

**Trauma & Orthopaedic Directorate**

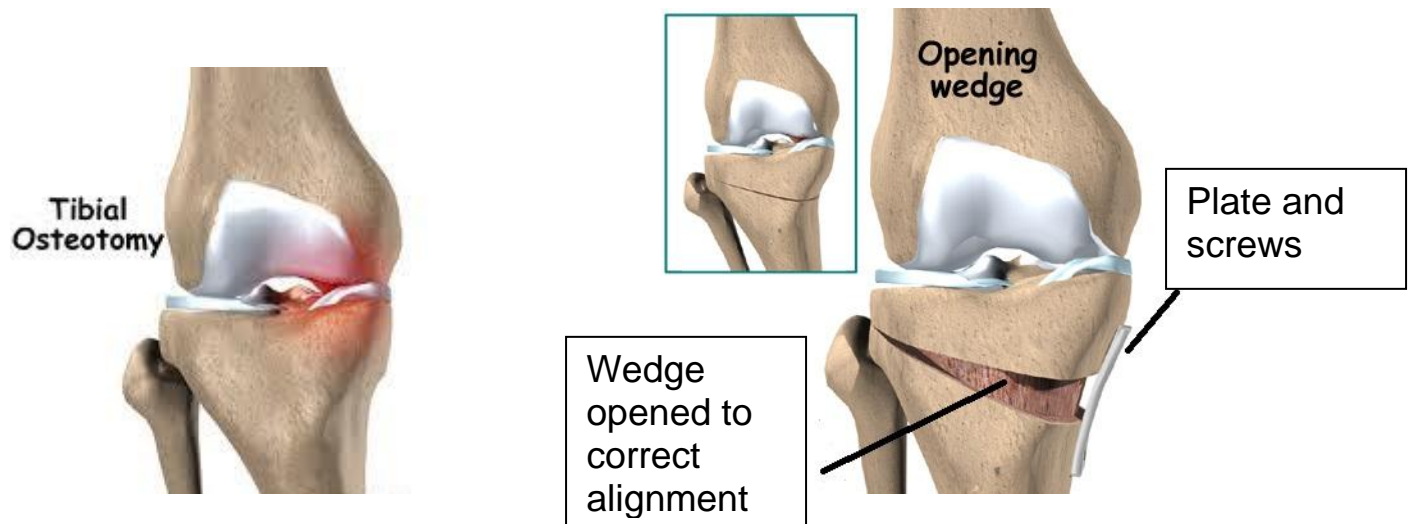
# **Osteotomy around the Knee**

## What is Osteotomy?

**Osteotomy** is a surgical procedure performed around the knee joint to relieve pain and improve function in patients with early arthritis affecting one side of the knee. It is often used in younger patients as it preserves your own knee joint.

**Osteotomy** works by **re-aligning the leg** and taking pressure off the painful part of the knee. This relieves pain and delays further progression of the arthritis and deformity.

