



TOTAL KNEE JOINT REPLACEMENT

WHY A KNEE REPLACEMENT?

You can only walk easily and without pain when the bones in your knee joint are smooth and cushioned by healthy, smooth cartilage. You also need strong muscles and ligaments for stability because your knee is more than a simple hinge joint: each time you bend your leg to walk or climb stairs, the bones rotate, roll, and glide on each other.

Knee pain and stiffness often result from osteoarthritis from injury or wear and tear. Other knee problems include rheumatoid arthritis (an inflammatory joint disease), previous infection, or poor alignment of your bones. With osteoarthritis, your cartilage “cushion” wears away. Bones become rough and rub together, causing pain. With rheumatoid arthritis, your joint may also be inflamed and swollen.

A painful, stiff knee can keep you from doing the simple things in life, even walking without pain. Now your orthopaedic surgeon can replace your problem knee. After your knee replacement, you’ll have some restrictions on using your new knee, but you can look forward to returning to many of your activities of daily living.

YOUR NEW KNEE

Total knee replacement means re-surfacing the bones of your knee with a prosthesis (artificial knee joint). The natural knee joint consists of the main joint between the thigh and the leg bones (Tibio-Femoral Joint) and the joint between the kneecap and the thigh bone (Patellofemoral Joint). Depending on which surfaces of your knee is affected by arthritis; one or both surfaces may be replaced in the operation. The decision as to whether to replace the patellar (Knee Cap) surface is usually made during the operation. Like a normal knee, your prosthesis has smooth weight-bearing surfaces. The femoral component covers your thighbone, the tibial component covers the top of the shinbone, and the patellar component covers the underside of your kneecap. The femoral component and the tibial component are both made of metal. In between these two metal parts, a cushion made of a special type of plastic is inserted. The patellar component is made of plastic as well. The plastic used in knee replacement is made of special materials. This makes it extremely tough and resistant to friction and wear.

There are many designs of knee prosthesis available today and your orthopaedic surgeon chooses the prosthesis he considers most suitable for you. Some knee prosthesis require the use of medical cement to fix the components to bone (Cemented prosthesis), and others depend on natural bone ingrowth for fixation of the components (Uncemented prosthesis). Screws may be used to fix an uncemented tibial component to bone. Comparable results are obtained with both methods of fixation.

Total knee surgery is now as safe and effective as total hip surgery. However, there are definite risks and complications associated with the operation of Total Knee

Replacement. Although they are rare, and your orthopaedic surgeon and the hospital staff will do their best to try and prevent these complications from occurring, unfortunately, they still occur. Some of these complications are:-

1. **ANAESTHETIC COMPLICATIONS:** Your Anaesthetist will discuss these problems with you prior to surgery. If you have any questions regarding the type of anaesthetic you are going to receive, or if you have had previous problems with anaesthesia, please do not forget to let your Anaesthetist know.
2. **INFECTION:** One to two percent of all Total Knee Replacements will develop some type of infection. This can be a superficial minor infection or can be a serious deep infection around the metal parts. This can be a very serious complication and can result in prolonged hospitalisation. Limb loss has been the result of some severe infections beyond surgical control. This is fortunately very rare. Treatment of infection is always difficult. It might mean multiple trips to theatre for cleaning and if the infection is deep your surgeon might elect to remove all metal and plastic, together with all non viable tissues and place you in hospital on bed rest with intravenous antibiotics for a period of two to six weeks. This can be followed, if the infection has been eradicated, by another operation to put in a new knee replacement. Infection is more common in people suffering from diabetes, rheumatoid arthritis and infection elsewhere in the body, such as in the urine or the chest and in patients who have a condition affecting their immune system.
3. **VESSEL AND NERVE INJURY:** The knee is surrounded by multiple blood vessels and nerves. One or more of these structures may be injured during the knee replacement. It is not uncommon for some superficial sensory nerves to be divided during surgical exposure of the knee. This results in altered or reduced skin sensation over the front of the knee. Occasionally a neuroma develops. This uncommon complication may cause hypersensitivity of the skin or wound.
4. **FRACTURES:** Fractures of the thigh bone, shin bone and patella may occur during the operation. This is especially true in very thin and weak bone and during revision operations. Various surgical measures may be required to deal with the problem. Sometimes additional implants are required.
5. **DEEP VEIN THROMBOSIS AND PULMONARY EMBOLISM :** Clotting of blood in the veins of the lower limbs is a recognised complication of Total Knee Replacement surgery. These clots, unfortunately, sometimes detach and travel in the blood stream to reach the lungs. This is known as pulmonary embolism. This is a very serious condition and sometimes can be fatal. Every effort is made to try and minimise the occurrence of these complications. These measures include daily or twice a day injections of a substance into the tummy that thins the blood and reduces the risk of clotting. Your medical condition and other considerations may influence the use or dosage of prophylactic anti-coagulants. During surgery a mechanical compression device is applied to the leg that is not being operated on. This helps to maintain the circulation. After surgery you are encouraged to exercise and move your lower limbs as soon as possible. Walking and returning back to normal activity as soon as possible, helps to prevent these problems. On some occasions you will be provided with a white leg stocking which you should wear in hospital and also after discharge. Usually this stocking is worn for several weeks after the operation..
6. **FAT EMBOLISM:** Fat from the bone marrow can reach the circulation and again travel to the lungs. This condition is quite similar to the previous

