KNEE JOINT REPLACEMENT

Information for Patients

WHAT IS KNEE JOINT REPLACEMENT?

Total knee replacement is one of the most frequent orthopaedic operations. During surgery, damaged parts of the knee joint are replaced with artificial parts (prosthesis).

The knee normally functions as a hinge joint between the thigh bone (femur) and the shin bone (tibia). The knee joint has three compartments: the outer (lateral) compartment and the inner (medial) compartment, where the surfaces of the femur and tibia covered with articular cartilage glide over one another, and the patellofemoral compartment formed by the kneecap (patella) and the femur. Damage to the cartilage in one or more compartments can develop for various reasons, most often because of osteoarthritis or different forms of inflammatory arthritis (e.g. rheumatoid or psoriatic arthritis) occurring as a consequence of injury or bacterial infection of the knee.

The patients' main symptoms are pain and limited motion in the knee. Knee joint replacement is undertaken when all conservative and all other surgical treatment options have failed to provide relief. In order to qualify for the procedure, the patient must also have x-ray evidence of changes indicating advanced arthritis. Total knee replacement means the replacement of all three compartments of the knee. The cartilage under the patella is often only trimmed and smoothed. Since the replaced parts of the joint wear out over time, we generally advise patients to put off the operation as long as possible.

The aims of total knee replacement are to relieve pain, improve the quality of life, and preserve or improve joint function. The surgical procedure can be performed in all age groups of patients except in children whose bones are still growing.
WHAT ARE THE EXPECTED BENEFITS OF KNEE REPLACEMENT SURGERY?

The expected improvements after a total knee replacement operation are pain reduction in the affected joint and increase in mobility. The majority of patients can resume their usual activities in two to four months. There are no major restrictions of activity or precautions to be observed after the operation.

Most patients are very satisfied with the outcome of surgery, and most are able to maintain adequate pain-free mobility in their knees for at least 10 to 15 years or longer.

WHAT ARE THE RISKS OF KNEE REPLACEMENT SURGERY?

Serious complications after a total knee replacement are uncommon. In most patients, the benefits of the procedure outweigh its risks. Before deciding on surgery, you must be aware of possible risks.

- Operations on the knee increase the risk of blood clot formation (deep vein thrombosis, pulmonary embolism). With preventive measures (medication, compression stockings, early mobilisation), blood clots occur in only about 1% of patients. Pain and swelling in the calf or thigh can be a consequence of a blood clot in the deep veins of the leg. Chest pain, breathing difficulty, coughing up blood and fainting are signs indicating that the clot has travelled to the lungs (embolism). Patients with symptoms of thrombosis or pulmonary embolism must receive appropriate treatment as soon as possible.

- Bacterial infection after a total knee replacement is a comparatively rare (up to 2% of patients) but serious complication. Infections are treated with antibiotics. If infection spreads into the depth of the wound, antibiotics must be taken for a longer period and further surgery may be required, but removal of the endoprosthesis is rarely necessary.

- Fever, shivering, chills, sudden swelling, redness or increased pain around the incision suggest the possibility of infection. This can develop several years after surgery as a result of blood-borne spread from a distant site.
- Nerve damage that results in loss of touch sensation is the most frequent neurological complication. Peroneal nerve palsy occurs less frequently; the symptoms include numbness, tingling, and muscle weakness in the leg.
- Bone fracture or blood vessel damage can also occur during the operation. Most of these complications can be managed immediately after their occurrence.
- Blood loss during and after the operation usually does not exceed 500ml. Greater blood loss requires replacement by transfusion.
- Loosening of the prosthetic joint may develop several years after implantation as a result of wear or infection of its components.
- Stiffness in the joint after the operation can be a consequence of several factors, the most common being contracted tendons and muscles about the knee.

**ARE THERE ANY ALTERNATIVES TO SURGERY?**

If you decide against the operation, you can expect the pain and loss of motion in your knee to grow worse over time, which means that you will eventually need to use a walking aid and take pain medication on a regular basis. The operation cannot improve your overall health, and your deciding against it can have no life-threatening consequences. Non-surgical treatment for osteoarthritis of the knee includes:
- weight reduction or maintenance of a healthy body weight;
- physiotherapy;
- use of walking aids (crutches, walking stick);
- use of a knee brace or insoles (support to the knee and more suitable distribution of weight across the joint);
- anti-pain and anti-inflammatory medication;
- knee joint injections for pain relief.

In younger and more active patients, in whom the expected life of a total knee endoprosthesis is shorter, non-operative surgical procedures (keyhole surgery, osteotomy) are given priority. A partial knee replacement is the replacement of only one knee compartment (mostly the inner, less often the outer compartment). The operation is indicated in rare groups of patients and its aim is to reduce pain and postpone total knee replacement surgery.
Knee joint replacement is not recommended for patients with an active inflammation in the knee, elsewhere in the body, or on the skin, or with a severe vascular or neurological disease that can affect the entire extremity.

**HOW SHOULD YOU PREPARE FOR ADMISSION TO HOSPITAL?**

Before your knee replacement operation, you will need to see an internist, who will decide if you are fit for surgery. This is especially important if you suffer from a chronic medical condition. You will also see an anaesthesiologist, who will explain the anaesthetic procedure and possibly recommend additional tests or medication to be taken before the operation. You will need to undergo some basic blood and urine tests and a chest x-ray to rule out an inflammation or other major abnormality. The method of blood conservation will need to be discussed. The most frequently used methods are preoperative donation of autologous blood, perioperative blood salvage (i.e. collection and reinfusion of the patient's own blood), and treatment with erythropoietin, which stimulates the production of red blood cells. In this way the need for allogeneic blood transfusion is restricted to emergency cases. The above-mentioned methods are safer because the risk of disease transmission and allergic reaction is smaller.