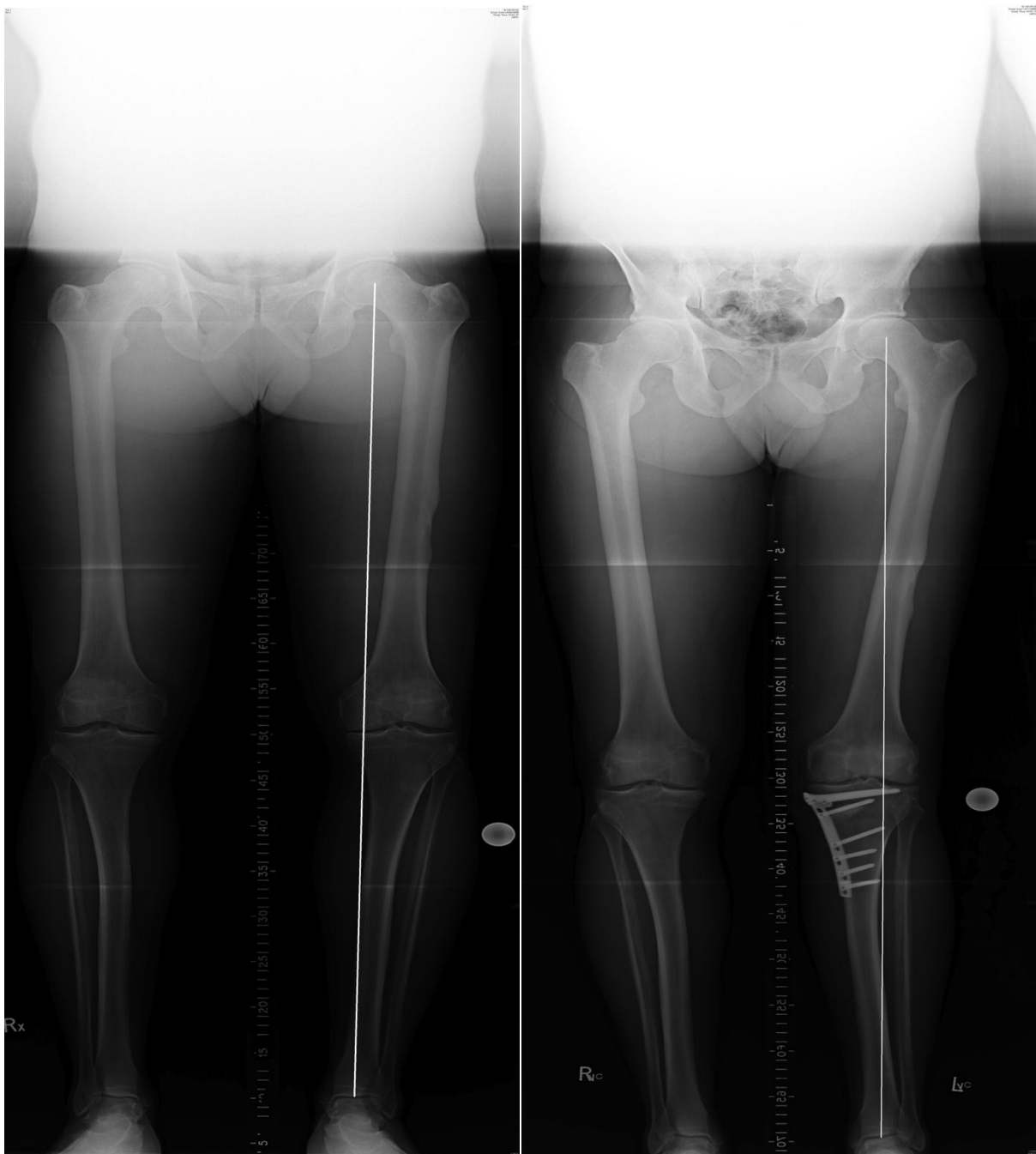
Most commonly the inner (medial) part of the knee is affected and the patient may be slightly 'bow-legged' (varus alignment). An osteotomy in the upper shin bone (**high tibial osteotomy**) will re-align the leg and move pressure from the inner (medial) side of the knee onto the healthy outer (lateral) side.



In some patients the outer (lateral) part of the knee is painful and a 'knock-knee' (valgus alignment) is present. Under these circumstances the osteotomy is usually performed in the lower thigh bone (**distal femoral osteotomy**).

## How is surgery performed?

Surgery is carefully planned with the aid of **digital planning computer software**. You will have **long leg alignment x-rays** performed to help your surgeon plan surgery accurately.



Pre- and post- operative long leg alignment x-rays (white line shows weight-bearing axis changed)

During the operation accurate surgical cuts are made in either the tibia (shin bone) or femur (thigh bone) to achieve the planned correction. The corrected bone is held firmly in place with a metal plate and screws.



Front view



Side view

An **arthroscopy** (keyhole surgery) may be performed at the same time as the osteotomy to fully assess the knee and allow the surgeon to trim torn meniscus cartilage or treat articular (joint surface) cartilage damage.