complication of pulmonary embolism. That is why it is called fat embolism. Again, this can be a very serious problem.

7. **WOUND COMPLICATIONS:** Wound necrosis (which means that the wound edges turn black), and wound breakdown (which means that the surgical wound opens up), are two complications that sometimes occur. Early recognition and aggressive treatment, which might involve returning back to theatre for cleaning or re-suturing, can avoid long term problems.
8. **PRESSURE SORES.** Pressure sores, especially of the heel area, develop within 24 hours of lying in bed. They are prevented by avoiding inactivity in bed. It is necessary that you relieve pressure from the heels and buttocks (sacral area) regularly. If you notice sensations of burning or pain in pressure areas you should inform your doctor or the nursing staff.
9. **LOOSENING:** Your new knee replacement is a mechanical device, subject to friction and wear. It is therefore not expected to last forever. Ninety-five percent of knee replacements are functioning satisfactorily after ten years from the date of surgery. One percent are expected to fail each year afterwards. These figures are related to normal usage of the knee. If the knee joint is subjected to excessive loads, such as too much running, jogging, kneeling, squatting and heavy impact activities, the knee is expected to fail at an early stage. Therefore, if you look after your knee by avoiding these activities, your prosthetic knee will last longer.
10. **STIFFNESS:** Your knee is expected to move from being fully straight to at least ninety degrees of bending. However, some knees are stiffer than others. If your orthopaedic surgeon is not happy with the amount of bending you are getting, he might put you to sleep in a theatre and try to improve the range of motion in your knee. This is usually done between four and eight weeks after the operation.
11. **GENERAL MEDICAL PROBLEMS:** Some complications do occur after major surgery. Fortunately these are rare. These complications include; Heart attacks, strokes, lung collapse, pneumonia, various heart problems, kidney dysfunction and bed sores.

PREPARATIONS FOR SURGERY

You are asked to provide your surgeon with information regarding:-

- Your general health.
- Medications that you are taking.
- Allergies
- Previous operations
- Bleeding disorders
- Other bone and joint problems.

A number of investigations will be carried out before the operation. Some blood tests and X-rays are generally required. You may be referred to a Specialist Physician or Anaesthetist to optimise your fitness for the operation.

UNDERSTANDING THE RISKS AND COMPLICATIONS

Understanding the risks and complications is part of your decision. Your surgeon can talk with you about infection, blood clots, pneumonia, cardiac problems, prosthesis

loosening, nerve loss, or other post-operative risks before you decide on total knee surgery.

BEFORE SURGERY

- Continue leading a normal, healthy lifestyle, and be sure to let your surgeon know about any infections or leg sores. Avoid any injections into the knee joint
- Because you may need blood transfusions during or after surgery, you may want to donate your own blood before your hospital stay.
- If you are taking arthritis tablets (non-steroidal anti-inflammatory), you should cease this medication at least 2 weeks before your operation.
- Remember to bring your X-rays with you to the hospital.

