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Total Knee Replacement

If your knee is severely damaged by arthritis or injury, it may be hard for you to perform simple activities such as walking or climbing stairs. You may even begin to feel pain while you're sitting or lying down.

If medications, changing your activity level and using walking supports are no longer helpful, you may want to consider total knee replacement surgery. By resurfacing your knee's damaged and worn surfaces, total knee replacement surgery can relieve your pain, correct your leg deformity and help you resume your normal activities.

One of the most important orthopaedic surgical advances of the twentieth century, knee replacement was first performed in 1968. Improvements in surgical materials and techniques since then have greatly increased its effectiveness. Approximately 25,000 knee replacements are performed each year in the Australia.



Total Knee Replacement

How the Normal Knee Works

The knee is the largest joint in the body. Nearly normal knee function is needed to perform routine everyday activities. The knee is made up of the lower end of the thigh bone (femur), which rotates on the upper end of the shin bone (tibia), and the knee cap (patella), which slides in a groove on the end of the femur. Large ligaments attach to the femur and tibia to provide stability. The long thigh muscles give the knee strength.

The joint surfaces where these three bones touch are covered with articular cartilage, a smooth substance that cushions the bones and enables them to move easily.

All remaining surfaces of the knee are covered by a thin, smooth tissue liner called the synovial membrane. This membrane releases a special fluid that lubricates the knee, reducing friction to nearly zero in a healthy knee.

Normally, all of these components work in harmony. But disease or injury can disrupt this harmony, resulting in pain, muscle weakness and less function.

Common Causes of Knee Pain and Loss of Knee Function

The most common cause of chronic knee pain and disability is arthritis. Osteoarthritis, rheumatoid arthritis and traumatic arthritis are the most common forms.

Osteoarthritis usually occurs after the age of 50 and often in an individual with a family history of arthritis. The cartilage that cushions the bones of the knee softens and wears away. The bones then rub against one another, causing knee pain and stiffness.

Rheumatoid Arthritis is a disease in which the synovial membrane becomes thickened and inflamed, producing too much synovial fluid that over-fills the joint space. This chronic inflammation can damage the cartilage and eventually cause cartilage loss, pain and stiffness.

Traumatic Arthritis can follow a serious knee injury. A knee fracture or severe tears of the knee's ligaments may damage the articular cartilage over time, causing knee pain and limiting knee function.

Realistic Expectations About Knee Replacement Surgery

An important factor in deciding whether to have total knee replacement surgery is understanding what the procedure can and can't do.

More than 90 percent of individuals who undergo total knee replacement experience a dramatic reduction of knee pain and a significant improvement in the ability to perform common activities of daily living. But total knee replacement won't make you a super-athlete or allow you to do more than you could before you developed arthritis.

Following surgery, you will be advised to avoid some types of activity such as jogging and high impact sports.

With normal use and activity, every knee replacement develops some wear in its plastic cushion. Excessive activity or weight may accelerate this normal wear and cause the knee replacement to loosen and become painful. With appropriate activity modification, knee replacements can last for many years.

Preparing for Surgery

Medical Evaluation

We will organise routine blood tests, ECG, chest X-RAY, and occasionally specialist physician consultation to check on your medical health prior to surgery. I may also request an MRI scan for computer assisted planning for your individual knee replacement.

Preparing Your Skin and Leg

Your knee and leg should not have any skin infections or irritation. Contact me prior to surgery if you have any cuts or sores on your leg.

Use PhisoHex soap to wash the skin of the leg, from the foot to the groin, every day for 1 week prior to surgery.

Medications

You should cease taking aspirin or medications that contain aspirin, eg Cartia, and anti-inflammatory medications at least 10 days prior to surgery. If you are taking warfarin we will make special arrangements which will involve stopping the warfarin and substituting it with heparin to prevent blood clots.

Dental Evaluation

Although the incidence of infection after knee replacement is very low, an infection can occur if bacteria enter your bloodstream. Treatment of significant dental diseases (including tooth extractions and periodontal work) should be considered before your total knee replacement surgery.

Urinary Evaluations

A preoperative urological evaluation may be required for individuals with a history of recent or frequent urinary infections. For older men with prostate disease, required treatment should be considered prior to knee replacement surgery.

Your Surgery

You will be admitted to the hospital on the day of your surgery. After admission, you will be evaluated by a member of the anaesthesia team. The most common types of anaesthesia are general anaesthesia, in which you are asleep throughout the procedure, and spinal or epidural anaesthesia, in which you are awake but your legs are anesthetized. The anaesthetist will determine which type of anaesthesia will be best for

you with your input.

The procedure itself takes about two hours. Knee replacement involves removal of the damaged cartilage and bone and insertion of the new metal and plastic joint surfaces to restore the alignment and function of your knee.

Many different types of designs and materials are currently used in total knee replacement surgery. Nearly all of them consist of three components: the femoral component (made of a highly polished strong metal, chrome cobalt), the tibial component (made of a titanium alloy baseplate with a modular, durable medical grade polyethylene plastic insert), and the patellar component (also plastic).

