

PATIENT INFORMATION

REALIGNMENT OSTEOTOMIES (HIGH TIBIAL/DISTAL FEMORAL OSTEOTOMIES)

INTRODUCTION

We expect you to make a rapid recovery after your operation and to experience no serious problems. However, it is important that you should know about minor problems, which are common after this operation, and also about rare but more serious problems that can occasionally occur. The section ***“What problems can occur after the operation”*** describes these and we would particularly ask you to read this. The headings from this section will also be included in the consent form that you will be asked to sign before your operation.

WHAT IS HIGH TIBIAL OSTEOTOMY/DISTAL FEMORAL OSTEOTOMY?

You have been diagnosed with osteoarthritis of the knee. In particular it is affecting one side of the knee joint. (See Fig. 1 below). In osteotomy surgery, the bones are cut and realigned. This area of bone is then stabilised, most commonly with metal plates and screws, (See Fig. 2 below) or more rarely by a metal scaffold known as an external fixator, until the osteotomy site heals and matures. Your body weight will be shifted from the arthritic part to a healthy part of the knee. By 'unloading' the damaged cartilage of the knee, osteotomy aims to decrease pain, improve function, slow knee deterioration and hopefully delay the need for later partial or total knee replacement surgery.

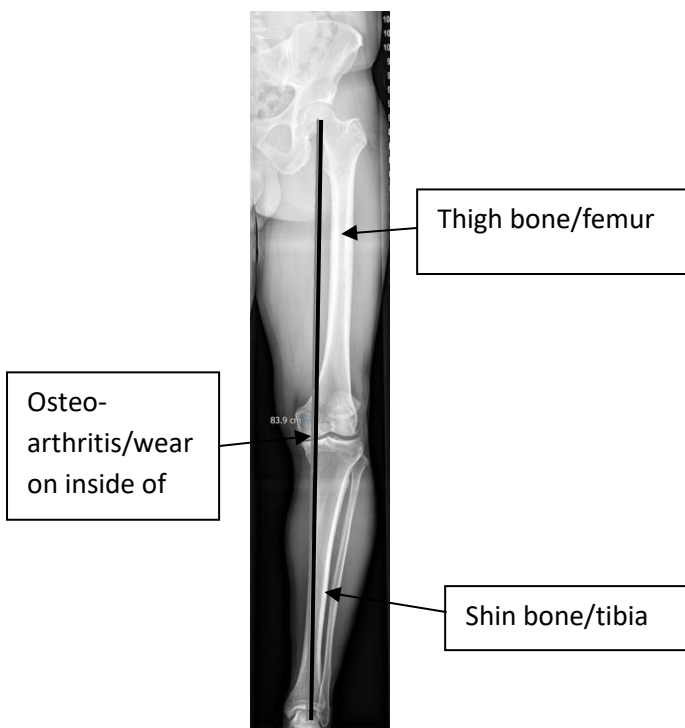


Fig 1: X-ray of left leg showing wear on inside of the knee. The black line drawn from the hip to the ankle joint shows the weight-bearing axis of the leg. It falls inside the centre of the knee joint indicating mal-alignment.

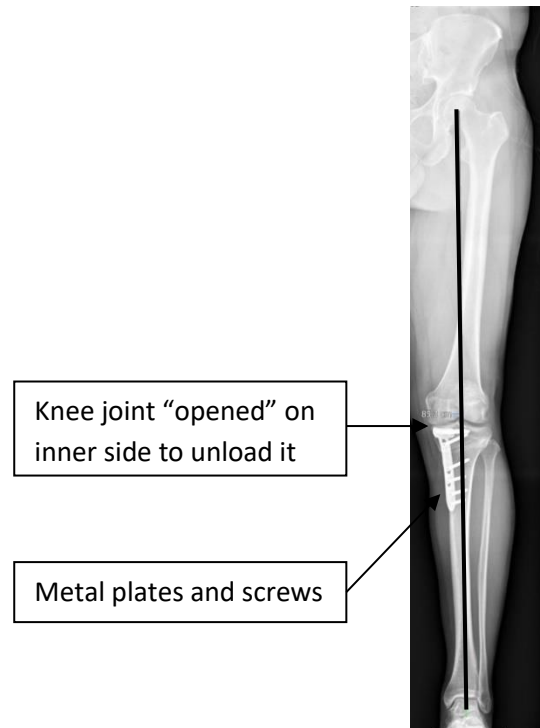


Fig. 2: X-ray of left leg after re-alignment via high tibial osteotomy. The black line drawn between hip and ankle joint showing the weight bearing axis of the leg now falls through the centre of the knee indicating re-alignment achieved.

