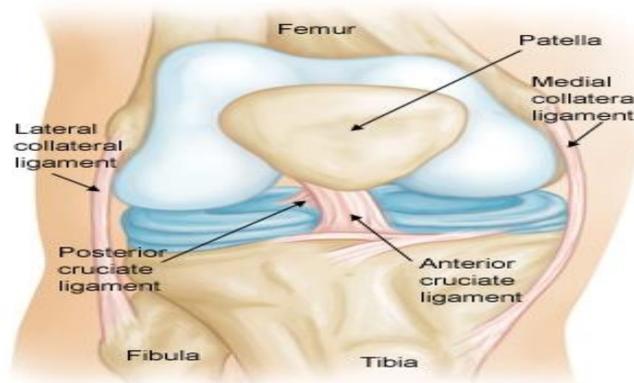


## Total Knee Replacement Surgery

### What is a total knee replacement?

A total knee replacement is a surgical procedure where the diseased knee joint bone and cartilage is replaced with artificial material. The knee joint is formed by the lower end of the femur (thigh bone) and the upper end of the tibia (lower leg bone). During a total knee replacement, the end of the femur bone is removed and replaced with a metal cap (bone cement is used to hold the metal cap in place).

The end of the lower leg bone (tibia) is also removed and replaced with a tibial tray (bone cement is used to hold the metal tibial tray in place). A plastic (highly cross-linked polyethylene - HCLPE) component is clipped onto the tibial tray and will serve as an articulating surface between the femoral metal cap and the tibial tray. If the patella (knee cap) cartilage is also significantly damaged a plastic button (HCLPE) is used to replace the diseased cartilage.



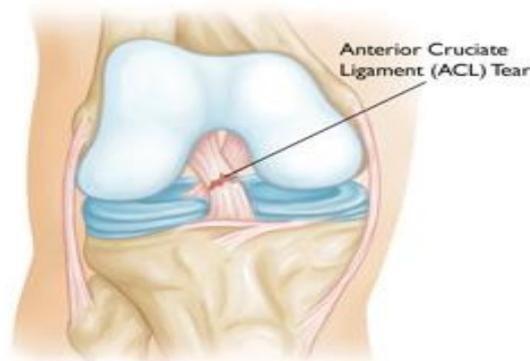
Normal knee anatomy. The knee is made up of four main things: bones, cartilage, ligaments, and tendons.

The bone structure of the knee joint is formed by the femur, the tibia, and the patella. The ACL is one of the four main ligaments within the knee that connect the femur to the tibia.

The knee is essentially a hinged joint that is held together by the medial collateral (MCL), lateral collateral (LCL), anterior cruciate (ACL) and posterior cruciate (PCL) ligaments. The ACL runs diagonally in the middle of the knee, preventing the tibia from sliding out in front of the femur, as well as providing rotational stability to the knee.

The weight-bearing surface of the knee is covered by a layer of articular cartilage. On either side of the joint, between the cartilage surfaces of the femur and tibia, are the medial meniscus and lateral meniscus. The menisci act as shock absorbers and work with the cartilage to reduce the stresses between the tibia and the femur.

## Description



The anterior cruciate ligament (ACL) is one of the most commonly injured ligaments of the knee. In general, the incidence of ACL injury is higher in people who participate in high-risk sports, such as basketball, football, skiing, and soccer.

Approximately half of ACL injuries occur in combination with damage to the meniscus, articular cartilage, or other ligaments. Additionally, patients may have bruises of the bone beneath the cartilage surface. These may be seen on a magnetic resonance imaging (MRI) scan and may indicate injury to the overlying articular cartilage.

### **What patients should consider a total knee replacement?**

Total knee replacement surgery is considered for patients whose knee joint cartilage and bone have been damaged by osteoarthritis. Osteoarthritis of the knee may be caused by advanced age (wear and tear) or some patients may have a genetic predisposition to osteoarthritis. This is called primary osteoarthritis.

Osteoarthritis may also be caused secondarily by other conditions such as trauma, infections, avascular necrosis, knee ligament insufficiencies and inflammatory arthritis (such as gout and rheumatoid arthritis).

When the osteoarthritis, no matter what the cause, results in progressive knee pain affecting the patients quality of life and function, the patient may be a candidate for a knee replacement. Pain is the single most important indication for surgery. Other less important indications are knee deformities and knee stiffness.