After surgery, you will be moved to the recovery room, where you will remain for one to two hours while your recovery from anaesthesia is monitored.

Your Stay in the Hospital

You will most likely stay in the hospital for several days. After surgery, you will feel some pain, but medication will be given to you to make you feel as comfortable as possible.

Pain control is a very important part of your recovery. You are encouraged to request and take pain killers as often as you need them. In conjunction with the anaesthetist I use a range of medications and techniques to keep patients comfortable following knee replacement. These include nerve blocks and a pain pump inserted at the time of surgery, and strong pain killers post-operatively to provide excellent pain control. The pain pump is left in for 2 days. Strong pain killing tablets are available throughout your hospital stay and for use at home after discharge.

Walking and knee movement are important to your recovery and will begin immediately after your surgery.

To avoid lung congestion after surgery, you should breathe deeply and cough frequently to clear your lungs.

You will also be prescribed blood thinning medications (Xarelto) to prevent the formation of blood clots (DVT's)

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. Most patients begin exercising their knee the day after surgery. The hospital 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.

Rehabilitation

You are strongly advised to spend a few days in a rehabilitation facility prior to going home. The benefits to be gained are more intensive physiotherapy and hydrotherapy which will help you to achieve the best possible result from surgery. You will be admitted under the care of a specialist rehabilitation physician who will oversee your treatment program in the rehab unit. There are many excellent rehabilitation units in Sydney and some areas of NSW. Arrangements for transfer to a suitable rehabilitation hospital will be made during your stay in hospital.

Possible Complications After Surgery

The complication rate following total knee replacement is low. Serious complications, such as a knee joint infection, occur in less than 2 percent of patients. Major medical complications such as heart attack or stroke occur even less frequently. Chronic illnesses may increase the potential for complications. Although uncommon, when these complications occur, they can prolong or limit your full recovery.

Blood clots in the leg veins are the most common complication of knee replacement surgery. Our blood clot prevention program includes early mobilisation, surgical TED stockings, and blood thinning medication (Xarelto) throughout your hospital stay. You will have a Doppler ultrasound test at around day 4 after surgery to check the legs for blood clots.

Although implant designs and materials as well as surgical techniques have been optimized, wear of the bearing surfaces or loosening of the components may occur. Additionally, although an average of 115 degrees of motion is generally anticipated after surgery, scarring of the knee can occasionally occur and motion may be more limited. This is particularly true in patients with limited motion before surgery. Finally, while rare, injury to the nerves or blood vessels around the knee can occur during surgery.

If you have any further concerns about surgery and the possible complications please contact me to discuss them prior to surgery.

Avoiding Problems After Surgery

Blood Clot Prevention

Wear the surgical stockings for 6 weeks after surgery. Keep mobile. Do regular exercises as shown to you by the hospital physiotherapist. Avoid long car or aeroplane trips for the first few weeks after surgery. Do not smoke.

Warning signs of possible blood clots in your leg include:

- Increasing pain in your calf
- Tenderness or redness above or below your knee
- Increasing swelling in your calf, ankle and foot

Warning signs that a blood clot has travelled to your lung include:

- Sudden increased shortness of breath
- Sudden onset of chest pain
- Localized chest pain with coughing

Notify your doctor immediately if you develop any of these signs.

Preventing Infection

The most common causes of infection following total knee replacement surgery are from bacteria that enter the bloodstream during dental procedures, urinary tract infections, or skin infections. These bacteria can lodge around your knee replacement and cause an infection.

After your knee replacement, you must take preventive antibiotics before invasive dental or surgical procedures that could allow bacteria to enter your bloodstream.

Warning signs of a possible knee replacement infection are:

- Persistent fever (higher than 38.5 degrees)
- Shaking chills
- Increasing redness, tenderness or swelling of the knee wound
- Drainage from the knee wound
- Increasing knee pain with both activity and rest

Notify your doctor immediately if you develop any of these signs.

Avoiding Falls

You should use a cane, crutches, a walker, hand rails or someone to help you until you have improved your balance, flexibility and strength.

Your physiotherapist will help you decide what assistive aides will be required following surgery and when those aides can safely be discontinued.

Wound Care

You will have an absorbable suture beneath your skin on the front of your knee. The suture dissolves in a few weeks and does not require removal, although it will be snipped

off where it exits the skin after about 14 days. The wound will be covered by a sterile waterproof dressing. This dressing should be left intact for 14 days.

It is safe to shower and attend hydrotherapy sessions in the pool as long as the waterproof dressing remains intact.

Diet

Some loss of appetite is common for several weeks after surgery. A balanced diet, often with an iron supplement, is important to promote proper tissue healing and restore muscle strength.