The operation can be performed on either side of the knee joint. In high tibial osteotomy, it is the shin bone that is cut and realigned (see Fig. 3 below), whereas in distal femoral osteotomy, it is the thigh bone. (See Fig. 4 below). Your surgeon will decide which procedure is most appropriate for you.



Fig. 3: The shin bone has been cut to allow realignment of the bone



Fig. 4: The thigh bone has been cut to allow realignment of the bone

WHEN IS THIS PROCEDURE REQUIRED/CONSIDERED?

Many patients with osteoarthritis of the knee are suitable for total knee replacement. However, knee replacements do not last forever. In younger patients, knee replacements are generally avoided as they will wear out and will not last a patient's lifetime and may require multiple, major revision surgeries over a patient's lifespan. When the initial diagnosis of osteoarthritis of the knee is made, a non-surgical treatment plan is followed. This will usually include some lifestyle changes, a regular knee muscle strengthening exercise programme, use of pain killing medications and weight control.

For patients under the age of **65** years old, when non-surgical treatment has not been successful, a realignment osteotomy procedure may be considered. It is best suited for patients who have just one side of the knee affected with arthritis. It is very well suited to patients who have a natural slight bow in the shin bone but can be done in patients who don't have this. Ideally the knee should have kept a full or almost full range of movement and importantly should be able to get to a fully straight or almost straight position.

Younger patients have higher demands from their knee joint, both from their work activities and also their functional or sporting demands. These demands are rarely met by knee replacement surgery and therefore osteotomy allows patients to keep the best knee joint they will ever have- their own.

For a different group of patients this operation may be recommended even though they do not have significant arthritis affecting the knee joint. Patients in this group require reconstruction of some of the soft tissues (muscles and ligaments) around the knee. For them, the alignment/shape of the knee is not normal and the realignment osteotomy is performed to increase the likelihood of success with the soft tissue operation.

MAKING THE DIAGNOSIS

Your surgeon will have questioned you so that he/she can be sure the history of symptoms supports the diagnosis, and will examine your knee to make sure you are suitable for this procedure. Special X-rays of your legs will be required to confirm your suitability and to plan your surgery. Your surgeon will explain the procedure and also the risks involved. They will also explain what to expect after your operation. They will answer your questions and offer you the surgery. At this stage you may feel happy to sign a consent form for the procedure but you may wish for some further time to think about the operation. This is very important as this is major surgery. You can telephone your consultant's secretary to let them know your decision. Ideally, this should be within 1-2 months. To help plan the operation, your surgeon may consider an arthroscopy (a look inside the knee with a small camera inserted in to the knee through small incisions performed under general anaesthesia) to confirm the extent and severity of wear and tear in your knee or alternatively, an MRI scan of the knee if indicated.

ALTERNATIVE TREATMENT

For some patients with a very similar problem, there may be an alternative option of performing a partial knee replacement. The decision to do either an osteotomy or partial knee replacement depends on many factors including your age, your activity level, how physically demanding your occupation is, your weight and the alignment of your knee. All of this will be taken into consideration by the surgeon before discussing the options with you.

WHAT HAPPENS BEFORE THE OPERATION?

You may have attended a pre-admission clinic before your operation. You will also meet a nurse who will ask questions about your health and who may answer any questions that you have. Your surgeon will see you before surgery to discuss the operation, answer questions you may have about it and to ask you to sign the consent form for the operation.

Patients who smoke should stop and continue to refrain from smoking until the fracture site is healed. Although this is not easy, it is very important and support is available to help with this.

WHAT ABOUT THE ANAESTHETIC?

The procedure is done under a general anaesthetic usually with spinal nerve block. In addition, the anaesthetist may use nerve blocks (local anaesthetic injections) to temporarily numb the leg for a few hours after surgery and to ease any pain after the operation. The anaesthetist will discuss this further with you.

WHAT DOES THE PROCEDURE INVOLVE?