## **What are the risks of undergoing a total knee replacement?**

### **Complications specific to knee replacements:**

- Blood clots in the lower limb veins (known as deep vein thrombosis or DVT)
- These blood clots can travel to the lungs, this is known as a Pulmonary Embolism or PE. Although rare a PE can cause respiratory failure and death.
- Knee dislocations (instability)
- Infections (superficial wound infection or deep infection involving the knee replacement)
- scarring and limitation of knee range of motion
- persistent pain despite the knee replacement
- Heterotopic ossification - new bone formation in the muscles surrounding the knee.
- loosening of the knee replacement components
- Bleeding
- Anaesthetic related complications such as heart arrhythmias, stroke, liver toxicity, pneumonia and death.

### **What are the preparations needed for the procedure?**

The preoperative evaluation generally includes a review of all medications being taken by the patient. Anti-inflammatory medications, including aspirin, are often discontinued one week prior to surgery because of the effect of these medications on platelet function and blood clotting.

Other preoperative evaluations include complete blood counts, electrolytes (potassium, sodium, chloride), blood tests for kidney and liver functions, urinalysis, chest X-ray, EKG, MRSA (methicillin-resistant *Staphylococcus Aureus*) screen and a physical examination. Your physician will determine which of these tests are required, based on your age and medical conditions.

Any indications of infection, severe heart or lung disease, or active metabolic disturbances such as uncontrolled diabetes may postpone or defer total hip joint surgery. In these cases, I will ask a specialist physician to consult the patient in order to optimize the medical conditions prior to surgery.

Total hip joint replacement can involve blood loss. Patients planning to undergo total hip replacement often will donate their own (autologous) blood to be stored for transfusion during the surgery. Should blood transfusion be required, the patient will have the advantage of having his or her own blood available, thus minimising the risks related to blood transfusions

Excess body weight may be a risk factor for infection, increased intra-operative blood loss, deep vein thrombosis/pulmonary emboli, knee stiffness and persistent knee pain following the surgery. These patients may also have a much slower post-operative rehabilitation recovery period. If at all possible, patients with excess body weight should consider a weight loss program to reduce the risks of Surgery.

## **What will recovery be like for the patient after surgery?**

A total knee joint replacement takes approximately two to four hours of surgical time. The preparation prior to surgery may take up additional time. After surgery, the patient is taken to a recovery room for immediate observation that generally lasts between one to four hours. Upon stabilization, the patient is transferred to a hospital room or Intensive Care Unit.

During the immediate recovery period, patients are given intravenous fluids. Intravenous fluids are important to maintain a patient's electrolytes and replace any fluids lost during surgery. Using the same IV, antibiotics might be administered as well as pain medication. Patients also will notice tubes draining fluid from the surgical wound site. The amount and character of the drainage are important to the doctor and can be monitored closely by the nurse in attendance. A dressing is applied in the operating room and will remain in place for 2 weeks. The dressing is changed earlier only if the wound is oozing or the dressing has come loose.

Pain-control medications are commonly given through a patient-controlled-analgesia (PCA) pump whereby patients can actually administer their own dose of medications on demand. Pain medications occasionally can cause nausea and vomiting. Antinausea medications may then be given.

Measures are taken to prevent blood clots in the lower extremities. Patients are placed in elastic hose (TEDs) after surgery. Compression pumps are often added, which help by forcing blood circulation in the legs. Patients are encouraged to actively exercise the lower extremities in order to mobilize venous blood in the lower extremities to prevent blood clots. Medications are given to thin the blood in order to further prevent blood clots.

Patients may also experience difficulty with urination. This difficulty can be a side effect of medications given for pain. As a result, catheters are often placed into the bladder to allow normal passage of urine.

## **What are the recommended exercises upon discharge?**

For an optimal outcome after total knee replacement surgery, it is important for patients to continue in an outpatient physical therapy program along with home exercises during the healing process. Patients will be asked to continue exercising the muscles around the replaced joint to prevent scarring (and contracture) and maintain muscle strength for the purposes of joint stability. These exercises after surgery can reduce recovery time and lead to optimal strength and stability.