Activity

Exercise is a critical component of home care, particularly during the first few weeks after surgery. You should be able to resume most normal activities of daily living within three to six weeks following surgery. Some pain with activity and at night is common for several weeks after surgery. You may need to take some pain killing tablets for the first 3 months following surgery. Your activity program should include:

- A graduated walking program to slowly increase your mobility, initially in your home and later outside
- Specific exercises several times a day to restore movement and strengthen your knee.
- You may need to continue physiotherapy after you leave hospital.

Driving usually begins when your knee bends sufficiently so you can enter and sit comfortably in your car and when your muscle control provides adequate reaction time for braking and acceleration. Most individuals resume driving about four to six weeks after surgery.

RTA guidelines recommend waiting 6 weeks before resuming driving.

How Your New Knee Is Different

You may feel some numbness in the skin around your incision. You also may feel some stiffness, particularly with excessive bending activities. Improvement of knee motion is a goal of total knee replacement, but restoration of full motion is uncommon. The motion of your knee replacement after surgery is predicted by the motion of your knee prior to surgery. Most patients can expect to nearly fully straighten the replaced knee and to bend the knee sufficiently to go up and down stairs and get in and out of a car. Kneeling is usually uncomfortable, but it is not harmful. Occasionally, you may feel some soft clicking of the metal and plastic with knee bending or walking. These differences often diminish with time and most patients find these are minor, compared to the pain and limited function they experienced prior to surgery.

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.

We will give you a card specifying your type of knee replacement

Frequently Asked Questions

How long will my new knee last?

It depends on your age and activity level. Younger, more active patients generally wear their knees out sooner than older, less active patients. If you are over 65 you will be unlikely to need a revision replacement. Studies have shown that about 5-10% of well performed knee replacements will need revision at 10 years, and most will last much longer.

Will I still have pain after a knee replacement?

You can expect to take analgesics for the first 3 months following knee replacement. After 3 months, occasional pain killers may be required. Some patients continue to experience pain but it is rarely as severe the pain from an arthritic knee.

How long will I be “out of action” following knee replacement?

You should be home from hospital and rehabilitation after about 10 days. You are likely to limp and require a stick for the first 6 weeks, possibly longer. You are encouraged to take regular walks after you return home, increasing your distance each day. You should be OK to drive at 6 weeks and take long walks or play golf by 2-3 months.

When can I return to work?

It depends on your job. You should not plan to do any work for at least 4 weeks. You may return to office work as soon as your mobility allows, usually around 4 weeks. Light manual work can commence after 8 weeks. Heavier work involving bending and lifting should be delayed for at least 3 months.

What exercises should I do?

Regular walking is the best. Stationary cycling and pool based exercises are also acceptable. The physiotherapists at the hospital and rehabilitation unit will show you some specific exercises to help you regain strength and mobility. You may continue these exercises at home.

What should I avoid?

Impact activities such as running and jumping.

Can I engage in sport?

It depends on your general fitness level. Golf, social tennis and careful recreational skiing are unlikely to be harmful to your knee replacement.

Can I squat or kneel?

Half squats for exercise are acceptable. Deep squatting is neither usually possible nor desirable after a knee replacement. Kneeling is not harmful but may not be comfortable.

Any other effects?

You may notice some clicking from your knee. This is harmless and may settle in time. You will have an area of numbness on the front of your knee. This will not affect your knee function.

Sex?

No restrictions.

What are the possible complications?

There are lots! Fortunately they are also uncommon. The most serious complications are infection, blood clots and medical complications. Your medical team will institute measures to minimise the risks of complications. You will be given medications to prevent infection and blood clots and if required a specialist physician will see you post-operatively to check up on your medical status.

Other possible complications include stiffness, joint laxity, fractures and more. A fuller list of potential surgical, medical, and anaesthetic complications is given at the end of this summary.

Remember, total knee replacement is a **safe procedure** with a **very high success rate** and complications are **uncommon**.

What kind of anaesthetic will I have?

Usually a general, often combined with a spinal or epidural for excellent post-operative pain relief. You will have the opportunity to discuss the anaesthetic with the anaesthetist in the hospital prior to surgery. The anaesthetists on my team are also very happy to speak to you at the hospital Pre Admission Clinic appointment prior to your admission.

What kind of knee replacement will I receive?

I use a proven design implanted using computer navigation, that utilises the most modern technology and the most effective and durable materials. You will receive a “state of the art” replacement. I use cemented and cementless implants, depending on the bone quality. The knee replacements that I use, whilst being of the highest quality, are

currently “no gap” implants, so there are no out of pocket fees for the implants

What is your infection rate?

Less than 1%

How many knee replacements have you done?

I specialise in knee and hip surgery only. I have done more than 15,000 knee operations and more than 3500 total knee replacements.

What about the experience of the anaesthetist?

The anaesthetists I use are very experienced. There have been no anaesthetic complications.

Where can I get more information?

See the Australian Orthopaedic Association brochure on knee replacement surgery.

Associate Professor Craig Waller

www.hipandkneesurgery.com.au