

Total Knee Replacement

If you and your surgeon have exhausted all non-surgical measures for treating your knee pain and inflammation, you might be a candidate for total knee replacement. This procedure is often the only option for restoring an active, pain-free life. If your surgeon does decide that this is the best option for you, the following information will give you an understanding of what to expect.

The purpose of knee replacement surgery is to cut away the damaged bone of the knee joint and replace it with smooth, artificial implants known as prostheses. This prevents the bones from rubbing together and provides a smooth knee joint.

The development of total knee replacement began more than 30 years ago. Today, more than 200 000 people in the United States annually undergo knee replacement surgery as a means of diminishing pain and stiffness and restoring mobility.

The Knee Joint



The knee is the largest joint in the body. It is commonly referred to as a “hinge” joint because it allows the knee to flex and extend. While hinges can only bend and straighten, the knee has the additional ability to rotate (turn) and translate (glide). The knee joint is formed by the tibia (shin bone), the femur (thigh bone) and the patella (knee cap). Each bone end is covered with a layer of smooth shiny cartilage that cushions and protects while allowing near frictionless movement. Cartilage, which contains no nerve endings or blood supply, receives nutrients from the fluid contained within the joint.

Surrounding the knee structure is the synovial lining, which produces this moisturizing lubricant. If damaged, the cartilage is not capable of repairing itself.

Tough fibres, called ligaments, link the bones of the knee joint and hold them in place; adding stability and elasticity for movement. Muscles and tendons also play an important role in keeping the knee joint stable and mobile.

Arthritis is the most frequent source of knee pain

The most frequent source of debilitating pain is arthritis. It is estimated that 40 million people in the United States have some form of arthritis. That's one in every seven people or one in every three families.

Of the more than 100 types of arthritis, the following three are the most common causes of joint damage.

Osteoarthritis is a disease which involves the breakdown of tissues that allow joints to move smoothly. The layers of cartilage and synovium become damaged and wear away leaving the underlying bones unprotected from wearing against each other. It occurs primarily in people over 60.

Rheumatoid arthritis is a systemic disease because it may attack any or all joints in the body. It affects women more often than men and can strike young and old alike. With Rheumatoid arthritis, the body's immune system produces a chemical that attacks and destroys the synovial lining covering the joint surface, causing pain, swelling, joint damage, and loss of mobility.

Trauma-related arthritis, which results when the joint is injured, is the third most common form of arthritis. It also causes joint damage, pain and loss of mobility.

When conservative methods of treatment fail to provide adequate relief, total knee replacement is considered. If your X-rays show destruction of the joint you and your surgeon will decide if the degree of pain, deterioration and loss of movement is severe enough that you should undergo the operation.

Today your orthopaedic surgeon can replace your problem knee thanks to the development of total

knee implants, which have been shown to provide long-term relief. Total joint replacement is a remarkably successful operation that has transformed the lives of many people by enabling them to be active and pain-free.

Total knee replacement

Total knee replacement or "arthroplasty" is the relining of the joint (bone end surfaces) with artificial parts called prostheses. There are three components used in the artificial knee. The femoral (thigh) component is made of metal and covers the end of the thigh bone. It may be cemented to the bone or, for some prostheses, inserted without cement for tissues to grow into the porous coating of the device (biological fixation).

The tibial (shin bone) component, made of metal and polyethylene (medical-grade plastic), covers the top end of the tibia. The metal forms the base of this component, while the polyethylene is attached to the top of the metal to serve as a cushion and smooth gliding surface between the metal of the femoral and tibial components. The tibial component may be secured to the bone with bone cement or, for some porous coated prostheses, biologically fixed by tissue ingrowth.

The third component, the patella or knee cap, may be all polyethylene or a combination of metal and polyethylene. Depending on the prosthesis used, this part may be fixed with or without cement.

The total knee replacement is inserted through an incision that runs three or four inches the knee down along the inside of the kneecap to several inches below the knee. The new components are stabilised by your ligaments and muscles, just as your natural knee was.

