

Knee Replacement Surgery

Information about surgery, potential risks and aftercare

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Total knee replacement is one of the most successful treatment interventions in current medical practice. In this operation, the surfaces of the knee joint are replaced with metal components and a polyethylene insert is interposed which together forms the artificial joint.

A large number of people have knee replacements and this information is intended to help the reader understand knee replacement operations, their advantages and disadvantages, and their limitations.

Arthritis of the knee

The knee joint is formed between the lower end of the thigh bone (femur) and the top end of the leg bone (tibia). The knee cap (patella) is located in front of the knee and articulates with the femur.

The surface of femur and tibia which form the knee joint are lined with a delicate smooth lining called the articular cartilage (hyaline cartilage). Additionally, the knee has two crescent shaped cartilages called the menisci which are located between the femur and tibia and act as shock absorbers.

In arthritis, the articular cartilage (hyaline cartilage) becomes thin and wears out. This leads to knee stiffness, deformity and pain. Various conditions can affect the integrity of the articular cartilage. Most commonly, it is osteoarthritis (also called as osteoarthrosis). Other conditions include rheumatoid arthritis, arthritis following injury to the knee, and rarely tumours and infections.

Knee replacement is carried out to relieve pain from the worn out (arthritic) joint.

Non surgical treatment options for knee arthritis

Knee arthritis is a common condition. Many patients with knee arthritis can be managed without surgical intervention. Surgery is only needed when the pain is persistent and not controlled by non-surgical methods.

Alternatives to knee replacement include

- Losing weight
- Stopping strenuous exercises or work
- Physiotherapy and gentle exercises
- Medicines such as anti-inflammatory drugs (ibuprofen or naproxen)
- Using a stick or crutch
- Injection of steroid into the knee
- Managing pain without opting for any specific treatment

Appropriate use of the above options may help to delay the need for knee replacement surgery.

Primary or revision knee replacement

The first time the natural knee joint is replaced, it is known as primary knee replacement. If further operations are required to change one of both components, it is called revision knee replacement.

In a primary knee replacement, the lower end of femur is prepared to accept a femoral component and the upper end of the leg bone is prepared to accept the tibial component.

The two components are fixed into bone either with special bone cement, or by cementless fixation. In cementless fixation, the size and shape of the prosthesis accurately matches the prepared bone and the metal is coated with a special surface which encourages bone ingrowth into the metal, hence providing a firm fixation and long term stability. Cemented fixation is used more commonly than cementless fixation in knee replacements. The outcome of either method is not significantly different, and your surgeon can advise you about the implant he / she plans to use for you.

A polyethylene (special plastic) insert is placed between the femoral and tibial components, which acts as the bearing surface, with motion occurring between the metal femoral surface and the polyethylene.

The back of the knee cap can be resurfaced at the same time if required, but this is not routine. The merits of replacing the back of knee cap are debatable. If not done initially, sometimes, the knee cap can be replaced at a later date through another operation.

Materials for knee joint

The knee joint prosthesis has a femoral component made of cobalt – chrome. The tibial component is usually titanium or cobalt chrome, and has a plastic fixed to it which is a (UHMWPE) plastic liner. The patellar button is usually entirely made of UHMWPE and is cemented into the back of the original knee cap.

Some patients may have nickel allergy, and this situation may require the use of Nickel free implants. An Oxinium implant is available for this situation, and patients with Nickel allergy should mention this to the surgeon at the time of clinic consultation and also the nurses at the time of preadmission tests. Merits of the use of Oxinium implant are also debatable, and your surgeon can advise you about this.

The operation

Knee replacement surgery is done under general anaesthetic or epidural anaesthetic. Epidural anaesthetic is more commonly used, and it helps in postoperative pain relief as well. The risks, pros and cons of anaesthetic technique will be discussed with you by the anaesthesiologist before surgery.

The operation is done with patients lying flat on the back. The incision is around 15cm in length on the front of the knee. The surgery takes 50 to 80 minutes. Usual hospital stay is between 2 and 4 days.

We use a system of 'rapid recovery' which improves the rehabilitation following surgery and helps in pain relief.

What to expect immediately after surgery

You will experience some pain around the knee and also a fair amount of swelling. You will be advised painkillers to you keep your pain under control. Swelling and bruising in the leg is common. Swelling around the knee and in the leg can take a long time to resolve, often many months, and some patients may have permanent residual swelling.

You are likely to require help with physiotherapy after surgery. After surgery, mobilisation is started on the following day. Initially a Zimmer frame is used to help mobility and this quickly progresses to crutches and then sticks.

Physiotherapist will help you get up and start walking initially with the help of a Zimmer frame. It is extremely important to do the exercises to regain full movements after surgery. Inability to exercise, or inadequate exercising may lead to stiffness after surgery.

By 6 to 8 weeks, most people are able to mobilise well, and some may take up to 3 months to regain best mobility. This may be even longer in some situations.

