



# information

## High Tibial Osteotomy surgery

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Date written: April 2018

Review date: August 2021

Version: 1.2

Code: PI1519

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The evidence used in the preparation of this leaflet is available on request. Please email [patient.information@salisbury.nhs.uk](mailto:patient.information@salisbury.nhs.uk) if you would like a reference list.

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## Flying

Flying is not permitted for 8 weeks following the surgery due to a higher risk of developing a blood clot.

**3 months:** Swimming, gentle cycling/rowing may be commenced

**4 months:** Return to manual work (jobs requiring ladders etc.)

**6 months:** Return to jumping and vigorous sporting activities

**6-12 months:** Removal of metal work

This information is only a guide and will be adapted to your individual needs, therefore timings may change slightly. The speed of your recover and rehabilitation will be guided by your surgeon. Healing rates vary between individuals and are influenced by your age, bone quality and other factors such as smoking and general health.

## 6 week clinic appointment

6 weeks after your operation you will return to clinic to see your Consultant. You will be advised on walking without crutches. Your Physiotherapist can now start to increase your functional activity

## Return to Function

### Driving

You must inform your insurance company that you are driving after this operation. You also need to be confident that you are able to do an emergency stop. For further information follow this web link: <https://www.gov.uk/driving-medical-conditions>

### Work

Return to work will depend on the job that you do, and is often limited by your restricted weight bearing and returning to driving. Return to desk based jobs 2-4 weeks; more active jobs 6-12 weeks.

## Introduction

This booklet will provide you with useful advice and general guidance to help in the recovery following your high tibial osteotomy surgery (HTO). Recovery and healing times are different for everyone. This information is only a guide and will be adapted to your individual needs, therefore timings may change slightly. Always take advice from your surgeon.

It includes advice and exercises to aid your recovery and provides guidance so that you know what to expect. Every surgery is different and your surgery may include a variation on the standard procedure. It may include repair of other structures within the knee including cartilage or ligaments.

## Why am I having a high Tibial Osteotomy?



The word arthritis means joint inflammation, also known as 'degeneration' or 'wear and tear', Osteoarthritis is the most common type of arthritis and develops over a long period of time. It affects the articular cartilage, which can start to wear away. In the presence of varus malalignment (bowed legs), the weight across your knee loads the medial (inner) portion of the joint causing this compartment of your knee to wear away, while the lateral (outer) side is preserved. You may have noticed your leg beginning to look more bowed – this is a result of the uneven wearing of the knee joint and will further alter the alignment of your leg.

## What is the procedure?

A high tibial osteotomy is a surgical procedure to realign the leg. A cut is made in the tibia (shin bone). The alignment of the tibia is carefully adjusted by levering open this cut in the bone until the desired alignment is reached. The bone is then fixed with a plate that is held in place with screws. This is called an 'opening wedge osteotomy'. The osteotomy gap in the bone will fill in with new bone over the next few months post-surgery.



Pre-operative Alignment



Post-operative alignment



Picture showing osteotomy gap and metal plate

Things you can do to help prevent a blood clot:

- Move around as much as possible. Be sensible though; short and regular walks are best.
- Drink plenty of water to keep yourself hydrated
- We strongly advise you not to smoke.
- Move your ankle up and down as much as possible to keep your calf muscle pumping.

## On going Rehabilitation

You will be referred to the Outpatient Physiotherapy team when you are discharged. If you do not hear from them within one week of discharge, please contact the Orthopaedic Therapy Team on Ext 3111

### 2 week clinic appointment.

2 weeks after you operation, you will see your Consultant in the outpatient clinic. Your wound will be checked and you will have another x-ray. Your Consultant will give you guidance on the next step of your recovery

You may be able to start putting more weight through your operated leg, but you need to continue to use the crutches. Your Physiotherapist can guide you on this, they will also progress the movement at your knee and the strength of the muscles around your knee.

## Blood Clots

- DVT (deep vein thrombosis) – this is a blood clot most commonly found in a deep vein that blocks the flow of blood.
- PE (pulmonary embolism) – a potentially fatal complication where a blood clot breaks free and travels to the lungs.

While you are less mobile, the risk of developing a blood clot is higher because of your reduced mobility. You may be prescribed medication to thin your blood to reduce the risk of a clot. This may be in the form of a daily injection into your tummy which you will administer yourself.