The wound will be monitored by Dr Chivers or Dr Coetzee and the wound sister. Patients should watch for warning signs of infection, including abnormal redness, increasing warmth, swelling, or unusual pain. It is important to report any injury to the joint to me immediately.

Future activities are generally limited to those that do not risk injuring the replaced joint. Sports that involve running or contact are avoided, in favour of leisure sports, such as golf, and swimming. Swimming is the ideal form of exercise since the sport improves muscle strength and endurance without exerting any pressure or stress on the replaced joint.

Patients with joint replacements should alert their doctors and dentists that they have an artificial joint. These joints are at risk for infection by bacteria introduced by any invasive procedures such as surgery, dental or gum procedures, urological and endoscopic procedures, as well as from infections elsewhere in the body.

We will typically prescribe antibiotics before, during, and immediately after any elective procedures in order to prevent infection of the replaced joint.

Though infrequent, patients with total knee replacements can require a second operation years later. The second operation can be necessary because of loosening, fracture, or other complications of the replaced joint. Reoperations are generally not as successful as original operations and carry higher risks of complications. Future replacement devices and techniques will improve patient outcomes and lead to fewer complications.

## **Pre and Post Surgery General Advice**

Below is a general guide of what to expect in preparation for your joint surgery. This is not meant to replace the advice or treatment by Dr Chivers or Dr Coetzee or other medical practitioner

### **Weeks Prior to Surgery:**

After a date has been set for your surgery, you should begin preparing for it. Keep your diet healthy and eliminate smoking and alcohol consumption as much as possible. Smoking greatly increases your risk of infection and decreases wound healing. Smoking can also make your anaesthetic very difficult. Avoid any drastic weight loss (unless recommended by your doctor), as this may throw off your internal balance and may weaken your immune system. Your doctor may recommend a strength-training program prior to your surgery to improve your recovery and outcome.

Stay in contact with us and make sure that we have your most recent medical aid information, medical history, and prescriptions are on file. Please remember that we do not know your medical aid history, when you joined your current medical aid; and your medical aid exclusions. It is your responsibility to inform us any information that is relevant to your surgery. We will do our best to assist with the medical aid authorisations and ICD 10 coding that your medical aid requires. Please understand that our contact with your medical aid merely on *your* behalf, we try do our best to facilitate a smooth process. However your medical aid remains your responsibility

Please make sure you understand the surgery, if you have any questions we are happy to clarify and help. Dr Chivers gives a detailed explanation of your operation during your last consultation before surgery. If you are unsure please ask!

## **One Week Prior to Surgery:**

You may be called in for pre-operative tests, blood, x-rays, or other tests. Usually Dr Chivers does this on the day of admission. In the week before the procedure, you should stop taking aspirin or any non-steroidal anti-inflammatory drugs (NSAIDs). These include volatrin, aspirin, brufen etc as these may interfere with clotting during or directly after the surgery. You may want to cook meals a few nights before and keep them in the refrigerator or freezer so that they will be easily heated up after the surgery. If you are not a cook, collect a take-away menus

## **The Night Before Surgery:**

Although you may be a little jittery, try to relax. Eat a sensible meal and go to bed early. Remove any jewellery and nail polish. Bathing / showering the night before or the morning of surgery is recommended. Arrive early, you do not want to rush to the hospital.

## **Directly After Surgery:**

You will feel woozy as you come out of your anaesthetic. You may feel sleepy, disoriented, and even nauseous after the procedure. As the medication wears off, you may also experience pain in the joint. Additional pain medication will be prescribed to manage your pain.

## **Weeks Following Procedure:**

Make sure you understand the amount of time it takes for a full recovery. Depending on the procedure you are undergoing, generally expect:

- Walking within 3 days post-surgery
- 2 Weeks until stitches are removed and follow up consultation
- 6 Weeks on crutches
- 3 – 6 months on average for a full recovery, a few patients take longer

A physiotherapist will see you the day after your surgery, and will follow you up regularly over a period of 6 weeks to aid in your recovery. He / she will explain to you how and how long to use crutches, bath, and perform exercises to increase your range of motion and leg strength. Please expect to have regular physiotherapy consultations after surgery. Exercises may include weight-training, flexion and extension, leg lifts and squats, deep knee bends, walking and cycling

The physiotherapist will also discuss household modifications, such as a raised toilet seat or a lift on your bed, if appropriate.