A fracture/break is surgically created in either the thigh or shin bone. The exact location of this will have been worked out by your surgeon before the operation. The exact location of the fracture/break will depend on the pattern and severity of arthritis to be treated but will be close to the knee joint. This surgically created fracture site is then either opened up in the form of a wedge or is closed after removing a piece of bone. This opening up or closing down of the bone alters the alignment of the knee joint (see Fig. 2 above) and shifts your weight away from the arthritic part of the knee. Sometimes a bone graft may be required, this may be a man-made bone substitute or human bone that has been donated to us via the bone bank. (It is thoroughly checked to ensure that it is suitable for use). The area is then held together and stabilised by a plate and screws placed under the skin. Rarely, this is undertaken using a metal scaffolding (external fixator) which is mainly outside the skin with the pins located in the bone. The area of this surgically created fracture is then allowed to heal. The incision (skin cut) is closed in layers of different stitches or clips and is covered with dressings and bandages in the operating theatre.

WHAT HAPPENS AFTER THE OPERATION?

When you return to the ward after surgery the knee will be bandaged and will be in a temporary splint. If you have had a nerve block, it will feel numb and heavy. The block will start to wear off anytime from a few hours to 24 hours. You will be given pain relieving tablets or medicine to reduce the pain. It is important that you take this regularly. The next day bandages will be reduced, the splint removed and you may be given ice packs to help reduce pain and swelling.

A physiotherapist will see you the day after your operation. A brace may be fitted on your leg for approximately 6 weeks although not every patient needs this. You will then be helped to stand and walk using crutches. The surgeon may require you to not put your full weight through the operated leg and the physiotherapists will instruct you in how to do this. An X-ray of the knee will be organised. You are encouraged to take regular painkillers to allow you to do your exercises comfortably.

The stitches are taken out at your GP practice approximately 2 weeks after surgery. Sometimes wounds around these areas can take longer to heal. You may notice some numbness around your scar. This is usually temporary but occasionally some small nerves in the skin that are in the line of the incision are unavoidably cut and the resultant numbness may be long term.

DISCHARGE FROM HOSPITAL

Once you are safe on crutches, with your pain well controlled, and if the knee is not excessively swollen, you will be able to go home. This will usually be the day after your operation. You should use the crutches for as long as you have been advised and follow the instructions that the physiotherapist has given you. You will be given an appointment to return to the orthopaedic clinic approximately 6 weeks after the operation.

WHEN CAN I RETURN TO WORK?

This will depend on the type of work that you do. You should plan to take at least 6 weeks off work to get you over your surgery. Some patients may feel able to return to sedentary work earlier, at about 3 weeks with precautions. Heavy manual work is best avoided until your surgeon has looked at your X-rays and confirmed that your osteotomy site is healing well. This can take approximately 3-4 months.

WHEN CAN I DRIVE?

This decision will be reviewed at the 6 week assessment. You will not be able to drive before this. To be medically fit to drive you need to be able to stop the car very confidently in an emergency situation. You should also inform your insurance company before returning to driving.

WHAT PROBLEMS CAN OCCUR AFTER THE OPERATION?

Wound problems/infection

Research undertaken at this hospital has shown an infection rate requiring hospital treatment of 3.5%, with a further 9.5% of patients receiving community treatment with oral antibiotics for minor wound infections. All precautions are taken to prevent infection, and you will be given antibiotics at the time of surgery to minimize the risk. In rare circumstances, if you get a severe infection you may need further surgery along with a longer course of antibiotics.

Swelling

During the early post-operative period you are likely to notice swelling of the knee and the leg. This is normal and usually settles in the coming weeks. The best way to control this is to raise the leg above heart level whenever you are sitting or lying down.

Deep vein Thrombosis

Deep Vein Thrombosis (a blood clot in the leg) is a possible complication, but is not common after this procedure (2-5%). If you are at a particular risk of blood clots, special precautions will be taken to reduce the risk. Avoiding smoking, keeping well hydrated, moving your toes and ankles as soon as you can after the operation and mobilising soon after the operation all help prevent blood clots from forming. You may be given automatic foot pumps to aid circulation in the leg and blood thinning injections to further reduce risk while you are still not very mobile.

In very rare circumstances (less than 1%), a blood clot can pass to the lungs- this is known as a pulmonary embolus. This is a very serious complication which can be life threatening and requires urgent medical attention.