### Symptoms:

- Swelling – you will have some swelling due to your surgery but if you have any concerns about hard tight swelling that does not improve with rest and elevation, please call for advice.
- Pain – we want to know about any new pain, especially in the calf muscle.
- Calf tenderness, especially if you gently squeeze the muscle
- Heat and redness compared with the other leg

If you experience

- Shortness of breath
- Chest pain when breathing in

Seek urgent medical advice

## What are the advantages of an Osteotomy?

The osteotomy aims to relieve pain and preserve your own knee joint, delaying or even avoiding the need for a knee joint replacement. It can allow younger patients to lead a more active lifestyle.

Following recovery you will be able to return to your full activities, even impact sports. Around 80-90% of patients feel an improvement in their knee following an osteotomy. In the future, if your arthritis progressed you could still have a knee replacement.

## Risks and complications of surgery

All surgery carries a small risk of complications. Some of the possible complications are listed below.

**Infection** – infection can occur with any surgery. Special precautions are taken to reduce this risk. The infection risk is low, less than 1 in 100 (1%) and can usually be treated with antibiotics. In some cases it may be necessary to perform further surgery.

**Blood clots** – Blood clots are rare, the risk of a deep vein thrombosis (DVT) is less than 1%. The risk is reduced by early mobilisation. A blood clot if left untreated can become serious. You may be prescribed medication to reduce this risk.

**Stiffness** – post-operative stiffness of the knee joint is rare. Some patients may struggle to regain the ability to fully straighten the knee. Physiotherapy can help reduce this risk.

**Delayed healing** - Sometimes the two bone edges do not heal together as planned – known as delayed union. This may require a further operation. Smoking significantly impairs bone healing as can anti-inflammatory tablets, and some surgeons avoid these after surgery.

**Failure** – Collapse of the osteotomy can result in loss of correction. This risk is reduced by the restricted weight bearing. Progression of your arthritis is possible and further surgery may be required in the future.

Failure to relieve some or all of your symptoms can occur although you can continue to see improvements for up to 18 months after your operation. It is unusual to see little or no improvement and exceptionally rare to be made worse by your surgery.

**Fracture** – Fractures around the osteotomy are possible after the operation and may extend into the knee joint. The risk of this is reduced by restricting the weight that you put through your leg and is monitored by further x-rays when you see your Consultant 2 weeks after your operation.

**Nerve damage** – Nerve damage is rare but you may feel a loss of sensation to touch surrounding your scar on the inner aspect of your leg.

**Bleeding** – Bleeding is rare, but some bruising may still occur. If blood collects in the area – known as a haematoma - it may need to be drained. Rarely damage can occur to blood vessels behind the knee. This can lead to loss of circulation to the lower leg and foot which may require further surgery.

## Leaving hospital

If you are comfortable and have good movement at your knee you may be able to go home on the same day as your operation. If this is not possible, you will be discharged the following day.

By the time you leave hospital you should try to:

- have full extension (straightening) - the same as your other leg
- have good flexion (bending), which is improving with exercise
- be safe mobilising with crutches, including up and down stairs
- understand your home instructions and exercises
- know how to apply an ice pack safely.

Your discharge may be delayed if you are not able to do these things.

When you are discharged the nursing staff will give you:

- Medication as required;
- written instructions about further appointments and wound care.

## Walking

You will be given crutches to help you walk and you will be taught how to use them. Do not put any weight through your operated leg. You are allowed to '**Touch weight-bear**' only. This means you can put your toes to the floor but not put any extra weight through them (imagine a tomato under your toes that you are not allowed to squash).



## Stairs

When you go **up the stairs**, brace your arms and use your crutches to support your body weight as you step your **un-operated leg up** on to the step. Follow with your operated leg, and then your crutches.



When going down the stairs, put your crutches down on to the step below. **Step down with your operated leg**, brace your arms and use your crutches to support your body weight as you step down with your un-operated leg.

Standing and walking for too long may cause your knee to swell. This may slow your recovery. If swelling is a problem, reduce the amount of walking and standing you are doing and rest with your leg up, above the level of your hip.

## Before your operation

You need to be as healthy as possible for major surgery to aid a quick recovery. You can improve your general health by:

- Trying to give up smoking completely. Smoking delays healing.
- Cutting down on the amount of alcohol you consume.
- Eating a well-balanced diet. This will help to improve your skin condition and help wound healing.
- Maintaining the correct weight for your height.
- Making sure your skin is unbroken and free from sores and open areas. This will reduce the possibility of infection both before your operation and after. An infection anywhere in your body will stop you from having your operation.
- Walking and exercising within the limit of your discomfort and ability.

Things you need to do and think about:

- If you live alone, think about someone staying with you, or you staying with someone, for the first couple of days after you go home from hospital.
- Think about help with the housework and shopping.
- You will not be able to drive for at least 6 weeks after your operation, so think about organising transport, especially for physiotherapy appointments.

