



## Knee revision surgery

### What is knee revision surgery?

If your orthopaedic surgeon has determined you need revision knee surgery, it is most likely because your knee has unrelieved pain and X-rays show damage has occurred to the knee replacement, causing its failure. The purpose of this procedure is to remove your failed implants, and replace them with new ones, which will help make your knee strong, stable and flexible again.

Approximately 45,000 revision knee replacement surgeries are performed in the United States every year, and new advanced technologies have made this a safe and effective way to restore the function of your joint.

### What are some of the situations that require revision knee surgery?

#### **Component failure**

While your knee implant may shift slightly after surgery, thus leading to unbalanced weight distribution and premature implant failure, the most common reason for knee implant failure is the wearing down of the plastic insert.

In the years following your first knee replacement surgery, the metal portion of your implant slowly wears down this plastic portion. In fact, your regular daily activities may produce as many as 2 million cycles per year on these parts.

Depending on the amount of wear to this plastic piece, your surgeon may be able to replace only the plastic piece alone. In other cases, though, you may have worn through it and damaged the metal components as well. In this case the entire implant will be replaced.

#### **Osteolysis**

The wearing down of the plastic component has an unfortunate side effect. The tiny plastic particles that wear off are attacked by your body's immune system, and this immune response also attacks the healthy bone around your implant. This leads to a condition called osteolysis, in which the bone in the area around the joint implant softens as it is absorbed by the body, thus making your implant unstable and in need of revision. Your orthopaedist usually will be able to detect osteolysis on your standard X-rays.

#### **Fracture**

If the bone next to your primary implant is fractured in an accident, revision surgery may be required in order to provide a safe, stable joint. In this case, the original implant may need to be removed, the fracture addressed and a revision joint implanted.

#### **Infection**

In a low percentage of cases, your knee may become infected after surgery. Although it may be successfully treated with antibiotics, there are severe cases where a follow-up revision surgery may be required. In this surgery, the primary implants will be removed, and temporary, antibiotic-laced “spacers” are implanted. These spacers allow for joint function and are intended to give your body time to heal before the new revision prostheses are surgically implanted. Most likely, you will be put on a six-week course of antibiotics in order to eliminate the infection. At a follow-up evaluation, your surgeon will determine if your body is ready for the revision procedure.

## **The implant**

Some questions you probably are thinking about are: what kind of implant device you will be receiving, what is it made of, and why is your surgeon using a particular kind of device? If you haven't discussed this with your surgeon, you should, because not all knee implant devices are made of the same material.

Due to significant advancements in technology, there is a new material for revision knee implant devices called OXINIUM<sup>®</sup> Oxidized Zirconium that has proven to be a superior metal for use in knee replacements. Because of its hardness, smoothness and resistance to scratching, the OXINIUM<sup>®</sup> material may last longer and exhibits superior performance characteristics over the alternative material option, cobalt chrome. Ask your orthopaedic surgeon about an OXINIUM<sup>®</sup> knee implant and if it is the right implant option for you.

In revision knee surgery, each prosthesis is made up of four parts. The tibial component has two elements and replaces the top of the shinbone (tibia). This prosthesis is made up of a metal tray attached directly to the bone and a plastic spacer that allows the thighbone to move over the shinbone.

The femoral component replaces the bottom of the thighbone (femur). This component also replaces the groove where the kneecap (patella) sits. The patellar component replaces the under surface of the kneecap, which rubs against the thighbone. The kneecap protects the joint, and the resurfaced patellar component slides smoothly on the front of the joint.

## **How do you prepare for surgery?**

Successful surgery is always a cooperative effort between you, the orthopaedic surgeon and the people who help you recover from surgery. You have a very important role in preparing for your knee replacement surgery. Ask your orthopaedic surgeon if a Joint Replacement Class is available through the surgeon's office or the hospital. The class will teach you how to care for your new knee and what to expect while you are in the hospital. You will also learn about the equipment you will be using after surgery and safe methods for walking and getting out of bed. It is very helpful to have a family member or friend attend the class with you.