Delayed healing/Non healing of the osteotomy site.

Sometimes the osteotomy may take a long time to heal or may not go on to heal at all. This is judged by the pace of your recovery, symptoms and the X- rays. The rate of failure of the osteotomy site to heal is 5%. Smokers and diabetics have an increased risk of delayed healing. If your surgeon is unhappy with the progress of the bone healing, it may be necessary to undergo further operations where a bone graft is used to encourage the process of bone healing.

Continued pain

The osteotomy operation is only designed to reduce your symptoms by taking pressure off the affected area but will not take away the arthritis in your knee joint. You may still continue to have pain in the affected area although the severity of it should reduce after the operation. The other parts of your knee will continue to have the natural progression of arthritis and may become more painful with time. You should clearly understand this before taking the decision to proceed with this operation.

The position of the kneecap can be altered by the osteotomy.

Change in appearance of the leg

As this is a realignment procedure you may notice a change in the shape or appearance of your leg. A change in the length of the leg may also be noticed. There is a small risk of over or under correction of the alignment of your leg, or loss of the correction obtained despite all measures taken. Your surgeon will keep a close eye on this during the operation and during follow up, and will discuss this with you if necessary.

Blood vessel or nerve damage

There are major blood vessels lying close to the site where the bone is cut and there is a risk of injuring them. The risk of injury of these is about 1 in 300. The surgeon will take all precautions and care to protect those during the procedure. There is also a small chance of injury to the nerves around the knee (3-11%). In rare circumstances this can lead to permanent injury.

Compartment syndrome

Occasionally, due to excessive swelling around the operative site, the pressures in muscle compartments in the lower leg may increase abnormally, which affects the blood circulation in the leg. This is shown by pain which is out of proportion to the normal surgical pain. The surgical and nursing team keep a close watch for the signs and symptoms of this after this type of operation. If this is suspected, an emergency operation may be required to relieve the increased pressures in the affected compartments. The risk of this occurring is about 1-2%

Metalwork irritation

Metalwork has been attached to the bone to stabilise it while bone healing is occurring. Sometimes, patients can feel the metalwork and it may irritate the overlying soft tissues. The risk of this is around 7%. If this occurs, and once the osteotomy has healed and matured (approximately 18 months to 2 years after surgery), the metalwork can be removed. This will require another operation under an anaesthetic and is usually done as a day case. In rare cases some of the metalwork may have to be left in place if removing it is likely to cause more harm than good. Usually this does not lead to any serious consequences.

Fracture

A fracture extending beyond the created intentional fracture can happen. The chance of this happening is very low (less than 1%).

Others

The risks of a general anaesthetic

General anaesthetics have some risks, which may be increased if you have chronic medical conditions, but in general they are as follows:

- Common temporary side effects (risk of 1 in 10 to 1 in 100) include bruising or pain in the area of injections, blurred vision, and sickness. These can usually be treated and pass off quickly.
- Infrequent complications (risk of 1 in 100 to 1 in 10,000) include temporary breathing difficulties, muscle pains, headaches, damage to teeth, lips or tongue and temporary problems speaking
- Extremely rare and serious complications (risk of less than 1 in 10,000). These include severe allergic reactions and death, brain damage, liver and kidney failure, lung damage, permanent nerve or blood vessel damage, eye injury, and damage to the voice box. These are very rare and may depend on whether you have any other serious medical conditions.

CAN I STILL HAVE A KNEE REPLACEMENT AFTER THIS PROCEDURE?

Yes. This procedure is designed for relatively young patients in an attempt to postpone a knee replacement. It is difficult to give exact figures as to how long the operation may put off the need for knee replacement surgery but one study showed that shin bone osteotomy allows 70% to 85% of patients to delay knee replacement for 5 to 10 years and 50% to 60% for 15 years. A knee replacement can be performed when the time is right after this procedure. The metalwork from the osteotomy operation (if not already removed) can be removed at the time of knee replacement or as a separate operation.

WHAT SHOULD YOU DO IF YOU DEVELOP PROBLEMS?

If the problem is one of pain, don't forget to take your painkilling tablets. If the problem remains, please contact your Consultant's secretary unless it is an emergency.

WHO TO CONTACT IN AN EMERGENCY

In case of an emergency, please contact the nearest on-call GP. If they are unavailable, then you should go to the nearest Emergency Department