THE OPERATION

- The Anaesthetist will examine you before the operation. This doctor will discuss with you the choice of anaesthetic.
- An intravenous line is started before the anaesthetic is given and this line is generally maintained for 3 days.
- The operation is performed through a straight, longitudinal skin incision over the front of the knee. The worn surfaces of the thighbone and shinbone are shaved and replaced with the prosthesis. If your surgeon decides to replace the patella, the surface of this bone is also shaved and replaced with prosthesis. A surgical drain is placed in the joint at the conclusion of the operation. A bulky dressing is applied after closure of the wound.
- Your surgeon may decide to modify some parts of the operative procedure according to findings at the operation.
- You and your family can expect the operation to take about two hours.

IN THE RECOVERY ROOM

- After the operation you will be in the Recovery Room for about half an hour. You may wake up feeling groggy. You will be given pain medications. Your nurses also coach you with coughing and deep breathing exercises to help clear your lungs and prevent post-operative complications. The surgical drain is removed the following day. Sometimes a urinary catheter is necessary for a few days after the operation.
- Once you are fully recovered from the anaesthetic you will be transferred to your hospital room.

YOUR HOSPITAL RECOVERY

- Once you are back in your room, the goal for the rest of your hospital stay is to begin walking again before you go home.
- In the first 24 hrs, you are encouraged to keep active in bed. You should wriggle your toes and exercise your calves to improve circulation in the leg and to prevent clot formation. You should start straight leg raising exercises and work to straighten

your knee. Avoid holding your knee bent. Maintain deep breathing and coughing exercises. You may sit up if you wish. You are free to move around in bed.

- The day after the surgery you will start “Drop and Dangle” exercises to get the knee bending. Your physiotherapist will see you to start you on these exercises. You may get up, out of bed (with assistance) on crutches, or a frame if you wish. You start walking by taking a few steps at a time and increase the duration of walking over the next few days.
- You should aim to be able to move in and out of bed, walk on crutches and manage steps before you leave the hospital. You should be capable of bending the knee to at least 90 degrees and fully straighten the knee before discharge.

WOUND CARE

The dressings that were applied in the surgery will be kept in place for 48 hours before it is changed to a fresh and less bulky dressing. There are usually two changes of dressings during your hospital stay. You may be discharged before your sutures are ready to be removed. Arrangements will be made for the sutures to be removed in the outpatient clinic. If you develop redness, discharge or undue pain in the wound, you should contact your surgeon or the hospital. Do not simply take antibiotics to treat these concerns.

ANTICOAGULANTS

- You will be given injections of anticoagulant medication during your hospital stay. These injections are to reduce the risk of clot formation in the legs. The injections are given in the abdominal area once or twice a day. These injections are continued for a period of 2 weeks. As you are likely to be discharged from the hospital within a week, the injections are continued when you get home. You or a member of your family will be taught how to administer the injections. If you do not feel comfortable giving the injections yourself, a Community Nurse will visit you every day to administer the injections. You should not take Aspirin or other forms of anti-inflammatory medications during the time you receive the injections.
- There are a number of other measures taken to minimise the risk of a clot. During your hospital stay and for a period of 4 weeks after the surgery, you are required to wear an anti-thrombotic stocking. These stockings are specially designed to help circulation in the legs.
- A special test (Duplex Doppler) is carried out on your legs 5 – 7 days after the surgery. This test is to check for possible clots. This test is carried out with a Specialist vascular doctor and arrangements for the test will be made for you during your hospital stay.

X-RAYS

X-rays of your knee will be performed when you are in the recovery room or your hospital room. X-rays will be repeated 6 – 8 weeks after the operation and again in 6 months.

GOING HOME

Once you are recovered and can bend your knee enough to go home, your surgeon discharges you. Most patients are able to go home five to seven days after the

operation. You will be given instructions regarding exercises and medications before your discharge. You should feel free to ask your discharge nurse any questions you may have. You should have appointments made for outpatient physiotherapy and a post-operative visit to your surgeon before discharge.

NOTE: If you develop chest pain or experience pain and swelling of the calf you must contact your surgeon, or present yourself immediately to the hospital. If there is any concern about your wound or any aspect of your condition, please contact your surgeon or present yourself immediately to the hospital. It is unwise to simply take Antibiotics if you think there is an infection.