Most people with the office-based work can resume work after about two months. Driving is allowed after six weeks. Returned to manual work and gentle sport is likely to take between three and six months.

What can I do to help myself?

Before admission

Eat healthily. If advised, try to lose weight as this can reduce the risk of complications and improve the performance of your knee replacement.

Stop smoking even if it's just for a few weeks before your operation. It will help healing and recovery
Get a practical support from family and friends arranged – someone to drive, weekly shopping, help with cooking.

After Surgery

Take regular short walks. Early and regular movement helps protect against blood clots.
Continue with exercises as advised.
Don't smoke while the wound is healing.
Elevate your feet if they are swelling
Keep your weight under control if you are overweight.
Build up your activity level gradually.

Risks of knee replacement surgery

Knee replacement is, by and large, a reliable and successful surgery. However, a small number of people may have problems following surgery. The success rate of surgery is 90 to 95% at 10 years. Considering the complexity of the operation some patients may have a complication.

The potential problems include –

1. Infection in the knee.

Infection in the replaced knee joint is a serious but rare problem and the risk is less than 1%. Superficial infections in the wound present as discharge from the wound, and generally respond to antibiotics and dressing. If there is any concern about infections, patients are encouraged to contact their general practitioner or the Orthopaedic ward at Llandough as soon as possible.

Deep infection presents as persistent wound discharge, formation of sinus over the wound, or persistent pain. Deep infection may often require revision knee surgery - removal of the artificial knee joint and insertion of a new joint. This requires one or more major operations and will lead to a compromised final outcome.

Routinely, knee replacement surgery is done in clean air operating theatres, and along with the use of appropriate antibiotics, the risk of infection is very low.

2. Swelling and stiffness

Knee replacement is a major surgery and inevitable results in local swelling. This is usually temporary and settles in 3 to 6 months as knee movements are regained. Swelling in the knee after surgery is expected and is not a cause for concern.

Some patients experience stiffness and this gradually improves with progression of physiotherapy. It is very important to do exercises regularly to fully straighten the knee and to bend the knee.

Almost everyone will regain knee bending to a right angle and most will regain even more bending. The final range of knee bending after surgery is largely dictated by the range of movement prior to surgery. At the time of surgery, effort is made to maximise the range of movement.

About 1 % people may experience problems in bending their knee fully. In this situation a manipulation of the knee under general anaesthetic is needed to break the adhesions. Intense physiotherapy after manipulation helps to improve the range of motion.

Rarely, revision surgery may be needed to improve persistent stiffness after knee replacement surgery.

3. Deep vein thrombosis and Pulmonary Embolism

Deep vein thrombosis is development of a blood clot in the veins of the calf, thigh or pelvis. This is a risk with any hip or knee surgery and prophylaxis against this provided in the form of tablets to thin the blood or by injections. The medication used for preventing blood clots can sometimes increase the risk of bleeding from the wound. Foot pumps, while you are in hospital, are also used to help circulation.

Deep vein thrombosis causes swelling of the leg and pain, and temporarily delays rehabilitation following surgery. Clots require treatment with Warfarin.

Pulmonary Embolism is a very rare complication where a clot from the leg travels to the lungs and blocks circulation. Small clots are inconsequential and may not be noticed or detected. Large clots may cause breathlessness of sudden onset along with chest pain. These are dangerous and *can be life threatening*. You should seek medical attention as soon as possible if this is happening. The risk of having a significant clot is about 1 in 300 to 1 in 500.

4. Ongoing pain in the knee

About 10 to 15% patients may experience some degree of ongoing pain in the knee after knee replacement surgery. Generally, it is in the form of an aching sensation or occasional 'twinge' of pain. If your clinical examination and x rays are normal, then this may not be something to worry about and no further investigations would be required. The surgeon will be able to advise you about the follow up in this situation.

Some patients (1 to 2%) have significant pain after knee replacement. This requires investigations and sometimes further surgery may be needed to

alleviate the pain. Unless a specific cause of pain is found, further surgery is not recommended, and the treatment would rely on appropriate pain management.

5. Limp

Following knee surgery, walking aid in the form of Zimmer frame, crutches and sticks are needed temporarily. As muscle strength improves, the gait improves and by two months, most people are able to walk without sticks. Some people can take a longer time, and this is within normal expected recovery patterns.

If full mobility of the knee is achieved, a normal gait is possible. Majority of patients have a normal gait after surgery. Residual stiffness, pain, muscle weakness and instability can lead to a limp. If this is pronounced, it may need further surgical intervention.

6. 'Clunking' or 'clicking' in the knee or tightness in the knee / Instability

Some patients experience a sensation of clunking or clicking in the knee after the operation. The knee joint has some degree of inherent laxity. At the time of replacement, a similar degree of laxity is reproduced. The hard metal surfaces of artificial joints can give the impression that the joint is loose or clunking. This is normal and is generally not a cause for concern. It should be brought to the attention of the surgeon.

