 weeks.
  - Date(s) of formal physical therapy:
  - Number of times per week and number of weeks:
  - Describe home exercise program:
  
- Use of an assistive devices (such as a brace, cane, crutches, or walker).
  - Cane dates used:
  - Walker dates used:
  - Crutches dates used:
  - Knee brace dates used:
  
- Artificial joint fluid injection into the painful joint.
  - Medication(s) and Date(s) used:
  
- Patients with inflammatory arthritis (such as lupus or rheumatoid arthritis) may benefit from a treatment regimen of antirheumatic and/or other medications.
  - Name and dosage:
  - Date(s)used:

Patient Signature: \_\_\_\_\_ Date: \_\_\_\_\_