## Results of Osteotomy?

Most patients (80 – 90%) feel a dramatic improvement in their knee after Osteotomy surgery. The re-alignment of the knee means activities of daily living are usually much less painful. Many patients can return to sports such as tennis, skiing and golf. An advantage of osteotomy is that you keep your own knee joint (unlike in knee replacement surgery). If symptoms deteriorate later in life a knee replacement is still possible.

# What are the risks of Knee Osteotomy?

No operation is completely without risk. The surgeon will explain the risks but serious problems are rare (less than 1%).

The information included below is there to increase your understanding of the risks of the operation. Most major and minor complications are included, but the list is not comprehensive. You can find out more about the risks involved from your surgeon or at your attendance to the Pre-Assessment clinic.

## GENERAL RISKS

### ANAESTHETIC RISKS

The large majority of knee osteotomy surgery is performed with the patient fully asleep, under general anaesthetic. Patients having this type of anaesthetic rarely have significant health problems. If these are present however, the operation may be carried out under regional anaesthesia. General anaesthesia is very safe and complications are extremely rare.

### BLOOD CLOTS / THROMBOSES

The risk of blood clots either in the calf (deep vein thrombosis/ DVT) or in the lungs (pulmonary embolism P.E) is less than 0.05%. This risk is low as most patients having the surgery are up and about almost immediately. Good early mobility is the best way of preventing blood clots. Patients are also fitted with special AV boots which are a pneumatic compression device designed to reduce clot risk and swelling.

## **SURGERY SPECIFIC RISKS**

### **INFECTION**

Superficial wound infection is uncommon. This usually manifests itself as a slowly healing red wound, and reliably settles after treatment with antibiotics.

Deep infection in the bone itself is an extremely rare (less than 1%) but potentially very serious complication. It can require long treatment with antibiotics and further surgery.

### **FAILURE TO IMPROVE**

Failing to relieve all or some of the patients' symptoms can occur with knee osteotomy. It can take some time to recover from surgery, but patients go on improving for a year to 18 months. It is unusual to have little or no improvement in symptoms, and exceptionally rare to be made worse by surgery.

### **BLEEDING**

Osteotomy surgery always causes some bleeding. This is normally evident as bruising and/or swelling around the wound and down the leg. It is nothing to worry about and settles of its own accord. However, significant bleeding (haematoma) does occasionally occur and can cause wound problems. Very rarely this requires further surgery. Damage to major blood vessels behind the knee occurs exceptionally rarely. Patients on blood-thinning medications such as aspirin are more prone to bleeding during and after surgery. If you are taking blood-thinning medications, you will need to inform our staff in the Pre-Assessment clinic, as these medications may have to be stopped a number of days (7-10) prior to surgery.

## DELAYED BONE HEALING

Osteotomy is a surgically-created fracture (broken bone) and therefore needs to heal. With modern fixation techniques bone healing starts very quickly and full weight can be put through the leg within the first few weeks. X-rays taken at 6 weeks, 3 months and onwards monitor the bone healing process. Occasionally the osteotomy heals slowly, and very rarely this can require further surgery in the form of bone grafting.

## NERVE INJURY

Minor skin nerve damage can cause small areas of temporary or permanent numbness. Occasionally the wound can be sensitive or tender, but this normally settles with time. Serious nerve injury causing permanent damage is very rare indeed.

## CONCLUSION

Knee osteotomy is a safe and well-proven operation. The risks involved are hugely out-weighed by its likely benefits. If you would like to further discuss surgery and the risks involved you can do so with your surgeon.

### **Important**

Your operation may be cancelled if you have any of the following: - cuts, rashes, abrasions, or skin conditions (psoriasis, eczema etc) in-growing toenails, corns, leg ulcers or problems with your teeth or gums. Symptoms of general illness may result in the anaesthetist recommending that the operation should be cancelled e.g. a cold on the day.

# **What happens before my operation?**

## **Pre-Assessment Clinic**

A few weeks before your operation you will be asked to attend the Pre-assessment Clinic, where a thorough medical assessment will be carried out to make sure you are fit enough to cope with the surgery.

