A New Knee Joint

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Introduction

The aim of this booklet is to answer questions that may be in your mind if you are considering having a knee replacement. The information has been arranged so that it should be easy to find the topics which most concern you.

Do I need a knee replacement?

The decision to replace a knee will involve weighing up the risks of the operation and the benefit you will get if the operation is done. Essentially, if the knee is bad enough and not responding to tablets then it needs replacing.

The decision is easy if you are suffering severe pain and can't walk far, especially if you are older. Most people having a knee replacement are over the age of 70. Putting off the operation if you have severe arthritis could allow the muscles to become weaker, make the knee more stiff and deformed and will reduce the chance of success. On the other hand, if you are young, you may not wish to undergo such a major operation and your doctor may advise you to alter your lifestyle, particularly by losing weight. If you are under the age of 50 you are highly likely to need a further operation later in life and a second operation is not usually as good as the first.

What can I expect from a knee replacement?

About 90% of replacement knees last for more than 10 years. They are at least as good as hip replacements. However, there are many factors which determine the success of a knee replacement and people's expectations vary greatly. Most people have very little pain after the first 6 months but, even for those who do, it usually improves over two years. Most people have very little difficulty washing or drying all over and find it much easier to use public transport after a knee replacement.

Most people are able to walk with little pain for 30 minutes; unfortunately this remains difficult for some people and their mobility remains limited and they may need a walking stick. The improvement in walking also helps the heart and lungs and people are generally fitter a year after surgery. It is not usually possible to kneel after the replacement, because the scar runs over the front of the knee and would be painful to kneel on.

Before a knee replacement, giving way of the knee is a common symptom, but only 1 in 8 people are troubled by this after surgery. You should find it easier to do household shopping but 1 in 3 people still find this difficult. Before a knee replacement most people cannot use stairs except with considerable difficulty. This usually improves after knee replacement, but 1 in 5 people still have great difficulty or find it impossible. For younger people, a knee replacement will probably not be comfortable enough to get back to heavy manual work.
It takes longer to get over a knee replacement than a hip replacement. Do not expect your knee to bend fully, especially if it was stiff before. So you will probably still have some difficulty doing things which make the knee bend a lot, like getting in and out of a car.

**What happens before the operation?**

Most hospitals will invite you to a pre-operative assessment clinic. You will usually be assessed by a nurse to check that you are fit enough to cope with the operation. The nurse will:

- take blood samples to check you are not anaemic (full blood count)
- take biochemistry measurements (urea and electrolytes) to check that your liver and kidneys are working properly
- do a heart tracing (ECG) to check your heart.

This visit will give you the opportunity to ask questions about the hospital admission a week or two later. Some hospitals provide a physiotherapist or occupational therapist with whom you can discuss your concerns.

**What happens in hospital?**

You are usually admitted to hospital a day before the operation, but this will vary from hospital to hospital, and depending on how healthy you are. On the day of admission you will be visited by the nurses, the anaesthetist, and a member of the surgical team. Your leg will be marked to indicate where you need surgery and the consent form for surgery will be checked. You will be wheeled on a trolley to the operating room and a nurse and the anaesthetist will make further checks.

The anaesthetic A very small plastic tube will be placed in a vein, usually on the back of your hand. This tube is used to inject drugs for relaxation, sleep and pain control, and antibiotics to prevent infection. The anaesthetist will discuss, and decide with you, which is the most appropriate anaesthetic in your case. You may be given a general anaesthetic, in which case you will fall asleep. But there may be medical reasons to use a spinal anaesthetic or an epidural anaesthetic. In these, a needle is inserted in your back to freeze the body from the waist down. Another approach is to use a nerve block, along with a general anaesthetic. In this case, while you are asleep, the anaesthetist will inject the nerves in the thigh, which will take away pain in the leg for the first day after surgery.

The operation itself This usually takes between one and two hours. The surgeon will make the cut through the front of the knee. Many surgeons use a tourniquet (a tight band) around the thigh during the operation. This reduces blood flow around the knee and makes the operation easier. The wound is closed either with absorbable stitches, removable stitches or clips depending on the surgeon’s preference.

After the operation Before going back to the ward you will spend some time in the recovery room. You may be given more fluids and drugs such as painkillers through the tube in your arm. If necessary a blood transfusion will be given. Many surgeons use plastic tube drains from the knee for the first 24 hours to remove blood which could otherwise cause excess bruising around the knee. The knee will be covered by dressings. If your anaesthetist has used a spinal anaesthetic or a nerve block then you will not have pain nor very much feeling at all in your legs while resting in the recovery room. If you have had both knees replaced you will be less mobile at first and it is probable that you will awake
with a catheter, that is a plastic tube inserted into the bladder to drain urine. If there is a risk of weak ligaments or poor wound healing you may well wake up with a brace or plaster on your leg. This will help the knee heal for the first few days or weeks. Some surgeons use a continuous passive motion (CPM) machine which is a frame in which the thigh and leg rests. Your leg is strapped to this frame and an electric motor gently bends and straightens the knee and gradually increases the movement day by day. But these machines are no substitute for your own efforts because you have to get the muscles going.

Something will usually be done to reduce the risk of a blood clot forming in the leg (thrombosis) and breaking off and travelling to the lung (see the section ‘What are the main risks of the operation?’ on page 12). The most common technique is using foot pumps. These are special sandals which are strapped to your foot, in which a pneumatic device presses every few seconds against the sole of the foot. This pushes the blood out of the foot and through the veins back to the heart. Some surgeons use thromboembolic stockings (TED stockings). These stockings squeeze the veins in the leg to reduce the risk of clotting. Some surgeons use chemicals such as heparin which are injected just beneath the skin (subcutaneously).

What is the new joint and how does it work?

Your natural knee feels like a hinge joint but it actually moves in a complex arc. This allows your leg to twist and move sideways.

The diagram on page 2 shows a side view of a normal knee. The slippery cartilage on the ends of the thigh bone and the shin bone allows the bones to move easily against each other. The knee is also held together by fibrous bands (ligaments) which keep the bones in the right position.

Severe arthritis damages the cartilage so that it becomes thin and may wear away completely in places. The bones then rub against each other and themselves become worn.

To replace the knee joint, the surgeon removes the worn-out ends of the bones and replaces them with metal and plastic. These materials have been successfully tried and tested for many years. The end of the thigh bone (femur) is replaced by a single curved piece of metal. The top end of the shin bone (tibia) is replaced by a flat plate of metal. Plastic is fixed to this flat plate to act like cartilage and help the bones move easily. The fibrous bands (ligaments) which keep the knee stable are also often damaged by the arthritis and some are usually removed during the operation to gain access to the bone ends. With the new joint, it is the interlocking shapes of the metal and plastic replacement parts which give the knee its stability.

The diagram overleaf shows the usual design of a new knee joint. This is a ‘total’ knee replacement – meaning that both sides, or compartments, of the knee joint are replaced – and the type is called a semi-constrained type. The surgeon will pick the most appropriate design of replacement knee for you. The choice will depend on you, the condition of your knee and the past experience of the surgeon.

Another type of knee replacement is shown on page 8. This is a half knee (or uni-compartmental) replacement, which may be used if the disease has affected only one side of the joint. This joint is suitable for some people and involves less extensive surgery, which means a quicker recovery. An example of this is the Oxford knee, shown below.