Your knee evaluation

An orthopaedic surgeon specialises in problems affecting bones and joints. Your knee evaluation will begin with a detailed questionnaire. Your medical history is very important in determining whether surgery is necessary and medically safe. It helps the surgeon understand your pain, limitations in activity and the progression of your knee problem.

After your history is taken, a physical exam is performed. The range of motion of your knee is measured, your legs are evaluated for variances such as bowlegs or knock-knees, and your muscle strength is analysed. The surgeon will observe how you walk, sit, bend and move.

X-rays are taken of your knee joint. You should bring any X-rays that may have been taken of your knee in the past. These X-rays will help your surgeon plan the surgery and evaluate the fit of your new knee prosthesis.

A small amount of fluid may be taken from your knee joint to check for infection.

After your initial orthopaedic evaluation, the surgeon will discuss all possible alternatives to surgery. If the X-rays show severe joint damage and no other means of treatment has provided relief, total knee replacement may be recommended.

Before surgery

You may be asked to see your family physician or internal medicine doctor for a more thorough medical evaluation. To prepare yourself for surgery, you may be asked to do a number of things:

- You may be asked to lose weight if you are overweight.
- If you smoke, it is important for you to stop two weeks prior to surgery.
- If you are taking aspirin or certain arthritis medications, inform your surgeon: you may need to stop taking these two weeks before surgery.
- If you take estrogen (ie: Premarin), your surgeon will probably advise you to stop taking it one month prior to surgery.
- Your doctor may want you to donate your own blood ahead of time for a possible transfusion during surgery.

Your surgery

You will probably be admitted to the hospital the morning of surgery. You cannot eat or drink anything after midnight the day of surgery; you will be taken to the operating room about a half hour early.

In order to receive medications and blood transfusions during surgery, an intravenous (IV) line will be started. The anaesthesiologist will speak to you before surgery and discuss the type of anaesthetic to be used.

What to expect after surgery

You will awaken after your surgery in the Post-Anaesthesia recovery Room. You will remain there after you have recovered from the anaesthesia, are breathing well, and your blood pressure and pulse are stable. You may feel as though you only left your room for a few minutes. If you experience pain, medication will be available.

- You may have a tube or drain coming through the surgical dressing that is attached to a drainage apparatus. This system provides gentle, continuous suction to remove any blood that accumulates in the surgical area. The drain will probably be removed several days after surgery. The dressing will also be changed and a smaller one applied.
- An "immobiliser" (a cloth support with stays) will fit around this dressing and will hold your leg straight. An alternative to the operated leg being immobilised after surgery is the use of a "Continuous Passive Motion" (CPM) machine. Your leg is held softly in a cradle. The knee is then gently and slowly bent and straightened.
- Your leg will be supported and elevated on one or two pillows to help your circulation and stretch the muscles behind your leg. You will be asked to move your ankle to promote circulation and prevent stiffness in your ankle joint. The immobiliser may be used the next 48 hours or longer, if needed, even after you leave the hospital.
- The nurse will assist you in turning on your side, if you wish. You may adjust the head of the bed to any level you desire. The knee adjustment on the bed should not be used. Your knee should remain straight unless you are performing knee exercises.
- An IV may remain in your arm for several days to administer antibiotics or other medications you may need. This helps prevent infection and gives you proper nourishment until you are eating and drinking comfortably. You will begin regular fluid and food intake under the direction and advice of your surgeon.
- To prevent problems in your lungs, you may receive an incentive spirometer after surgery to encourage you to cough and breathe deeply. This is used every hour while you are awake.

It is normal to feel pain and discomfort after surgery. Inform the nurse of your pain, and medication will be ordered.

Physical Therapy for rehabilitation

Your knee rehabilitation programme, which begins 24 hours after surgery, is ordered by your surgeon and done under his supervision and/or control. Isometric exercises (tightening muscles without moving the joint) will begin while you are still in bed. You will be instructed to do these exercises a number of times per day while awake. You will be encouraged by the physical therapist to move your ankle and other joints so that you will remain strong.

