A PATIENT GUIDE TO TOTAL KNEE REPLACEMENT

THE NATURE OF A KNEE REPLACEMENT

We welcome you to the consideration of a total knee replacement. We hope that you have already discussed the suitability and benefit of a total knee replacement with Dr Ho at your consultation. It is also beneficial to discuss this with your partner and family members, as they often play an important role in supporting you through the rehabilitation process after knee replacement surgery. Total knee replacement operations are now very well established and have been performed for many years with a high success rate. Knee replacement surgery is suitable for patients with significant disability and symptoms from knees that are worn out and beyond help by other means. It is particularly useful in relieving pain and allowing the patient to regain mobility and knee function.

There are two main parts in a knee replacement, namely the femoral (upper) and the tibial (lower) part with or without a third part, the patella (knee cap). The purpose is to replace the worn out articulating surfaces with new artificial parts. Typically about 10mm of bone and damaged knee surface is removed from each of these parts. The surgeon uses specialised cutting instruments and precise cutting jigs to achieve this. These areas are then replaced by the artificial parts (ie., the prosthesis). They are made of a combination of metal alloy (usually Cobalt chromium alloy or Titanium) and plastic (ultra high density Polyethylene). The capsule of the knee, the side ligaments of the knee and the muscles are preserved and provide the knee with stability.

The commonly quoted longevity of a knee replacement is about 10 to 15 years. The operation is usually suitable for patients at or over 60 years of age and by the time the patient reaches 70 plus, the level of physical requirement is decreased and the wear on the knee will decrease accordingly. Therefore we hope to see that patients will not require a second replacement operation. On the other hand, a revision knee replacement is sometimes needed and with reasonable success. One of the prostheses Dr Ho chooses to use (eg., Zimmer NexGen), is known to have a good history of longevity. Dr Ho will continue to choose a prosthesis for you from the latest technology, but also one that has good proven reliability.

For most patients, a period of 3 months is needed to gain full recovery from the operation. At that point, the patient is usually back to most, if not all, normal activities (eg., golf, bowls, long walks).

POTENTIAL RISKS

Total knee replacement is major surgery and for any major surgery, Dr Ho has a duty to inform patients of the possible complications.

Infections: Infection is a concern in any operation. Generally speaking, the infection rate after a knee replacement is not high. However certain groups of patients can be more at risk. Patients who are known to have a higher infection risk include patients who have/are: Diabetes, smokers, overweight, cancer, previous multiple operations to the knee, taking medication which decreases body defence (eg., immunosuppressant drugs). Infection rates may also vary amongst different hospitals from time to time.
In severely infected cases the prosthesis would have to be removed and either a second prosthesis inserted some weeks later or a knee fusion (knee totally stiff) would need to be carried out. Limb amputation has been reported in some severe infections beyond control. Fortunately, this is very rare. Milder infection is treated with antibiotics with or without debridement (cleaning-up & washing-out) operations. This would mean a prolonged stay in hospital.

**Clots in the veins of the legs (deep vein thrombosis):** There is a reported incidence of 30-50% of detectable clots in the larger veins in patients undergoing a total knee replacement. Small clots are of no major concern but larger clots require blood thinning drug therapy. In more severe cases, the lungs can also be affected and can be fatal (i.e., pulmonary embolism). You will receive medication (e.g., Clexane injections), wear compression stockings and use mechanical ‘foot/calf pumps’ in order to decrease the risks.

**Stiffness of the knee:** Post-operative rehabilitation is mandatory for patients undergoing knee surgery and the patient is advised to dedicate time and effort in order to regain a good range of movement after the operation. However, in some patients there is a tendency for excessive scar formation and the capsule around the joint can become contracted. In this case, a decrease in the range of motion of the knee can result, leading to decrease in knee function.

**Fracture of bone around the knee during the operation:** Patients with very weak bones are more at risk of this complication. This requires an extension of the operation to allow for fixation of the fracture at the time of surgery. Stiffness of the knee may occur.

**Injuries to the ligaments & tendons of the knee:** The structures of concern include the medial and lateral collateral ligaments of the knee, the quadriceps tendon, the infra-patellar tendon and the popliteus tendon. The risk is increased in very deformed or stiff knees. Additional bracing and longer use of crutches is usually required. Further repair operations may be needed.

**Patellar fracture:** The knee cap is a small bone of the knee and during surgery of the patella, fracture could occur. This is reported to have up to a 5% incidence.

**Post-operation patellar pain & patellar dislocation:** Should this occur after the operation, further surgery may be necessary to rectify the problem.
Injury to arteries & major nerves of the lower leg: The peroneal nerve and the posterior tibial nerve are close to the area of operation and therefore have an associated risk of damage which would lead to loss of sensation and movement of the leg below the knee.