We recommend regular stretching and range-of-motion exercises to preserve mobility in the knee. With stronger muscles, you will also make faster progress in your rehabilitation after the operation. It is important that you maintain your body weight at an ideal level or reduce it if necessary, since excessive body weight significantly increases the risk of complications during and after the operation.

You might consider making some changes in your home to make your return from the hospital easier.

**WHAT HAPPENS ON THE DAY OF SURGERY?**

You will be admitted the day prior to surgery. You should bring to the hospital your health insurance card and a referral note and findings received from your primary care doctor. You
will be asked to sign a consent form for anaesthesia and surgery, and you will meet your surgeon, who will answer any questions you may have. The day before the operation, you will be given a laxative to cleanse your bowel. You will fast (have nothing to eat or drink) for at least 6 hours before the procedure. In the morning of the day of surgery, you will take only those of your regular medications that have been approved by your doctor. You will be asked to remove all jewellery, and you will take a bath or a shower. During the morning ward round, as a safety precaution, the doctor will mark the lower limb on which the operation is to be performed with a pen.

A nurse from the ward will take you to the operating suite and leave you with the anaesthesia team. An anaesthesiologist and a nurse anaesthetist will check your identity and prepare you for the operation. Knee replacement surgery is performed in the operating theatre under general anaesthetic, with the patient fast asleep, or under local anaesthetic, which numbs the lower half of the body from the waist down.

**HOW IS THE OPERATION PERFORMED?**

The operation takes about 60 to 80 minutes. An incision is made down the front of the knee, its length depends to a considerable extent on the thickness of the subcutaneous fatty tissue. During the operation, the surgeon removes damaged bone and cartilage at the lower end of the femur and the upper end of the tibia. The surgeon then implants the replacement joint, which is usually made of metal and plastic. Just before the operation, you will be given a single dose of an antibiotic to prevent infection. The type of implant selected and the method and site of incision depend on each patient’s needs. A total knee endoprosthesis is made up of a femoral and a tibial component; the patella is rarely replaced. There are many different types of knee replacements made by different manufacturers. Most knee replacements last at least 15 years.
HOW LONG WILL I NEED TO STAY IN HOSPITAL?

The length of the hospital stay depends on a number of factors. If there are no complications, most patients complete their rehabilitation programme in 6 to 8 days.

After the operation, you will spend a short time in the recovery room. Then you will be transferred into the intensive care unit (ICU), where you will receive infusions of fluids and pain medication. To decrease the risk of blood clots forming in your legs and the risk of pulmonary emboli, you will be given blood thinning-medication (injections or tablets) and compression stockings to wear. You will begin doing exercises to prevent cardiorespiratory complications as well as range-of-motion exercises for your knee, and you will start getting out of bed according to instructions received from a physiotherapist. In addition to all your regular medication, you may be given an antibiotic (usually 24 hours after the operation) to prevent infection. The following day, you will probably return to the ward and continue your rehabilitation.

Physiotherapy is an important part of the rehabilitation process following surgery. With the help of a physiotherapist, you will learn to sit up and stand up unassisted and to walk with support. You will perform passive and active range-of-motion exercises for the knee joint and strengthening exercises for the thigh muscles, and you will practice activities of daily life. At discharge, you will be able to walk independently on level ground and to climb up and down stairs on crutches.

During the hospital stay, your wound dressings will be changed regularly, and blood tests will be performed as required. You will be taking all your regular medication, with the exception of diuretics (drugs that increase the excretion of water from your body) and certain anti-hypertensives (blood pressure lowering drugs) on the day of surgery and in the first postoperative days. Detailed instructions will be given by your doctor. You will continue to receive anticoagulant therapy, and you will be taught to administer the injections yourself.
WHAT SHOULD YOU DO AFTER DISCHARGE FROM HOSPITAL?

After discharge, your dressings will be changed regularly every two to three days by your primary care doctor, who will also remove the sutures or clips from your wound about 12-14 days after the operation. After returning to your home environment, until the first follow-up appointment with your orthopaedic surgeon (1-2 months after the operation), it is advisable that you walk on two crutches, bearing no weight on the operated leg. In this period, you must continue to wear compression stockings. You should remain on anticoagulant therapy until the 35th postoperative day, and take your pain medication only when needed. You will continue with the rehabilitation programme at home. This can also take place at a rehabilitation facility.

Patients are usually able to resume their usual daily activities three to six weeks after surgery. The aim of rehabilitation is to restore strength and a full range of motion in the knee joint. After several months, upon completion of the rehabilitation programme, patients are encouraged to maintain an active lifestyle. Walking, cycling and swimming are recommended, but contact sports (such as football or basketball) and other high-impact activities such as running should be avoided.

WHO SHOULD I CONTACT IN CASE OF DIFFICULTIES AFTER DISCHARGE?

If you have any kind of difficulties after discharge from hospital, first consult your primary care doctor or, outside regular working hours, the doctor on duty in your community health centre. When seeing a doctor, always bring with you your discharge summary from the hospital. In case of a major complication, your doctor will arrange an urgent appointment with an orthopaedic surgeon. Consult your doctor if you notice any signs of infection in the operated area, such as redness, heat and swelling, or if your wound starts to leak fluid. If a bacterial infection is suspected, you may not take any antibiotics before seeing an orthopaedic surgeon.