

Total Knee Replacement

Introduction

Total Knee Replacement is a surgery involving replacing your existing diseased cartilage and bone in the knee joint by a prosthesis composed of metal and plastic. There are usually three components: femoral prosthesis, tibial prosthesis and patellar prosthesis.

The knee joint can be divided into two parts: femoral-tibial articulation and femoral-patellar articulation. Depending on the severity of disease in your knee, the femoral-tibial articulation, with or without the femoral-patellar articulation, will be replaced by the prosthesis.

Indication

- End stage arthritis of the knee joint
 - Usually due to osteoarthritis, rheumatoid arthritis
 - Sometimes gouty arthritis, osteonecrosis, ankylosing spondylitis, haemophilia, Charcot joint, etc.
- Occasionally for tumor, fracture, etc.
- The most common symptoms in end-stage arthritis are pain, deformity and stiffness. Occasionally, patients may complain of instability of the joint.
- After surgery, pain is usually much reduced. Original deformity and stiffness are usually improved. However, the range of motion is usually not as good as a normal knee. If the knee range was already very good before the surgery, it is difficult to further improve the range of motion.

The Procedure

- You have to undergo general anaesthesia or regional anaesthesia (e.g. epidural anaesthesia, spinal anaesthesia, etc). Your anaesthetist will discuss with you about the anaesthetic procedure in details.
- You need antibiotic prophylaxis for the operation. Please inform your doctor or nurse if you have drug allergy history.
- A tourniquet may be put around the thigh region of the limb. It will be inflated during the procedure to decrease the blood flow to the leg.
- Incision is made in the anterior aspect of the knee joint.
- Diseased cartilage and bone are then removed. The femoral prosthesis and tibia prosthesis are usually fixed to the bone by cement or other mechanical means. If your patella needs to be replaced, your surgeon will implant the patella prosthesis.
- At the end of the procedure, drain(s) may be inserted for drainage of haematoma.
- Before going back to a general ward, you may be kept in the recovery room of the operation theatre for observation.

Risk and Complication

General Complications

Like other surgical procedures, there are associated risks and complications with total knee replacement surgery, for example, those associated with anaesthesia, wound complications, pneumonia, stroke, heart attack, etc.

Specific Complications

Total Knee Replacement is a safe and well accepted surgical procedure internationally. However, similar to other surgical procedures, there are still chances to encounter potential undesirable effects and complications.

- **Revision Surgery**
The artificial joint is expected to suffer from mechanical wear. The joint will be loosened eventually and revision surgery will be required.
- **Infection**
One of the biggest enemies of artificial joint replacement is infection. The infection rate increases if you have adverse comorbidity, for example, diabetes mellitus.
- **Dislocation**
The chance of dislocation in a total knee replacement is infrequent.
- **Nerve palsy**
Nerve may be injured during total knee replacement. Nerve injury can result in loss of sensation and function. Some numbness of skin around and at the outer side of the incision should be expected.
- **Bleeding**
Some amount of blood loss during a total knee replacement is expected and transfusion may be required.
- **Vascular injury**
There is a remote chance of major vessel injury during total knee replacement. Major vascular injury may result in the loss of a limb.
- **Fracture**
Fracture can occur both within the operation and in the post-operative period.
- **Problem in wound healing**
The problem encountered in wound healing may range from persistent wound discharge to wound edge necrosis and wound dehiscence, which may require further surgical reconstruction.

- **Thromboembolic disease**
Deep vein thrombosis after Total Knee Replacement is not uncommon. However, the chance of subsequent pulmonary embolism is low. Death can follow pulmonary embolism but the incidence is very low.
- **Complications associated with extensor mechanism of knee**
The complications of extensor mechanism complication include symptomatic patellar instability leading to the need of re-operation, patellar fracture, rupture of patellar tendon and soft tissue impingement problem.
- **Stiffness**
Stiffness occurs occasionally after surgery which may require any further treatments.

Before the Procedure

- Treat and optimize existing disease conditions, e.g. ischemic heart disease, hypertension, diabetes mellitus, anemia, lung disease
- Fasting few hours before the procedure

After the Procedure

- You will be allowed to eat and drink when your condition is stable.
- You need to start mobilization exercise of the ankle. This will help the circulation of blood inside your calf and decrease the chance of deep vein thrombosis.
- Physiotherapy will be started later to maintain the range of motion gained during the operation. These include achievement of full extension, maximal flexion and regaining the strength of quadriceps. After a few days, therapists will start to train you to walk.
- The stitches / staples will be removed after the wound heals.

Possible Additional Procedures

- **Transfusion**
Bleeding is inevitable in total knee replacement. Blood transfusion may be required.
- **Additional Procedure for Fixation of Fracture**
The chance of intra-operative fracture is low. However, if fracture is encountered, your surgeon may need to stabilize the fracture by extending the wound and fixing the fracture with additional metal implants.
- **Additional Vascular Procedure**
Despite the chance of major vessel injury in total knee replacement is remote, the consequence of such injury can be devastating and may lead to potential loss of the limb. If such injury occurs, vascular surgery will be needed.

Alternative Treatment

Your surgeons will consider total joint replacement for you only if the symptoms cannot be controlled after exhausting other means of conservative treatments, including analgesics, physiotherapy and activities modification. On the other hand, total knee replacement is not a life saving surgery. One can always select to adopt conservative treatments, despite the presence of significant symptoms in terms of pain, stiffness and deformity.

Follow Up

- You should keep your wound clean and dry
- You must follow instructions strictly on taking medication, see the doctor as scheduled
- If you have any excessive bleeding, collapse, severe pain, fever or signs of wound infection such as redness, swelling or large amounts of stinking discharge, see your doctor immediately or attend the nearby Accident and Emergency Department

Remarks

The information contained is very general, the list of complications is not exhaustive and other unforeseen complications may occasionally occur. In special patient groups, the actual risk may be different. For further information please contact your doctor.