These exercises will help you regain strength and mobility. The therapist will teach you the safest methods for getting in and out of bed or a chair and on and off the toilet. You will be taught the do's and don'ts of joint replacement recovery.

The day after surgery, you will probably begin walking and exercising your knee joint. The exercises will probably be done twice daily. Initially, the physical therapist will assist you in getting out of bed and standing at the bedside with a walker. For your entire hospital stay, you will walk with a walker or

crutches under the supervision of a therapist. Your walking distance will gradually increase. When you are strong enough, you will be able to walk without the support of the immobiliser.

You will probably begin range of motion exercises on your first postoperative day. Through progressive daily exercises, you may achieve about a 90-degree bend in the knee joint by the time you leave the hospital.

Bending your knee during the exercises may be painful. Pain medication taken before therapy will make the exercises more comfortable. Ice packs, hot packs and other treatments may be used to assist you in bending your knee.

The therapist will check your progress daily and will keep your surgeon informed.

Progress

The usual hospital stay for knee joint replacement is usually three to five days. Depending on your progress you will probably gain independence within one week after surgery. To accommodate sitting, there will be an elevated chair and commode available for your use. An elevated toilet seat will be ordered for you to take home. At home, you will need a firm chair with arms.

The therapist will teach you how to dress, get out of bed without help and use a walker or crutches. You will continue strengthening exercises in preparation for your return home.

It is important for you to adhere to your surgeon's directions and follow proper positioning techniques throughout your rehabilitation. Since you will no longer be in the hospital, arrangements will be made for someone to remove the sutures or skin clips about 10 days after surgery. It is not uncommon to still experience some pain. The full recovery period normally lasts three to six months.

Preparing to go home

Just prior to your discharge, you will receive instructions for your at-home recovery. Until you see the surgeon for your follow-up visit, you must take certain activity precautions.

As soon as you are home from the hospital, make an appointment to see the doctor.

Look for any changes around your incision. Contact your surgeon if you develop any of the following:

- Drainage and/or foul odour coming from the incision.
- Fever (temperature about 101 degrees F or 38 degrees C) for two days.
- Increased swelling, tenderness, redness and/or pain.
- Take time to adjust to your home environment. It is normal to feel frustrated, but these frustrations will soon pass. It is okay to take it easy.

Resuming activities

Depending upon the physical demands of your job, you normally can resume work when authorised by your surgeon.

You usually may begin driving once you are able to bear full weight on your knee. Be sure you are comfortable with your strength. Be sure to practice driving in a safe area. Once you are comfortable with your mobility, you generally may drive anywhere.

Sexual intercourse may be resumed at any time as long as all knee precautions are kept in mind.

We encourage you to be active in order to control your weight and muscle tone. It is generally three to four months before you can resume low-impact aerobic activity such as walking, golfing, bowling and swimming. Jogging, high-impact aerobics and contact sports are never allowed. Your new knee is artificial and although it is made of very durable materials, it is subject to wear and tear.

Since your rehabilitation is an individual one, please seek advice on future activities from your surgeon.

Medication/pain control

It is normal for you to have some discomfort. You will probably receive a prescription for pain medication before you go home. If a refill is needed, please call your surgeon's nurse at least five days before you run out of pills. Please contact your surgeon if you have increased discomfort or pain.

Special instructions

You may be seen six weeks, five months and twelve months after your surgery. It may be requested that you see your surgeon once a year after the first year, even if you are not having any problems.

Any infection must be promptly treated with proper antibiotics because infection can spread from one area of the body to another through the blood stream. Every effort must be made to prevent infection in your artificial joint. You should always tell your dentist or physician that you have an artificial joint. If you are to have dental work performed, please call your surgeon prior to having this work done. Your surgeon will most likely prescribe an antibiotic for you. Antibiotics must be used before and after any medical or dental procedure - a precaution that must be taken for the rest of your life.

For more information please visit: Information for patients and care guiders on the Smith & Nephew website: http://global.smith-nephew.com/us/patients/Total_knee_replacement_12214.htm