Injury to the arteries can threaten the survival of the lower leg and therefore the risk of amputation. The reported incidence in the average patient is 0.1% and is known to be increased in patients with hardened arteries, abnormal anatomy or already compromised arteries and those with a very weak blood supply to the lower leg. Tourniquet paralysis may also occur.

Skin breakdown: This complication is related to extensive surgery or in patients with a pre-existing poor skin condition or poor circulation.

Loss of skin sensation around the knee: Patches of skin numbness are due to injury to superficial small branches of sensory nerve. This is not uncommon but usually does not cause a major concern.

Post-operation bleeding in the joint (haematoma & haemarthrosis): The bleeding may have to be stopped and the clots removed, therefore requiring more subsequent surgery. This may occur in the immediate post-operation period.

Fat embolism: This is due to large globules of fat escaping from bone and finding their way into the circulation and eventually ending up in the lungs, clogging up the function of the lungs and also possibly the kidneys, creating a dangerous condition. Fortunately, the occurrence is very uncommon.

General medical problems: Some complications do occur after major surgery. These complications include heart attacks, strokes, lung collapse, pneumonia, various heart problems, kidney dysfunction and bed sores. Patients who had a history of these conditions will be more vulnerable. Please alert Dr. Ho if you happen to suffer from some medical conditions so that these conditions can be assessed and if possible, optimised.

Complications related to anaesthetics: Your anaesthetist will discuss these with you on the day of your operation. If you have important issues to discuss with the anaesthetist, we can arrange that before your operation.

Potential problems in the longer term: Premature wear leading to early failure of the knee replacement may occur. This risk is higher in young patients or heavy manual uses. ‘Late’ infection could occur years after the operation. This type of infection usually has spread to the knee from a source elsewhere in the body. Unexplained pain in the knee could also occur.

Allergy to metal: If you have a metal allergy, please inform Dr. Ho before the operation. A special knee replacement different from the conventional prosthesis may need to be ordered for you.

PREPARING FOR SURGERY

Medical evaluation: Many patients with chronic medical conditions, like heart disease, would benefit from an evaluation by a specialist (such as a cardiologist) before the surgery.

Specific x-rays & CT scans of knee/leg: A specific set of x-rays and scans will be organized. Dr Ho will use these to obtain important measurements about your knee and the alignment of your leg.
so that a pre-op plan can be made regarding how much correction is required and how best to position your prosthesis during the operation.

**Other tests:** Several tests, such as skin swabs, blood and urine samples, will be needed a few weeks before your surgery.

**Medications:** Tell Dr. Ho about the medications you are taking. He will tell you which medications you should stop taking and which you should continue to take before surgery (also see attached sheet on this).

**Dental evaluation:** Although the incidence of infection after knee replacement is very low, an infection can occur if bacteria enters your bloodstream. To reduce the risk of infection, major dental procedures (such as tooth extractions and periodontal work) should be completed before your total knee replacement surgery.

**Urinary evaluation:** People with a history of recent or frequent urinary infections should have a urological evaluation before surgery. Male patients with prostate problems should consider completing required treatment with a Urologist before undertaking knee replacement surgery.

**Attending a ‘Pre-admission Clinic’ at the hospital:** These clinics are available at The Sunshine Coast Private Hospital at Buderim and the Nambour Selangor Hospital. An appointment will be made for you at the relevant Pre-Admission Clinic by Dr Ho’s receptionist. The pre-admission nurse will check the details of your regular medications. Some patients may have individual needs during their hospital stay and the nursing staff will help you to assess and arrange these. An ECG tracing of your heart beats will be obtained for health checks. You will also be given special shower soap to use just before your operation.

**About the ‘Rehabilitation Ward’:** Rehabilitation wards are available at both The Sunshine Coast Private Hospital at Buderim and the Nambour Selangor Hospital. Most patients find it very beneficial using this facility. Once the patient’s general condition is stable after the operation (usually around day 4 post-op), they are transferred to the Rehab ward for about 5-10 days where they will receive comprehensive physiotherapy in a dedicated set-up.

**Maintain the skin of the legs in good condition:** Please refer to the additional sheet.

**YOUR HOSPITAL STAY**

**Admission:** Dr Ho’s secretary will arrange for you to be admitted into hospital the morning of your surgery. The operation will be scheduled for the afternoon. Prior to the surgery, the hospital nursing staff will prepare you for theatre. This includes changing into a theatre gown, clipping hair around the operative site and the application of a skin disinfectant lotion. The usual hospital stay is about 7 days (a bit longer with Rehab)