Prior to your knee replacement surgery be sure to ask about all of the following:

- Pre-operative procedure
- Getting your house ready before your surgery
- Help at home
- Preparation for the hospital

## **Pre-operative procedure**

To prepare, you and your surgeon may participate in an initial consultation during which you will discuss pre-operative X-rays, complete medical history, physical examination and a

review of medications and allergies. During this visit, your surgeon will most likely review your knee replacement procedure and answer any questions you may have. In addition, your orthopaedic surgeon may also require that you have a complete physical examination by your internist or family physician, as you will need to be cleared medically before undergoing this extensive procedure. Your surgeon may also ask that you donate your own blood in case you need it during surgery or post-operatively.

Your surgeon may also ask you to consult with a physical therapist to discuss recovery, a knee rehabilitation program and important precautions you must take after your surgery. Finally, your orthopaedic surgeon and hospital may require that you visit the admissions department prior to surgery to pre-certify your knee replacement procedure with your insurance company.

## **Preparation for the hospital**

Here are a few things to keep in mind as you pack and prepare for the hospital.

### **Clothing:**

Getting dressed in the morning helps you feel better, so be sure to bring some comfortable clothing to the hospital:

- Loose shorts or pants
- Loose tops or t-shirts
- Underwear and socks
- Short robe or pyjama
- Toiletries

### **Shoes:**

Bringing proper shoe wear to the hospital is important. Choose a shoe with a closed heel or less than one inch. Gym shoes and walking shoes are fine.

### **Walking aids:**

If you are currently using a walking aid (walker, cane, wheelchair or crutches) bring it with you to the hospital.

### **Days before surgery**

In the days before surgery follow your regular diet and try to get long, restful nights of sleep. In the days leading up to your surgery, your doctor will provide a list of instructions regarding medication use. In some cases, a blood thinner may be ordered a few days before surgery. Aspirin and non-steroidal anti-inflammatory medications should generally not be taken seven days prior to surgery.

The night before surgery, do not eat or drink after midnight. You may have a few sips of water, if needed, to take medications. On the morning of surgery, you may brush your teeth and rinse your mouth, but do not swallow any water.

### **Day of surgery**

Once admitted to the hospital on the day of surgery, you will be taken to the appropriate pre-surgical area where the nursing staff will take your vital signs, start intravenous (IV) fluids and administer needed medications.

You will then be asked to change into a hospital gown and remove all jewellery, contacts, glasses, dentures and even nail polish. Then you will be placed on a cart and transported to the operating room area. The anaesthesiologist will meet you there and review the

medications and procedures to be used during surgery. An IV will be inserted and final preparations for your surgery are made.

## **After Knee Revision Surgery**

### **What do you do after surgery?**

In this section, we will discuss a few things you need to know in regard to surgery and recovery. We will cover some common hospital protocols as well as precautions your doctor and staff will be taking to avoid complications which can result from surgery.

- Surgery and recovery
- Post-operative care and precautions
- Rehabilitation after knee revision surgery
- Hospital discharge and home instructions
- Life after total knee replacement surgery

### **Surgery and recovery**

Once your surgery is complete, you will be taken to a recovery room for a period of close observation. Your blood pressure, heart rate, respiration and temperature will be closely monitored with special attention given to the circulation and sensation in your feet and legs. Once you awaken and your condition is stabilized, you will be transferred to your room.

While protocols differ from hospital to hospital, here is a list of things you may see when you wake up:

- A large dressing applied to the surgical area
- A drain tube leading into the surgical area
- An IV will continue to be used to provide adequate fluids and administer antibiotics and other medication
- A catheter may have been inserted into your bladder as the side effects of medication often make it difficult to urinate
- A patient-controlled analgesia (PCA) device connected to your IV for pain relief

### **Post-operative care and precautions**

As with any major surgical procedure, knee complications can occur following knee replacement surgery. The following is a list of some of the complications with a brief description of each.