At this clinic, routine pre-operative tests including urine, blood, ECG (heart trace) x-rays may be advised. You will also be screened to ensure that you do not carry MRSA (Methicillin Resistant Staphylococcus Aureus) and MSSA (Methicillin Sensitive Staphylococcus Aureus) on your skin. This appointment will also provide you with an opportunity to speak to your Consultant and / or Registrar. You will also be asked to sign a consent form for the planned surgery.

## **What should I do before my admission?**

Please arrange for someone to bring you into hospital on the morning of your admission. You will need to make arrangements for your journey home, as you will not be able to drive or use public transport immediately after surgery. You are advised to contact your insurance company and discuss with your physiotherapist at your first appointment before commencing driving. It is likely to be 6 weeks or longer before you are able to drive safely (and legally).

If you are using a taxi you will need to be accompanied by a responsible adult.

Most patients are in hospital 2 to 3 nights after knee osteotomy surgery. If you work you will need to arrange to have time off. The length of time off depends on the nature of your work. For office workers 6 weeks is realistic, but some will be able to return sooner. Manual workers may require 3 months off work. This is very individual and depends on the exact nature of your work. You can discuss this further with your surgeon at Pre- Assessment Clinic.



## What happens on arrival?

- You will be welcomed to the ward by a nurse who will check your name and details and show you the layout of the ward
- You will be asked to sign / re-sign your consent form
- If you are female you will be asked to reconfirm you are not pregnant
- Your affected knee will be indicated with an arrow marked on your leg by one of your surgical team
- You will be seen and assessed by the anaesthetist
- All the tests you had done in the pre-admission clinic will be checked and the results given to you
- Anyone with you will be asked to leave as soon as possible, unless there are good reasons for them to accompany you (translation, blind and/or deaf patients etc)
- Your operation time will be confirmed as close as possible – this may not be straight away
- You will go down to the operating theatres – either: walking there yourself accompanied by a member of staff, going down in a chair, or, going on your bed

## What should I expect after surgery?

After returning to the ward you will be asked to rest quietly for a while. A thick bandage will cover your knee this should stay in place until the following day. At the end of surgery a local anaesthetic will be injected into your knee. Most patients find that their knee is comfortable on return to the ward.

After you have slept off the effects of the anaesthetic you will be offered something to eat and drink.

- The day after surgery a physiotherapist or nurse will then check that you are safe to get out of bed, walk and you will practise going up and down stairs.
- A formal x-ray of your knee will be done in the radiology department. You will wear the AV boots to decrease swelling and decrease the risk of blood clots. These will be worn on both feet at ALL times whilst you are in bed.
- Your surgeon will check on your progress.
- You will be taught exercises to carry out at home.
- You will be discharged home once safe to do so (normally after 2 or 3 nights in hospital).
- You will be taught how to use crutches, which are normally used for 6 weeks following osteotomy surgery.

For most osteotomies you are able to start putting some weight through the leg straight away, and most patients can fully weight bear by 3-4 weeks.

Your surgeon and physiotherapist will discuss this on an individual basis.

# **Your Recovery at Home**

It is important to follow your surgeon's and physiotherapist's instructions carefully after you return home.

## **Swelling**

Keep your leg elevated as much as possible for the first few days after surgery.

Apply ice as recommended by your physiotherapist to relieve swelling and pain.

## **Dressing Care**

You will leave the hospital with a dressing and bandage covering your knee. You may remove the bandage the following day and apply the support bandage (Tubigrip)

Keep your incisions clean and dry for 2 to 3 days. After 2 - 3 days you may only shower if your wounds are healed completely and then you may bath. If you have stitches or skin clips you will need to arrange to have these removed at your local surgery at about twelve days, if you have steri-strips these should fall off at about ten days. If they come off earlier do not attempt to reapply them just cover the wound with a clean dressing.