The knee cap is in the front of the knee joint and is sometimes resurfaced at the time of the knee replacement. Sometimes, occasionally when the knee cap has not been resurfaced, there may be sensation of grinding on movements of the knee joint. This is not a cause for concern. In some situations, placing a plastic button behind the knee cap may resolve this.

A feeling of '*tightness*' is occasionally experienced after knee replacement. This may be due to the physical presence of a metal prosthesis. This is likely to settle with time, but persistent feeling will compromise the outcome of surgery.

Rarely, patients may experience the knee 'giving way' after surgery. This could be due to ligament instability. This should be brought to the attention of the treating surgeon and may need further surgery.

7. Other complications

Other complications of knee surgery include chest infection or urinary tract infection. Most patients do not need a catheter in the urinary passage, but if you have had problems with passing urine before surgery, you are more likely to experience problems after surgery and may need catheter for a short time.

The surgical incision of the knee is a vertical cut on the front of the knee. This results in unavoidable damage to some small nerves in the skin, which leads to numbness on the outer side of the knee adjoining the scar. This numbness may be permanent but is not a cause for concern.

In some instances, there may be a crack in the thigh or leg bone during fixation of the components. These are generally detectable and treatable at the same time. It may involve a longer period on crutches after surgery.

8. Serious / life threatening complications

Injury to the nerves or vessels behind the knee is a very rare but very serious problem. This can endanger the blood supply to the leg and in worst case, may require amputation of the leg. Any such injury will compromise the outcome of knee replacement, even if the leg can be saved. Injury to these vessels is extremely rare.

The risk of dying as a result of knee replacement is extremely low – about 1 in 500. Pulmonary embolus, heart attack or stroke, especially with a history of such an event in the past, are the underlying factors for this. Patients are advised that although very rare, this risk is not zero. Knee replacement is a major operation and all major operations can lead to serious problems.

9. Long term complications

In the long term (years), the fixation of the artificial joint into the bone may become loose, or the polyethylene liner may wear out. These situations result in pain and damage to bone around the knee joint. Revision to a new knee joint is required to correct these problems.

Revision of the knee is more extensive operation than the primary surgery and the risk of complications is also higher in revision surgery.

Despite all the risks mentioned here, most patients (80 to 90%) have a speedy and uneventful recovery after knee surgery and do well. 15 to 18% may have a minor complication which delays rehabilitation, but does not affect the outcome. Only 1 or 2 percent end up with a significant problem and may need further surgery.

Care after surgery

Following knee replacement, driving is not recommended for about 6 weeks. The insurance company should be informed about the knee replacement surgery. An automatic transmission car can be driven earlier after surgery to the left knee.

Heavy work and lifting heavy objects is not recommended after knee replacement. Running and contact sport are also not recommended. Golf is possible, as is doubles tennis. Riding a bicycle is allowed after 2 to 3 months. Walking is not restricted after knee replacement.

Gardening is limited and many people may experience difficulty in kneeling down and / or squatting. Squatting is allowed after knee replacement but almost half the patients may find this difficult. This may be permanent restriction.

If there was significant stiffness in the knee prior to surgery, it may be difficult to regain further movement after surgery. This means tying shoe laces and cutting toe nails may be difficult in these situations.

Return to sedentary work can be expected within a few weeks. Return to manual work and sports can take 3 or 6 months or sometime longer.

It is important to remember that **the artificial knee may not feel 'normal' to you**. The artificial joints do not function exactly like the normal, native joint and you may be aware of the artificial joint in day to day activities. Current knee prostheses do not reproduce the kinematics of the normal knee joint.

These are broad guidelines and individual circumstances dictate rehabilitation following total knee replacement.

It is advisable that knee replacement surgery is undertaken only when the expected benefits outweigh the potential risks.

AFTER SURGERY If you experience any of the following please contact us

- If your wound becomes red, hot, swollen or starts leaking
- If you start to feel unwell in yourself or if you have high temperatures
- If you are unsure or concerned about anything to do with your operation
- **Unless there is an emergency** please use this number to contact us and we will deal with your problem appropriately. Try to avoid calling your GP or attending A&E if possible.

Contact details

- Weekdays from 8am -4pm and at weekends please ring this mobile number – **07779451774**
- At all other times including bank holidays please contact the ward from which you were discharged. **Charles Radcliffe Ward – 02920 716184 or 029 20716186** or **West 5 – 029 20715007**

There is an answer phone facility of the phone so please leave a message including your name and Hospital number and someone will be in contact with you at the earliest convenience. If you do not hear back from us within 2 hours please contact the ward from which you were discharged.

Statement

I confirm that I have been given all the information (page 1 to page 9) in advance of the knee replacement operation. I have had time to consider the facts stated in this and have had the option to return to clinic for further consultation, if needed prior to surgery. I have retained one copy of this information and I am returning a signed copy for filing in my medical notes.

The alternatives to surgery have been explained to me. I fully understand the risks of knee replacement surgery and wish to proceed with the surgery.

Signature:

Name:

Date of signature:

Date of birth / Hospital identifier / Addressograph: