chiltern knee clinic

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KNEE REPLACEMENT

Patient Information

What is knee replacement surgery?

Knee replacement surgery is generally the final treatment option for pain secondary to advanced knee arthritis when all other conservative treatments or joint preserving surgical options have been exhausted or deemed no longer appropriate.

Can I have a partial knee replacement?

The knee is considered to have three main compartments – the medial (or inner) tibiofemoral compartment, the lateral (outer) tibiofemoral compartment and the patellofemoral compartment (joint between the kneecap and the femur). If your arthritis affects only one of the three main compartments of your knee, you may benefit from a partial knee replacement (also referred to as a unicompartmental replacement).

To be suitable for a partial knee replacement, the deformity must be correctible on examination, the ligaments should be intact and the range of knee movement should be relatively preserved.

Sometimes, the provisional plan may be for a partial knee replacement, but the procedure may change to a total knee replacement at the time of surgery when the joint surfaces are directly inspected as a partial replacement may no longer be deemed appropriate.

What are the advantages of a partial knee replacement?

The potential advantages of a partial knee replacement are that they often feel more like the normal knee because the knee ligaments are spared. Furthermore, the surgical approach is less invasive so recovery is generally quicker. Partial knee replacements offer the opportunity to preserve more bone.

What are the disadvantages of a partial knee replacement?

There is the risk that you could develop arthritis in the rest of your knee which has not been replaced by a partial knee replacement. This could result in pain symptoms that might require the partial knee replacement to be converted to a total knee replacement at a later date.

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What are the benefits of a total knee replacement?

Total knee replacement surgery is a very effective treatment option for end-stage severe knee arthritis which is not suitable for a partial knee replacement. Knee replacements work best for patients whose joint surface is worn down to the bone (bone-on-bone arthritis).

The main indication for total knee replacement is relief of significant pain that is no longer effectively controlled by conservative measures and when less invasive surgical options are no longer deemed appropriate.

Patients who undergo knee replacement may also notice an improvement of function, with daily activities becoming more comfortable. Some patients may find that they have an improved range of movement but this is not guaranteed.

What happens during a knee replacement operation?

Surgery for total knee replacement involves removing small sections of bone and damaged cartilage from the end of the femur (thigh bone) and another section from the top of the tibia (shin bone). The surfaces are then replaced by metal components using a special bone cement. A polyethylene bearing insert is placed between the metal components. The patella (kneecap) surface may be replaced with a plastic dome. Occasionally, we will try to preserve your natural patella, although sometimes the decision will need to be made during the operation.

In a partial knee replacement, just both sides of that compartment of the knee are replaced.

Cementless components, where the bone grows onto and bonds directly with knee replacement components, are sometimes used.

Is knee replacement a successful operation?

The results of modern knee replacements are very good. In general, only a very small percentage (approximately 5%) of total knee replacements fail within 10 years. However, the younger, heavier and more active you are, the greater the risk that your knee replacement may wear and fail quicker. This has to be often factored in when recommending knee replacement surgery. Furthermore, despite an excellent outcome for the majority of patients, approximately 20% of patients can experience some chronic pain after knee replacement.

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Partial knee replacement is also an effective treatment but patient selection is important as studies report a higher revision rate for partial knee replacements compared to total knee replacements.

A knee replacement can never be quite as good as a normal healthy knee. Most knee replacement will not bend as far as your natural knee. You may also notice clicking and clunking from the knee replacement.

What is a complex knee replacement?

If you have major bone loss due to arthritis or fracture, very marked deformity or instability of the main ligaments, you may need a more complex type of knee replacement. These knee replacements may have a longer stem to allow more secure fixation in the bone canal. The components may interlock or form a hinge in the centre of the knee to provide greater stability. Metal augments may be used to make up for any removed or damaged bone.

A complex knee replacement may be needed if you are having a revision procedure (see below).

What is a revision knee replacement?

If your knee replacement fails either due to wearing out, becoming loose or sometimes due to infection, stiffness or instability, then a revision procedure may be required to replace all of the components. Revision surgery can be more complex and technically more demanding than your original knee replacement.

The younger you are when you have a knee replacement, the greater the chances that you'll eventually need further surgery. However, there is also evidence that the outcome after surgery may be better if you don't wait until the knee becomes very stiff or deformed. The likelihood of needing another operation is also increased if you are overweight, do heavy manual work or participate in vigorous sports or high impact activities.

Are there alternative treatments for knee osteoarthritis other than knee replacement surgery?

The treatment of knee osteoarthritis mainly depends on the stage of the disease and the severity of your symptoms. Other factors such as your age, occupation, lifestyle, co-morbidities and any limb deformity are also important considerations.

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Non-surgical treatments include painkillers and anti-inflammatories, joint injections, weight-loss, physiotherapy, off-loading knee braces, and walking aids. Activity modification, in particular avoiding high impact, is also recommended. You may find that with good conservative (non-operative) treatment you can hold off or avoid surgical treatment.

Surgical treatment can sometimes include a knee arthroscopy to deal with unstable meniscal tears or loose bodies, but arthroscopy is often not helpful and not appropriate when there is more advanced osteoarthritis. Realignment osteotomy may be an option when there is deformity and one side of the knee is more affected by the osteoarthritis.

All options will be discussed with you. Knee replacements are less likely to be effective in the early stages of arthritis. We can be more confident that the operation will be effective when the arthritis is more advanced.

What happens before surgery?

You will already have had a conversation in the outpatient clinic regarding your diagnosis and treatment options. The surgical procedure, risks and potential complications, likely recovery time including time off work and rehabilitation will all have been discussed with you. If you feel that you have further questions about your treatment, then we would be very happy to answer them prior to your surgery. Ultimately, it is your decision to go ahead with the operation or not. It is important that you feel fully informed.

If you have significant other medical co-morbidities, your general health may sometimes need to be optimised prior to undergoing knee surgery.

If you have any dental problems, it is a good idea to get these dealt with before your knee operation. There is a risk of infection if bacteria from dental problems enters your bloodstream.

It is recommended that you try to strengthen the muscles in your thigh as these often weaken with knee arthritis. Recovery will be easier if your muscles are strong.

You will usually have a nurse-led pre-operative assessment prior to your date of surgery so that you can advise us of any relevant medical history, medications and allergies. You will usually have blood tests, microbiology swabs to check that you are not carrying any resistant bacteria and provide a urine sample. An electrocardiogram (ECG) tracing is often obtained to make sure your heart is healthy.

Sometimes, certain medications may need to be discontinued or modified in the peri-operative period e.g. blood thinning medication such as Warfarin or Clopidogrel

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may need to be discontinued 5-7 days before surgery. You should discuss this at the pre-operative assessment.

What happens on the day of surgery?

You will usually be admitted to hospital at least 1-2 hours before the scheduled operation time. This will allow the nursing staff time to perform any pre-operative checks and prepare you for surgery. You will be fitted with compression stockings (TEDS) which are worn to reduce the risk of blood clots in your legs.

The anaesthetist will meet you prior to your operation and will confirm any relevant medical history, medications that you take and any allergies. They will discuss the type of anaesthetic and risks of anaesthesia.

Mr Johal will meet you once again before your operation and confirm that you have no further questions before your surgery. If not already done prior to your admission, you will be asked to sign an informed consent form as a record that you understand the procedure being carried out and the potential risks and complications. The side being operated on will be confirmed and marked.

You will also be asked if you are willing for details of your operation to be entered into the National Joint Registry (NJR) database. Data is collected nationally on knee replacements so that we can monitor the performance of implants and outcomes of knee replacement surgery.

What are the potential risks and complications of knee replacement surgery?

The surgical team will endeavour to make your operation as safe as possible. The majority of patients will recover well from their knee surgery without any significant problems. However, complications can happen. Most of these complications are minor and can be successfully treated.

The risk of developing a complication is dependent on many factors including your age and general health. Potential risks and complications of a knee replacement surgery include, but are not limited to:

- **Anaesthesia** – Your anaesthetist will discuss the type of anaesthetic and risks of anaesthesia with you prior to your operation.

- **Medical complications** – Any major operation carries small risks of medical complications and this is very much dependent on your general health and lifestyle prior to surgery.

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- **Scar** – You will have a longitudinal scar across the front of the knee. This usually heals neatly but there is a risk that it may be sensitive or unsightly, especially if you are prone to keloid scar formation.

- **Infection** – Surgery is carried out under strict sterile conditions and antibiotics are administered intravenously at the time of your surgery. The risk of surgical wound infection is low (approximately 1 in 50). You should aim to keep your wounds covered until the planned wound check. If you develop a high temperature, notice any pus in your wound or if your wound becomes red, painful or has a persistent ooze, you should seek medical advice. Deep infection (1 in 100 risk) may require surgical washout and debridement. Sometimes, it necessitates removal of the knee replacement and treatment with antibiotics for a period, before another knee replacement can be re-implanted. In extreme cases, where the infection cannot be cured, the knee replacement has to be removed permanently and the bones fused such that the leg will no longer bend. In very extreme circumstances an above knee amputation is needed.

- **Nerve injury** – Damage to nerves around the knee (less than 1 in 100) may lead to numbness or weakness in the leg or foot. This will usually improve but is sometimes permanent. Numbness on the skin to the outer side of the scar due to the small nerves in the skin being injured is very common- it does not normally cause problems and often diminishes with time.

- **Blood vessel injury** – About 1 in 1000 suffer damage to the arteries in the leg. This can require urgent vascular surgery to repair the damaged artery if the limb is ischaemic.

- **Deep vein thrombosis (DVT)** – This refers to a blood clot in the deep veins of your leg. You should advise the medical team if you have risk factors such as previous DVT or PE, high BMI, family history, smoking, on the oral contraceptive pill or hormone replacement therapy etc. You will be provided with compression stockings, calf pumps and blood-thinning medications to minimise the risk. Blood-thinning medication can also increase the risk of bleeding, bruising and swelling, so these risks will need to be balanced. You will also be advised to mobilise as soon as possible after surgery. A DVT can cause pain, swelling and redness of the leg which can increase in size significantly. You should seek medical advice if you are concerned post-operatively.

- **Pulmonary embolism (PE)** – Pulmonary embolism is a blood clot in your lungs. You will be risk assessed as above for DVT and receive prophylactic treatment. If you develop shortness of breath, chest pain or cough up blood after your surgery you should seek immediate medical advice or go to your nearest A&E department. It is usually possible to treat a pulmonary embolism

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with blood-thinning medication and oxygen therapy. In extreme cases, it can be fatal.

- **Swelling** – Swelling is expected after surgery and usually takes a few months to improve. Once your bandage is removed you should use regular ice packs or a cryotherapy cuff to reduce swelling. Most of the swelling will improve by 3 months, but the operated knee can remain swollen and warm compared to the other side for as long as 6-12 months post-surgery.

- **Stiffness** – You will be instructed on range of movement exercises after your knee surgery. Sometimes the knee can become stiff after surgery (1%) due to scar tissue forming inside the knee. If this does not improve with physiotherapy, the knee may require manipulation under a general anaesthetic. On rare occasions, further surgery is needed to break down scar tissue.

- **Bleeding** – Some blood is inevitably lost at the time of surgery. If larger volumes are lost, then a blood transfusion may be required. Bleeding is more likely to occur if you take certain medications, such as Clopidogrel. They may need to be stopped at least one week prior to surgery. A wound haematoma is when blood collects in a wound. It is normal for a small amount of blood to leak from the wound after surgery, but this usually stops within a couple of days. If you have a persistent leak after your surgery, you may need an operation to evacuate the haematoma and lavage the knee.

- **Ligament or tendon damage** – If ligament or tendon damage occurs (approximately 1 in 100), this is usually repaired during the operation or protected by a brace while it heals.

- **Fracture** – A fracture may occur at the time of surgery or the bone around the knee replacement can break after a fall or injury at some point months or years after your surgery, especially if you have osteoporosis. This is usually very rare but may require surgery to fix the fracture or replace the components.

- **Revision surgery** – Over time the components of the knee can wear or become loose. This can result in worsening pain and can require further surgery to replace the components.

- **Dislocation of the replaced knee joint** - The incidence of this is rare. If it occurs, the joint can often be put back into place with manipulation under anaesthesia. Sometimes this is not possible and an open operation is required.

- **Dislocation of the bearing** – This is rare e.g. the Oxford unicompartmental knee replacement, has a mobile bearing that can rarely dislocate (less than 1%) and require further surgery to reposition it.

- **Failure of osseointegration** – If a cementless knee replacement is used, then rarely there may be a failure of bony union with the components.

- **Compartment syndrome** – This is a very rare complication of surgery (approximately 1 in 5000), where a build-up of pressure within the leg could result in nerve, blood vessel or muscle damage.

- **Complex regional pain syndrome** – This is another very rare condition and the cause is not fully known. It can result in you experiencing severe pain and stiffness requiring physiotherapy and pain-killing medication. It can take many months or years to resolve.

- **Damage or numbness to the skin under the tourniquet.**

- **Ongoing symptoms** – There is a risk that the pre-operative symptoms may not be fully resolved by the procedure and up to 20% of patients can have some ongoing chronic pain symptoms. This isn't caused by any technical error or recognisable complication.

- **Death** – The risk of dying within 30 days from a knee replacement operation is very rare - less than 0.2% 30-day mortality in the UK.

What will happen during the hospital stay?

Immediately after surgery, you will be transferred to the theatre recovery area and then back to the ward. You will have a bandage on the knee. A drip will be in your arm and this is usually removed at 24 hours. You will receive regular pain medication. You may also have a urinary catheter which is removed as soon as you are mobile.

Depending on the time of day that you undergo surgery, you will commence rehabilitation with the physiotherapist either on the afternoon of, or the morning after surgery.