## **Wound care**

Your wound must stay dry and covered for 2 weeks. Leave the hospital dressing on. Your wound may ooze for the first 3- 7 days post-surgery. If dressing is 'dirty' do not be concerned. By opening the dressing, you are increasing the risk of infection. If the dressing does come off you can replace it with a clean post-op opsite or primapore. These dressing are available at clicks or dischem

If there is any foul smelling 'ooze' or increasing redness around the wound or if and you are concerned: please contact Helen and she can arrange a consult for you with the sister at the rooms.

## **Surgery: What to expect**

Below is a general guide of what to expect in preparation for your joint surgery. This is not meant to replace the advice or treatment by Dr Chivers or Dr Coetzee or other medical practitioner

### **Weeks Prior to Surgery:**

After a date has been set for your surgery, you should begin preparing for it. Keep your diet healthy and eliminate smoking and alcohol consumption as much as possible. Smoking greatly increases your risk of infection and decreases wound healing. Smoking can also make your anaesthetic very difficult. Avoid any drastic weight loss (unless recommended by your doctor), as this may throw off your internal balance and may weaken your immune system. Your doctor may recommend a strength-training program prior to your surgery to improve your recovery and outcome.

Stay in contact with us and make sure that we have your most recent medical aid information, medical history, and prescriptions are on file. Please remember that we do not know your medical aid history, when you joined your current medical aid; and your medical aid exclusions. It is your responsibility to inform us any information that is relevant to your surgery. We will do our best to assist with the medical aid authorisations and ICD 10 coding that your medical aid requires. Please understand that our contact with your medical aid merely on *your* behalf, we try do our best to facilitate a smooth process. However your medical aid remains your responsibility

Please make sure you understand the surgery, if you have any questions we are happy to clarify and help. Dr Chivers gives a detailed explanation of your operation during your last consultation before surgery. If you are unsure please ask!

### **One Week Prior to Surgery:**

You may be called in for pre-operative tests, blood, x-rays, or other tests. Usually Dr Chivers does this on the day of admission. In the week before the procedure, you should stop taking aspirin or any non-steroidal anti-inflammatory drugs (NSAIDs). These include volatrin, aspirin, brufen etc as these may interfere with clotting during or directly after the surgery. You may want to cook meals a few nights before and keep them in the refrigerator or freezer so that they will be easily heated up after the surgery. If you are not a cook, collect a take-away menus

### **The Night Before Surgery:**

Although you may be a little jittery, try to relax. Eat a sensible meal and go to bed early. Remove any jewellery and nail polish. Bathing / showering the night before or the morning of surgery is recommended. Arrive early, you do not want to rush to the hospital.

### **Directly After Surgery:**

You will feel woozy as you come out of your anaesthetic. You may feel sleepy, disoriented, and even nauseous after the procedure. As the medication wears off, you may also experience pain in the joint. Additional pain medication will be prescribed to manage your pain.

## **Weeks Following Procedure:**

Make sure you understand the amount of time it takes for a full recovery. Depending on the procedure you are undergoing, generally expect:

- Walking within 3 days post-surgery
- 2 Weeks until stitches are removed and follow up consultation
- 6 Weeks on crutches
- 3 – 6 months on average for a full recovery, a few patients take longer

A physiotherapist will see you the day after your surgery, and will follow you up regularly over a period of 6 weeks to aid in your recovery. He / she will explain to you how and how long to use crutches, bath, and perform exercises to increase your range of motion and leg strength. Please expect to have regular physiotherapy consultations after surgery. Exercises may include weight-training, flexion and extension, leg lifts and squats, deep knee bends, walking and cycling

The physiotherapist will also discuss household modifications, such as a raised toilet seat or a lift on your bed, if appropriate.

## **Wound care**

Your wound must stay dry and covered for 2 weeks. Leave the hospital dressing on. Your wound may ooze for the first 3- 7 days post-surgery. If dressing is 'dirty' do not be concerned. By opening the dressing, you are increasing the risk of infection. If the dressing does come off you can replace it with a clean post-op opsite or primapore. These dressing are available at clicks or dischem

If there is any foul smelling 'ooze 'or increasing redness around the wound or if and you are concerned: please contact Helen and she can arrange a consult for you with the sister at the rooms

**If there are more queries please not hesitate to contact us.**