## **Weight Bearing**

For most osteotomies you are able to start putting some weight through the leg straight away, and most patients can fully weight bear by 3-4 weeks. Your surgeon and physiotherapist will discuss this on an individual basis. After the 6 week follow-up appointment in the Outpatient Clinic the vast majority of patients will be fully weight-bearing and able to wean off or stop using crutches completely.

## **Driving**

Most patients will be unable to drive for 6 weeks after a knee osteotomy. Occasionally this period will be longer, and very rarely shorter (e.g. if the

left leg has been operated upon and you drive an automatic car). Discuss any questions about driving with your surgeon or physiotherapist.

## **Potential Warning Signs of Complication**

Contact your GP if you experience any of the following

- Prolonged Fever
- Persistent warmth or redness around the knee
- Persistent or increased pain
- Significant swelling in your knee
- Increasing pain in your calf muscle
- Shortness of breath or chest pain.

**If have any problems please don't hesitate to contact the ward on  
01256 313681**

## Exercises to Strengthen Your Knee

You should exercise your knee regularly for several weeks following surgery to strengthen the muscles of your leg and knee.

After discharge you will have several appointments with the physiotherapist. This is vital to a good recovery and ultimately a good outcome you're your surgery. Physiotherapy will continue until you have reached the required standard of movement and muscle strength.

Your physiotherapist will discuss exercise regimes in more detailed (and these may be adapted for individual patients).

Below are some examples of the exercises to be performed.

### KNEE EXERCISES

#### **HEEL SLIDE**

Sitting; Pull heel towards body.

Assist stretch with hands on your shin

Hold for 5 seconds

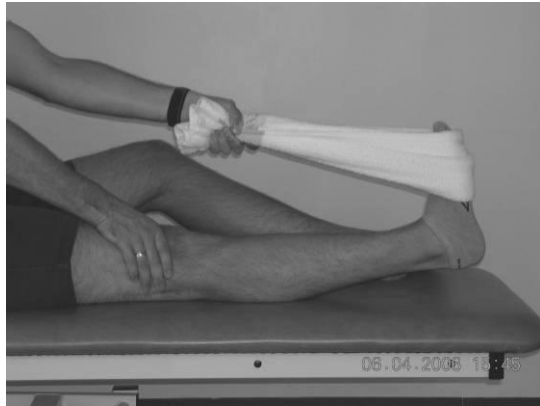
Bend a little further and hold for another 5 seconds

Relax and return to starting position. Repeat 10 times.



### **TOWEL STRETCH**

Hold on to towel as shown  
Use opposite hand to push down on your thigh just above your knee  
Hold for 5 seconds  
Release towel and tighten thigh muscle so that heel stays in raised position  
Repeat 5 times



### **KNEE EXTENTION**

Place a rolled towel under your knee  
Keeping the knee in contact with the towel raise your heel from the bed.  
Hold for 3 seconds  
Repeat 10 times



## QUADS TIGHTENING

Sitting with leg straight out in front of you

Tighten your thigh muscle by pushing the back of your knee into the bed

Hold for 5 seconds

Repeat 10 times



Please carry out exercises 3 times a day or as instructed by your physiotherapist

If you have any questions please contact Orthopaedic physiotherapists on 01256 313531

## STAIRS

UP

DOWN

Lead with your good leg going up the stairs



Lead with your operated leg coming down the stairs



# TUBIGRIP SUPPORT BANDAGE

You have been supplied with a tubular bandage to help control swelling of your limb.

Please read the following carefully:

ELEVATE and SUPPORT your limb ABOVE a horizontal position whenever possible

Apply the bandage in the morning and remove it at night.

Ensure there are no creases in the bandage.

DO NOT turn back the bandage at the edges (leave frayed ends frayed).

The bandage may be washed in COOL water – allow to dry naturally (DO NOT tumble dry)

Wear two layers during the day for the first three days –reducing to one layer for a further four days or as advised by your physiotherapist, or continue if swelling persists.

## IMPORTANT

Remove the bandage and contact your GP if you experience any of the following:

Your toes turn blue or white or become swollen and do not recover when elevated or exercised.

You have pins & needles, numbness in your foot or have difficulty in moving your toes due to pain

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