#### **Deep vein thrombosis**

Deep vein thrombosis occurs when blood clots are formed in the larger veins of the legs. In some cases, these clots may dislodge from the veins, travel through the circulatory system and become stuck in critical arteries of the lungs. The following precautionary steps may be taken by you and your physician to prevent deep vein thrombosis:

- Blood thinning medication, such as aspirin or anticoagulants
- Support stockings (TED hose)
- Foot elevation to prevent swelling
- Pneumatic devices placed on the feet to improve circulation

#### **Infection**

In a small percentage of patients undergoing knee replacement surgery infection can occur. Your physician will be able to minimize the risk of infection by closely monitoring the incision and looking for any signs of redness, swelling or other indications. Always remember to

wash your hands after any contact to the incision site, especially when the sutures are still in place.

### **Pneumonia**

A possible side effect of surgery is the development of pneumonia. The following steps may help minimize the risk.

Deep breathing exercises: A simple analogy to illustrate proper deep breathing is to “Smell a Rose and Blow Out the Candles.” In other words, inhale slowly and deeply through your nose and exhale slowly through your mouth at a slow and controlled rate. A simple rule of thumb may be to perform these deep breathing exercises eight to 10 times every hour.

Coughing: This activity helps to loosen the secretions in your lungs and excrete them from your pulmonary system.

Incentive spirometer: This simple device provides visual feedback while performing deep breathing exercises. Your nurse or respiratory therapist will demonstrate the proper technique.

### **Knee stiffness**

In some cases the mobility of your knee following surgery may be significantly restricted. You may develop scar tissue in your knee that will cause stiffness during walking and other activities. The following steps may be taken to maximize your range of motion following surgery.

- Strict adherence to a continuous passive motion (CPM) protocol as prescribed by your orthopaedic surgeon
- Early physical therapy to begin range of motion exercises and walking program
- Edema control to reduce swelling using ice, support stockings (TED hose) and elevation
- Adequate pain control so you can tolerate the rehabilitation treatment

### **Rehabilitation after knee surgery**

Perhaps the most critical factor in achieving successful knee revision surgery depends on your approach and diligence in physical rehabilitation. It is important that you actively participate in every aspect of this process, working on your own and with your physical therapists to achieve the best results.

The physical therapists will begin working with you as early as one to two days after surgery. They will teach you simple exercises that can even be performed in bed to strengthen muscles in the knee and lower extremity. These exercises may include:

- Ankle pumps: Flex and extend the ankles
- Quadricep sets: Tighten and relax the thigh muscles
- Heel slides: Flex your hip and knee. Return knee to the straight position
- Leg lifts: Raise leg six inches above mat, keep knee straight
- Knee extension: Place a pillow under your knee. Lift your foot off the mat

Your physical therapists will also teach you the following proper techniques for performing daily activities. Although these activities may seem simple, you must learn to do them safely so you do not suffer other injury.

- Get in and out of bed
- Walk down the hall using your walker or crutches
- Manage steps at home
- Bend your knee 90 degrees and straighten your knee

An occupational therapist will teach you how to safely perform activities needed in daily life and will also provide you with a list of knee precautions that are designed to protect your

new knee during the first eight to 12 weeks following knee surgery. The occupational therapist will also instruct you in the proper use of various long-handled devices that will assist you in your daily life activities. These devices may include the following:

- A reacher to dress and pick things up off the floor
- A sock-aid to assist in putting on socks
- A long-handled sponge to wash your legs and feet
- A leg-lifting device to move the operated leg in and out of the car or bed
- An elevated toilet seat for when using the bathroom
- An elevated bathtub chair to fit in the shower or tub

### **Hospital discharge and home instructions**

Before leaving the hospital, your doctor and staff will help you adjust to recovery in every way possible. They will show you safe techniques of simple activities like getting in and out of bed, going to the bathroom, managing steps at home and getting in and out of a car.

Progress varies from patient to patient, so discharge instructions may also vary. You will receive specific precautions from your orthopaedic surgeon, nurse and physical therapist.

- You will be using a walker or crutches to assist with walking. Ask your surgeon how much weight you can put on your operated leg
- Wear your TED hose
- Your surgeon will talk to you about when you can drive; generally it is six to eight weeks after surgery
- Continue the exercise program you learned while in the hospital