The outer bandage can usually be removed the morning after surgery and ice packs or a cryotherapy cuff may be used to help with swelling. The main dressing underneath the bandage should remain intact and not be disturbed until the time to remove the skin clips or stitches. If it is very blood stained it may require changing,

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and this will be performed under an aseptic technique. You should not get your wound wet until it has healed and the stitches or skin clips have been removed.

You will have blood tests on the day after surgery and an x-ray of your knee.

How long will I be in hospital?

Most patients will be in hospital between 2-4 days for knee replacement surgery. You may be discharged home when you are medically fit, your pain is controlled, you are mobilising safely and can manage the stairs. Keeping up with your exercises will make a big difference to your recovery time.

What exercises will I need to do?

You will be given instructions regarding the rehabilitation programme by the physiotherapist who will supervise your rehabilitation whilst in hospital. You will have outpatient physiotherapy organised upon discharge.

These are the type of exercises you will be instructed on (at least twice per day, 15 times each):

Day 0-3

- **Ankle pumps:** Move your feet up and down to help blood circulation.
- **Static quadriceps contraction:** Sit or lie with your legs stretched out in front of you. Tense your muscle on the front of your thigh by pushing the back of your knee down into the bed. Pull you toes towards you. Hold for 5 seconds, relax and then repeat.
- **Inner range quadriceps:** Sit or lie on the bed or on the floor, with a firm cylinder wrapped in a towel under your knee. Push the back of your knee down into the towel and straighten the knee. Hold for 3 seconds, relax and then repeat. As you get stronger hold up to 10 seconds.
- **Knee bending exercise in lying:** Sit or lie with your legs stretched out in front of you. Slide your heel up towards your bottom, allowing your knee to bend. Slide your heel back down again. Relax and repeat.
- **Knee bending and straightening in sitting:** Sit on a sturdy surface, with your feet on the floor. Straighten your knee off the ground as far as you can, aiming to get the knee straight. Hold for 3 seconds and then slowly lower

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your leg. Then bend your knee as far back as possible by sliding your foot along the floor. Relax and repeat.

Day 3 onwards

- Continue the above exercise and add in the following:

- **Knee bending exercise in standing:** Stand with hands supported on a high-backed chair. Bend your knee, taking your heel towards your bottom and count for 5. Lower the foot back to the ground. Relax and repeat.

- **Sitting to standing:** Sit on a firm chair with arm rests. Bend both of your knees as far back as possible keeping your feet flat on the floor. Stand up fully and then sit down again. Repeat.

- **Step up and down:** Stand at the bottom of a flight of stairs and hold the bannister for support. Place the foot of the operated leg onto the first step and hold for 3-5 seconds. Step down and then repeat.

How much walking can I do after surgery?

When you are discharged from hospital, you will be walking safely with sticks or crutches. Start off with short distances but increase the distances as the knee becomes more comfortable.

Aim to keep both step lengths equal and spend the same length of time on each leg. Ensure your heels strikes the ground first with each step.

Will I be taught how to go up and down stairs after my surgery?

Yes. The physiotherapist will ensure that you are able to manage stairs safely before you go home. When going up stairs, put your unoperated leg onto the step first, then move your operated leg up. When going down stairs, put your operated leg down first, followed by your unoperated leg.

Do I need to sleep in a special position after my knee replacement?

No. You don't need to sleep in any special position. However, it is important that you do not lie with a pillow underneath your knee. Whilst this may be comfortable, it can affect the muscles and soft tissue healing such that it becomes difficult to straighten your knee fully.

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Can I kneel after a knee replacement?

Try not kneel for 6 weeks after surgery to allow the wound and soft tissues to heal fully. Thereafter, the knee will not come to any harm if you kneel on it, but many patients feel uncomfortable kneeling because of the altered sensation and numbness around the scar. You may find it easier to kneel on a soft cushion.

When can I drive after knee replacement surgery?

Normally, driving can be resumed at about 6 weeks after surgery. Most patients are comfortable walking at this stage and can safely perform an emergency stop. You should check with your insurance provider whether you are covered during your recovery and you need to be confident that you are able to control the vehicle in all situations.

I'm still working, when can I return?

This will depend on your occupation, how physically demanding your work is and how you commute to work. You will generally require at least 6 weeks off work, but it will often be closer to 3 months. If you have a physically demanding job, consideration may need to be given to whether a change of employment or role to lighter duties might be possible.

When will I be reviewed in clinic post-surgery?

Your wound will usually be reviewed at approximately 2 weeks post-surgery and stitches or skin clips removed. You will then be reviewed at 6 weeks post-surgery in the clinic. You should have physiotherapy appointments also during this period.

Important: This information is only a guide to help you understand your condition, treatment and what to expect. Please contact the Chiltern Knee Clinic for advice if you have any concerns about your planned treatment and recovery.