**Anaesthetic:** The operation usually takes about 2 hours. The patient either undergoes a general anaesthetic or a regional anaesthetic. A regional anaesthetic (eg., a spinal anaesthetic) will numb any feeling from the waist down and you are not completely asleep during the operation. Often the anaesthetist also performs a nerve block to help the pain (eg., a femoral nerve block). You will have a chance to meet your anaesthetist after admission who will discuss the most suitable form of anaesthetic for you.
**Pain Management:** When you leave the theatre after your operation, you will be linked to a few tubes at various parts of your body. These include an intravenous cannula, which allows you to be given fluids when you are not able to take in a lot of fluid by mouth. This also allows for the effective administration of drugs. Often the effect of a spinal anaesthetic or nerve block will continue to give good pain relief after the operation. Some numbness and weakness in the leg and an inability to pass urine may occur temporarily for a short time. For additional pain relief, some patients may be given a ‘patient-controlled anaesthesia’ (PCA). This pain-killing injection is delivered to you by your own command at the push of a button. The nursing staff will explain how to use this. Pain control is also available in the form of pain tablets or by muscular injections. (Occasionally as an alternative, patients have an epidural line extended from the lower spine. This is a form of pain relief administered by the anaesthetist and the dose is pre-adjusted to allow sufficient pain relief).

**Blood Clot Prevention:** Dr. Ho may prescribe one or more measures to prevent blood clots and decrease leg swelling. These may include compression stockings, cyclically inflating foot pumps (or compression boots), and blood thinners. Foot and ankle movement also is encouraged immediately following surgery to increase blood flow in your leg muscles to help prevent leg swelling and blood clots.

**Physical Therapy:** Most patients begin exercising their knee the day after surgery. A physiotherapist will teach you specific exercises to strengthen your leg and restore knee movement to allow walking and other normal daily activities soon after your surgery. To aid restoration of movement in your knee, a leg support device, called a continuous passive motion (CPM) exercise machine slowly moves your knee while you are in bed. Generally, Dr. Ho prefers patients to get close to 90° of bending but not over 90° until after the wound is fully healed (usually about 2 weeks). You should continue to do regular exercises for the knee for the first 6 weeks post-op at least.

**Take deep breaths and use oxygen prongs/masks:** To help prevent sputum from clogging up the airways, it is important to take frequent deep breaths. Your nurse may provide a simple breathing apparatus called a spirometer to encourage you to take deep breaths. Keep the Oxygen nasal prongs on while you are sleeping. This will aid your breathing and wound healing.

**YOUR RECOVERY AT HOME**

Following your discharge, please make an appointment to see Dr. Ho in 1 to 2 weeks for follow-up.

**When you go home:** Although you will be able to walk on crutches or a walker soon after surgery, you will need help for several weeks with such tasks as cooking, shopping, bathing and doing laundry. It is advisable to arrange a family member or friend to stay with you for a few weeks. If you live alone, it is highly advisable that you use the Rehabilitation Ward for further recovery. Dr. Ho will help you to book this prior to your admission. When you go home from the hospital, a discharge planner can help you make arrangements to have someone assist you at home.

**Home Planning:** Several modifications can make your home easier to navigate during your recovery. The following items may help with daily activities:

- Safety bars or a secure handrail in your shower or bath
- Secure handrails along your stairways
- A stable chair for your early recovery with a firm seat cushion (and a height of 46 to 51 cm), a firm back, two arms, and a footstool for intermittent leg elevation
- A toilet seat riser with arms, if you have a low toilet
- A stable shower bench or chair for bathing
- Removing all loose carpets and cords
- A temporary living space on the same floor because walking up or down stairs will be more difficult during your early recovery

**Wound Care:** The wound should be covered with waterproof dressing for at least 14 days after the operation. The wound is secured by small metal clips. Dr Ho recommends these be removed on day 12 post-operatively. This will be carried out by either nurses in the hospital or Dr Ho.

**Activity:** Exercise is an important component of home care, particularly during the first few weeks after surgery. Further physiotherapy on an outpatient basis is advisable. You should be able to resume most normal activities of daily living within 4 to 6 weeks following surgery. Some pain with activity and at night is common for several weeks after surgery.

**Compression Stockings:** Please wear your anti-blood clotting elastic stockings on both legs for a period of at least 4 weeks after the operation.

**WHAT TO EXPECT AFTER YOUR OPERATION**

Improvement of knee motion is the goal of total knee replacement. Most patients can expect to be able to almost fully straighten the replaced knee and to bend the knee sufficiently to climb stairs and get in and out of a car. However a full range of movement like the flexibility of a young person’s knee, would not be achieved.

Kneeling is sometimes uncomfortable, but it is not harmful.

Most people feel some numbness in the skin around the incision. You also may feel some stiffness.

Most people also feel or hear clicking of the metal and plastic with knee bending or walking. This is also normal.

The operative knee will often appear more swollen or bulky than the opposite knee. This will take months to slowly subside.

Some warmth could be felt in the knee and could take a year to completely go away.

Your new knee may activate metal detectors required for security in airports and some buildings. Tell the security agent about your knee replacement if the alarm is activated.