- If your stairs are difficult, think about how you will manage these. (You will practice doing stairs before your discharge)
- You may need help to look after your children or pets
- When you go home with crutches, you will be unable to carry drinks or meals from room to room.
- Remove loose rugs, trailing electrical flex or anything else that could cause you to trip, slip or fall.

## Coming into hospital

### Things you need to do:

- Make sure you have read your admission letter so that you come in on the right day and at the right time. It will also tell you when to stop eating and drinking.
- Do not bring any towels or face cloths in with you. They will be provided for you by the hospital.
- Patients are usually discharged on the day after surgery. Please bring an overnight bag with everything you need for a stay in hospital (shorts and T-shirt, night attire, dressing gown, toiletries etc).
- Bring sensible footwear i.e. trainers or sensible slippers with proper non-slip soles (not flip-flops, backless or fluffy mules!)
- Bring in any regular medications you are currently taking and a list of when and how many you take.



### 3. Knee flexion/extension

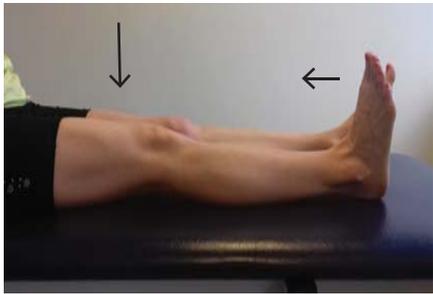
Sitting on your bed, bend and straighten your knee. Try to bend your knee as far as you can, pause in this position and then straighten your knee. Keep your kneecap pointing to the ceiling.



4. Sitting on your bed, pull your foot up towards you, brace your knee to stop it from bending and lift your straight leg off the bed. Slowly lower your leg back down. You only need to lift your leg a small distance.

**Knee exercises:** Start these exercises as soon as possible after you operation. It is beneficial to practice them before your operation.

Do these exercises 3-4 times a day and 10 repetitions of each one. It is your responsibility to do these exercises regularly, and to continue them once you are at home.



### 1. Static Quads

Sitting on the bed, pull your toes up towards you and push your knee down into the bed. 'Brace' your knee using the muscles on the front of your thigh. Hold for 5 seconds and then relax.

### 2. Inner Range Quads

Sitting on your bed, put a rolled up towel under your knee. Pull your foot up towards you, push your knee down in to the roll and lift your heel off the bed. Keep your knee in contact with the roll. Hold for 5 seconds and then relax gently. Do not rest with the roll under your knee.



- Leave jewellery and large amounts of money at home.
- You can use your mobile phone

## Day of surgery

A member of the surgical team and the anaesthetist will see you before surgery.

## Consent

We must by law obtain your written consent to any operation beforehand. Staff will explain all the risks, benefits and alternatives before they ask you to sign a consent form. If you are unsure about any aspect of the treatment proposed, please do not hesitate to speak with a senior member of staff again.

## The operation

To reduce the risk of being sick, you will not be allowed to eat or drink before surgery. You will be told when you should stop eating and drinking.

The surgery is usually performed under general anaesthetic and takes approximately 1–1 ½ hours.

# Rehabilitation

## Phase 1. After your operation:

After surgery you will have a dressing or dressings on your knee, your wound will be glued so there will be no stitches or clips to remove.

If the anaesthetist used a type of local anaesthetic in your leg, called a nerve block, your leg will feel numb and weak for a few hours after the operation.

Nursing staff will make regular checks of your temperature and pulse. Analgesia will be given to you to help keep you comfortable.

A physiotherapist will teach you exercises and will help you to get out of bed and start mobilising with crutches.

## Post-op exercises

The exercises are to improve:

- circulation;
- flexion (bending) of your knee
- extension (straightening) of your knee

It is important that you are able to straighten your operated leg as much as your other leg as soon as possible. **Do not sit with a cushion or pillow under your knee**, as this will stop you achieving this.

**Circulation exercises:** These need to be done 10 times each, every hour, whenever you are awake.

1. Ankles: Paddle your feet up and down and circle them round and round.
2. Knees: With your legs out straight, brace your knees down so that you can feel the muscle tightening on the front of the thigh. Hold for a count of 3 and then relax. You should be able to see your knee caps move slightly.
3. Bottom: Clench your buttock muscles together and hold for a count of 3 and then relax.
4. Breathing exercises: Place your hands on the sides of your rib cage. Take a deep breath and feel your ribs expand as you breathe in. Do this 3-4 times every hour.