REHABILITATION

- The exercises you carried out during your hospital stay should be continued at home. These exercises are aimed at improving mobility and strength of your knee. You require crutches until you feel sufficiently comfortable putting full weight on the leg. When you discontinue the use of crutches you should use a single walking stick until you see your surgeon for the first post-operative review.
- You should visit your Physiotherapist at least twice a week after your discharge from hospital. He will check on your progress and advise you on any additional exercises you may require.
- Your surgeon will see you within a month of the operation and at that visit he will assess your ability to walk, the mobility, strength and stability of your new knee. He will then advise you on how you can get on to the next level of function.
- You are capable of driving a car 6 weeks after the surgery. You may walk any distance within your comfort. Swimming is permitted and indeed encouraged. Activities such as dancing, golf and bowling can usually start after 2 months.
- Your knee will serve you well and painlessly if you are able to put in the time for the exercises. The new knee should last for many years if you exercise reasonable caution. Heavy impact sports, jumping and violent twisting of the joint can cause early failure.

PREVENTION OF INFECTION:

If you get an infection anywhere in your body (e.g. skin, urine, chest, throat, teeth), the infection can get into the blood stream and spread to your hip.

Therefore, call your doctor :-

- Before you have any dental work.
- Before any other operation or invasive procedure, e.g. Endoscopy, Sigmoidoscopy, Urinary Catheters, Gynaecological Procedures.
- If you are put on antibiotics by your doctor.
- If you suspect you have an infection anywhere.
- If your wound becomes red, hot, swollen, more painful or discharges any fluid.

C: Protocol – TKR (old protocol) – Revised 7/7/03

KNEE REPLACEMENT PROTOCOL

PRE-OPERATIVE

- Check for sores. Clean but do not cut nails.
- Showers
- Surgical Site.
- Cease NSAIDS.
- Anti-Coagulation.
- Mark side of operation.
- Check skin condition - sacral, heel areas & op-site.
- Instructions about operation and post-operation care:-
 - Post-op pain control.
 - Bed/heel sore management.
 - IVI site care.
 - Teach quads, ROM exercises and use of walking aids.
 - Plan discharge.
 - Home facilities – shower/toilet.

POST-OPERATIVE

Day 1

- X-ray in recovery
- Intake/Output Review
- FBC, Electrolytes
- Elevate foot of bed
- IVI AB
- Relevant AB, urine MSU if catheterisation necessary. Indwelling if history of prostatism.
- Calf compression.

Day 2

- Drain out
- Drop and Dangle
- Straight Leg Raising
- Daily Heel/Sacral Pressure Care
- Intake/Output Review

Day 3

- Frame Ambulation
- Change Dressings
- Off AB, Drip. Prescribe Oral Analgesics.
- Heel/Sacral Areas Inspection and Care

Day 5

- FBC, Electrolyte
- Surveillance Duplex Doppler
- Crutches. Drop/Dangle, Passive Assisted Range of Motion Exercises.
- Work to Secure Full Extension
- Change Dressing
- Allow Showers

Day 7

- Change Dressings
- Arrange Removal of Sutures Day 10 – 14.
- Review with Surgeon 2 – 4 weeks as instructed.
- OPD Physiotherapy to be arranged.
- Home anti-coagulants.

**CONSENT FOR OPERATION
KNEE**

I (Name), of

.....(Address)

hereby give consent to to Dr Lee Woo Guan perform the following operation/procedures.

.....

I declare that the nature of the operation/procedure (operations/procedures) and the possible complications have been explained to me.

Type and specification of implant may differ from that listed on the operation prescription.

I am aware that the following risks/complications may result from the operation:-

1. Anaesthetic related complications.
2. Allergic reactions to medications and material used before, during and after the operation.
3. Blood Loss/Haemorrhage.
4. Infection
5. Fractures.
6. Mal-alignment of limb and components.
7. Loosened and unstable components; Dislocations and subluxations.
8. Sympathetic Dystrophy.
9. Painful, thickened or unsightly scar.
10. Joint Stiffness.
11. Residual or incomplete pain relief.
12. Clots (Thromboembolic disease).
13. Strokes.
14. Myocardial Infarction.
15. Bed sores.
16. Chest complications, e.g. Pneumonia.
17. Urinary complications – Retention, Infection.
18. Renal Failure.
19. Thrombophlebitis.
20. Wound breakdown.
21. Nerve injury and paralysis.
22. Metal Sensitivity

I have read and understand all aspects of the proposed treatment, and I have been given a chance to ask questions and discuss all the issues related to my operation.

I accept the risks associated with the operation to be undertaken and give consent to the operation.

Signed: Date:

Name: Place:

Witness: Name: Date: