



Charing Cross Lower Limb Trauma Unit

INFORMATION FOR PATIENTS WITH LIMB INJURIES

This booklet has been provided to help answer some of the questions you may have about your injury and how it may be treated during your stay at Charing Cross Hospital. All the health care professionals involved in your care will be happy to answer any queries or concerns you may have.

The Lower Limb Trauma Team

Consultant Plastic Surgeons



Prof. Jagdeep Nanchahal



Mr Simon Eccles



Mr Adam Topping

Consultant Orthopaedic Surgeons



Mr Dinesh
Nathwani



Mr Michael Pearse

Senior Physiotherapist



Laura Burgess



Moira Morgan

Welcome to the Lower Limb Trauma Unit at Charing Cross Hospital.

We specialise in the type of injuries that you have.

You have been brought here for one of the following reasons:

1. You have an injury to your leg(s) involving either broken bones or open joints.
2. You have a wound that cannot be closed because it is too big.
3. You have damage either to the blood vessels or to the nerves of your leg(s).

Orthopaedic Surgeons will treat your broken bones or open joints; Plastic Surgeons will look after your skin and soft tissue damage, which includes the nerves and blood vessels. The two groups of surgeons work together if you have both broken bones and soft tissue damage.

The nursing staff on the ward will provide daily care and you will also see the physiotherapists, particularly after your operation(s), who will help with your mobilising (moving around).

A general outline of your treatment plan

1. Admission to hospital.

2. Seen by Orthopaedic Surgeons and / or Plastic Surgeons

3. First operation

This is to clean and inspect the wound. You may need a second operation approximately 48 hours later to repeat this until the wound is clean.

4. Discussion with Orthopaedic Surgeons and Plastic Surgeons

How can the injured leg be reconstructed?

Is the wound too severe for the leg to be reconstructed?

5. Main operation

Leg is reconstructed if possible.

Orthopaedic Surgeons fix the bones if needed

Plastic Surgeons cover the wound with soft tissue.

6. Rehabilitation – physiotherapy

7. Discharge home and follow-up in clinic

The length of your stay will depend on your injury:

- If the operation is relatively simple, you will need to stay in hospital for 3 or 4 days to recover.
- More complex procedures will mean a stay of up to 2 weeks or more, depending on the surgery and amount of rehabilitation required afterwards.

What happens now?

The first thing we need to do is to get an idea as to the extent of your injuries. We will do this in the operating theatre whilst you sleep under a general anaesthetic.

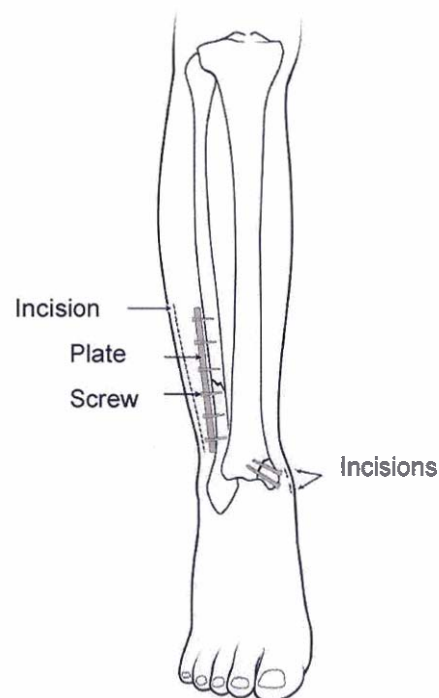
The surgeon will explain the procedure to you in detail before asking you to sign a consent form. This is to make sure that you understand the risks and benefits of having the operation.

The anaesthetist who will be putting you to sleep for the operation will also see you to discuss the type of anaesthetic you will have before asking for your written consent. S/he may prescribe a 'pre-med' for you to take 1 hour before surgery to help you relax and make you sleepy.

During the operation, the wound will be cleaned by taking away any dead or dirty soft tissue as well as any dead or dirty pieces of bone if that is broken..This is done to help prevent the wound from becoming infected.

Your wound will then be washed out thoroughly with saline solution and if required, the bone will be held together using one of the methods below, if this has not been done already. Please note, sometimes the fixation device that was used to hold the bone together immediately after your injury will need to be changed.

Fixation can be either by using a metal bar outside the leg (usually an 'external fixator') or by a metal plate or a nail within the bone (see illustration).



Your wound will then be sealed using a special 'vacuum dressing'. This is attached to a machine that gently sucks on the wound to keep the wound clean and controlled (not messy).

Will I need any medication?

We will give you antibiotics to prevent wound infection, especially if you have a broken bone as well. These medications will be given intravenously (via a vein), which gives a higher dose.

You will also have daily anti-coagulant (blood thinning) injections to prevent thrombosis (blood clots) in your calves and be measured for special stockings (sometimes known as 'TEDS') to help the flow of blood in your uninjured leg.

How will my pain be controlled?

We will give you standard painkillers to start with, but some people can react differently to these and some types may not work for you. If this happens, we can change them for you. We also have a 'Pain Team' who are here to help and can also advise about painkillers.

Remember – if you are in pain, then tell a member of the nursing staff and your tablets can be adjusted.

Is there anything I can do to help myself?

Your injured leg must be elevated (raised) at all times to reduce the swelling. This will also reduce your pain and improve the flow of blood through your leg.

If you are a smoker – NOW IS THE TIME TO QUIT! Nicotine in cigarettes will prevent healing and will damage any reconstruction that can be done to encourage your leg to heal. This could result in amputation of your leg.

Your body will be trying to heal itself. This takes a lot of energy and you will need to eat and drink plenty to help it to repair. The nurses will give you energy drinks as this will help your body to heal.

What happens after the first operation?

We should know at this stage what the extent of damage is and what needs to be done. The Orthopaedic Surgeons and the Plastic Surgeons will know if the damage is too great to be repaired and whether an amputation is the best way forward. We will come and talk to you about all the possibilities, including amputation.

Please be assured that we will not perform an amputation without having spoken to you about it first.

What about further surgery?

This can be one of the following options, which will be fully discussed with you. Please note these operations are all done under a general anaesthetic.

1. With major injuries to soft tissues, it may be that you need to go back for further surgery to make sure the wound is clean. It can sometimes be difficult to see whether muscle is actually alive or not and rather than take it all away, we prefer to wait and see what survives. This will usually be within 48 hours of the first operation.

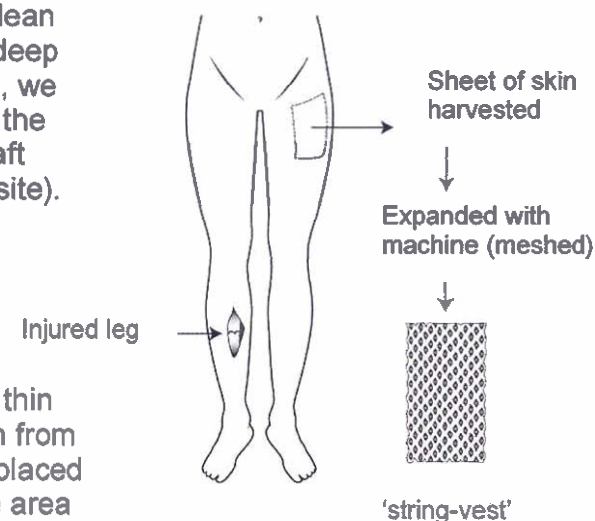
Only when we are happy that the wound is clean will we be able to decide what to do.

2. When the wound is clean and healthy, not too deep and no bones broken, we may be able to close the wound with a skin graft (see illustration opposite).

This is where a very thin piece of skin is taken from your thigh and then placed onto the wound. The area where the skin was removed is like a graze and will heal on its own after around 2 weeks.

Where the skin graft is covering the wound, it will initially be covered with a dressing. We will ask you to remain in hospital for about 5 days before we check the graft to see whether it has 'taken' (survived). If all is well, then you will be able to go home with dressings over the wound.

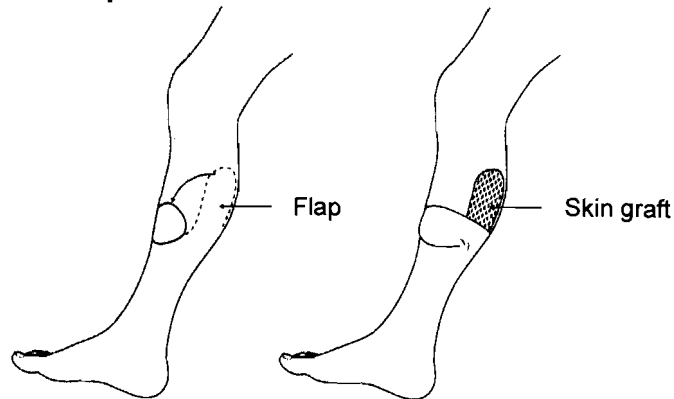
3. Deeper wounds to the leg that have tendons or bare bone exposed require covering with a 'flap'. The difference between a flap and a graft is that the flap has its own blood supply, whereas the graft needs to get its blood supply from the wound. A graft cannot survive on bare bone or bare tendon.



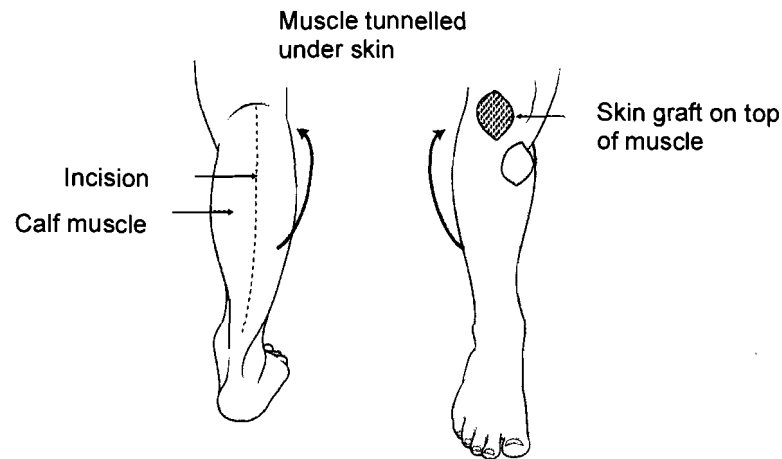
A flap can be either a piece of skin, a muscle or both. Flaps can be of 2 kinds:

- a) 'Local' flaps (see illustrations below) – where the flap is planned next to the wound and can be moved across to cover the wound. In reality, the damage to the surrounding tissues usually prevents us from using this method.

'Local' skin flap



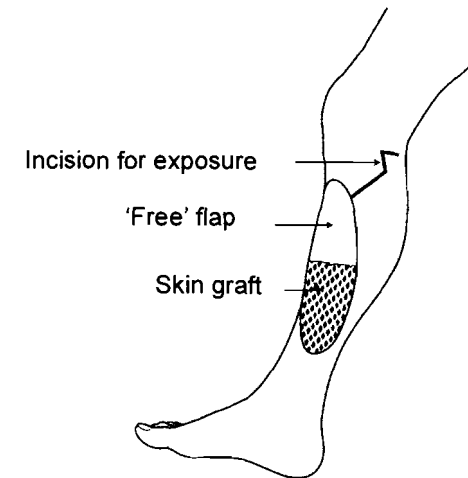
'Local' muscle flap



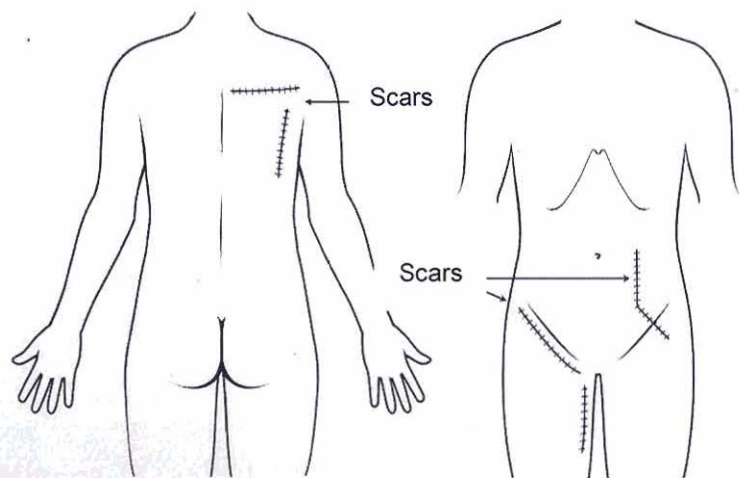
- b) 'Free' flaps (see illustrations below and on the page opposite) – where a piece of skin or muscle is detached from somewhere on the body, either the thigh, the back or the abdomen (tummy), complete with its artery and vein which supply it with blood.

Using a microscope, the artery and vein are then connected to the main artery and vein in the leg, so that the flap can receive the blood supply it needs to keep it alive. The flap (piece of skin or muscle) is then used to cover the wound in your leg. If we have used a piece of muscle, this will need a skin graft over the top to cover it. This is complex surgery and can take up to 6 hours to complete (see the section headed 'Other investigations' on page 12).

'Free' skin flap taken from the leg



Alternative sites for removal of skin for a 'free' flap



The type of flap required is very individual and the choice can only be made depending on your specific wound. Certain flaps work better in some areas than others and this will be discussed with you by your surgeon.

- .. If your leg is severely damaged and we cannot repair it, then we will talk to you about the prospect of an amputation. At Charing Cross Hospital, we have the Holderness Centre, which is a unit purely for the rehabilitation of patients who have had amputations. One of the staff from the Centre will also visit and if you wish, s/he can arrange for you to talk with a patient who has already had an amputation.

Limb prostheses (artificial limbs) are very good and very realistic these days and can return you to a lifestyle very similar, if not the same, as the one you had before your injury. **People do very well after amputations – cycling and even running marathons!**

Other investigations

You may need an angiogram before your reconstructive surgery. This is a special x-ray examination of the blood vessels in your injured leg via your groin and is done under local anaesthetic.

A dye (known as 'contrast medium') is injected into the artery supplying your leg using a catheter (a fine, plastic tube). The dye allows detailed images (pictures) of the blood vessels to be seen using x-rays. We can then see if the blood vessels in your leg are in good enough condition for us to stitch the blood vessels from a piece of tissue or muscle to form a 'flap'.

You will be awake during the test and although you may feel some pressure or pushing at the insertion site to begin with, this should not be painful.

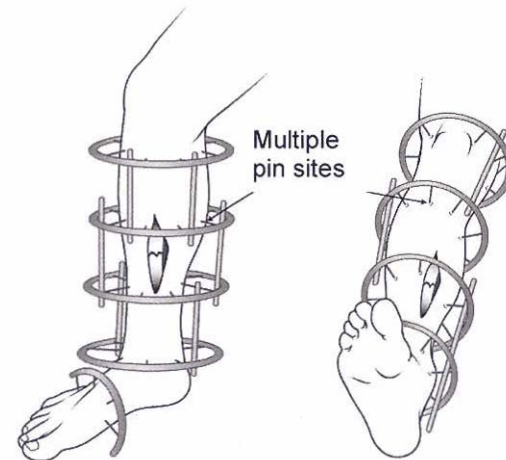
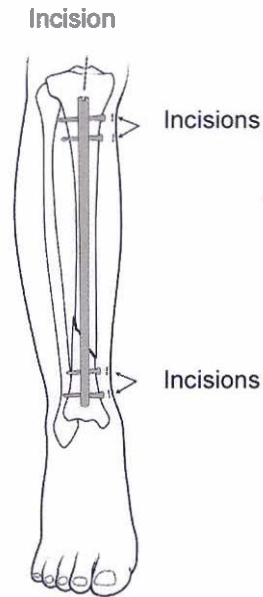
What about the broken bone or open joint?

If you have a broken bone and have come to us from another hospital, then this might have been held together already. If it has not been fixed or the fixator that was used is a temporary one, then the Orthopaedic Surgeons will need to change this.

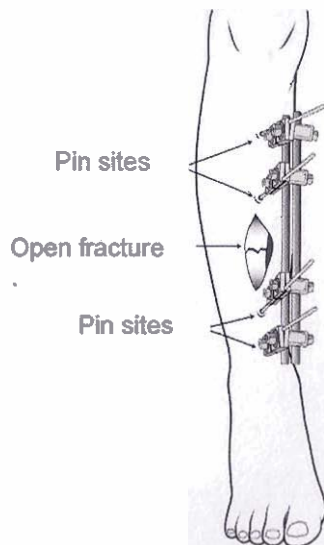
How the fracture is held together depends on several things:

1. How badly damaged the bone is and the pattern of the break.
2. How much bone has been lost in the injury.
3. How clean the wound is and whether there is infection present.

More simple fractures that are not infected involving the middle part of bone can be fixed together using a long nail that passes down the inside of the bone (see illustration opposite). This nail will remain permanently inside your leg within the bone, even after it has healed. Breaks around the ankle can be fixed using metal plates and screws which are also buried under the skin and will also be left there permanently.



Sometimes we use a special fixator, which consists of rings around the legs and wires that pass through the bone (see illustration opposite).



Complex fractures that are in several pieces or those where infection is present, need to be held by an 'external fixator' (see illustration opposite).

This is where 4 metal pins or more are placed into the bone on either side of the break. The pins are then connected together outside of the leg by bars and this holds the break in the correct position. The pins and bars are removed when the bone has healed.

This is called an 'Ilizarov frame' after the surgeon who invented it and gives greater control of the break. It can also be used at a later date to slowly lengthen the bone, if a lot of bone has been lost in the original injury. This will bring the leg back to its normal length.

Please note

The fixation of the bone is usually done by the Orthopaedic Surgeons at the same time that the fracture is covered with soft tissue by the Plastic Surgeons.

What are the risks associated with reconstructive surgery?

With this type of surgery, the risks depend on:

1. The extent of the injury you have suffered, including injuries to other parts of your body
2. The type of reconstruction you will need
3. How fit and healthy you are normally

as well as general risks such as wound infection (5 – 8%), bleeding after the operation (approximately 2%) and thrombosis (blood clots) in the leg (approximately 2%). Reconstruction with a 'free' flap has a failure rate (where the new flap does not survive at its new site) of up to 5%.

Long-term complications include failure of the bone to heal initially or not healing in the correct position (approximately 10%). If this happens, then an operation may be required to either adjust the metalwork (fixation device) or to take some bone from your hip to place around the break, as this will encourage the fracture to heal.

There will also be risks specific to your particular operation. These mainly centre around the reconstruction not working or failing. If this happens, a different option may have to be taken. Your surgeon will discuss this with you in detail before any operation.

What happens after the operation?

You will wake up in the Recovery Room before you are taken back to the ward.

If all is well, you will be able to eat and drink the day after your operation.

Please tell us if you are in pain or feel sick. We have tablets/injections that we can give you as and when required, so that you remain comfortable and pain free. However, you may have a device which you can use to control any pain yourself. This is known as a 'PCA' (Patient Controlled Analgesia) pump and you will be shown how to use it.

You may feel light-headed or sleepy after the operation. This is due to the anaesthetic and may continue until the next morning. It is also common to have a sore throat for 2 or 3 days after having a general anaesthetic. This sometimes happens because the anaesthetist (specialist doctor) has to pass a tube down your windpipe to give you the anaesthetic gases that keep you asleep during the operation.

The nurses will take your temperature, pulse and blood pressure at regular intervals to check your recovery and it will sometimes be necessary to wake you up to do this. It is very important that we monitor your progress after your operation, so please be patient with the nursing staff during this time.

A catheter (tube) will be inside your bladder to drain urine away and to allow the nurses to closely monitor your urine output after the operation. The amount of urine you produce each hour is a good measurement of whether you are dehydrated or not and we can give you more fluids if needed. The tube will be removed when your condition is stable and you are able to move around.

A 'drip' (also known as a 'line') will be attached to a needle in your arm or neck to provide you with fluids and prevent dehydration.

'Drains' (tubes) are sometimes used to remove any fluid that collects in the wounds either at the injury site or the area where the flap has been taken from for the reconstruction. The drains will be removed when they are no longer collecting any fluid. However, sometimes fluid can re-accumulate after the drain has been taken out. We can usually remove this fluid using a syringe and needle.

1. Recovery after direct wound closure

If we were able to close your wound with stitches, the physiotherapists will visit you the day after surgery and help you to start moving around (known as 'mobilising'). We will ask you to keep your leg elevated (raised) the rest of the time. If all is well, you could be home within 3 days of having the operation.

2. Recovery after wound closure with a skin graft

If your wound had a skin graft, you can sit out of bed the next day, but you must keep your leg elevated (raised). We may have put a plaster of Paris cast on your leg to keep it still and help the graft to heal. We will inspect the graft approximately 5 days after surgery. At this stage, you should be able to get up and start to move around with the assistance of the physiotherapists. This is known as 'mobilisation'.

3. Recovery after wound closure with a local flap and skin graft

This is similar to recovery after a skin graft alone (see above). The flap will be checked regularly by both doctors and nurses. About 5 days after surgery, the graft will be inspected and your mobilisation will begin.

4. Free flap reconstruction

You will be cared for on the HDU (High Dependency Unit) and the flap checked every hour for the first 3 days after your operation. You will have a special warming blanket on to encourage blood flow within the flap. This will keep the reconstruction alive. On the 4th day after surgery, most of the lines and the catheter will be removed. You will be able to sit out of bed and begin to 'dangle' the flap. This means hanging your leg over the bed or letting your foot drop to the floor for 10 minutes at a time. This gets the reconstruction used to its new position.

Approximately 5 days after your operation, you may be able to get up and start to move around with the assistance of the physiotherapists. You may then need to stay in hospital for up to 2 weeks or more, depending in your recovery.

5. Recovery after amputation

If you and the doctors have agreed that an amputation is required, then the Holderness Centre team will have seen you before your operation. Depending on the extent of damage, usually you will be able to attend physiotherapy and the gym within 5 days after surgery. Your length of stay in hospital will be dependent on how long it takes to manufacture your prosthesis (artificial limb) and how comfortable you are with moving around. If you wish, you can go home at weekends during this time.

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When can I go home?

This depends on the type of surgery you have had. A skin graft or 'local' flap will mean you will need to stay in hospital for 5 – 7 days.

If you have had more complex surgery, then you will need to be closely monitored for up to 4 days after the operation. You may then need to stay in hospital for up to 2 weeks or more, depending on your recovery.

If you have had an amputation, then on average, your stay could be up to 5 weeks from the date of your admission to hospital.

If possible, please arrange for someone to come and collect you by car on the day of your discharge home, as you will not be able to drive yourself or travel on public transport. It is important that you make the necessary arrangements for going home unless your doctor feels that there are special reasons why you need hospital transport.

We will give you a 2-week supply of medication to take home with you. Any further medication will need to be prescribed by your GP. Please make sure that you arrange this before the 2-week supply runs out.

How will I cope at home?

We will not discharge you until you are safe to leave hospital and your home circumstances are suitable for you. We are keen for you to get home as soon as you feel able to do so and we are happy that you will be able to cope.

We have a Discharge Nurse who will liaise with your doctors and physiotherapists and social care packages will be arranged to make sure everything is ready for you.

Note for patients going home with an external fixator

You may find it difficult to wear your normal trousers over the frame on your leg. Tracksuit bottoms that have zips or buttons at the heel are ideal, as are stretchy pyjama bottoms or yoga pants.

Alternatively, you may wish to alter an old pair of trousers by sewing a triangle of material into the seam to make them flare out.

Will I need to visit the hospital again?

Yes. We will either give you an appointment before you leave or post one to you.

If you have any queries or concerns about your reconstruction whilst at home, please do not hesitate to contact the Lower Limb Team on 020 8846 1790.

How do I make a comment about my treatment?

We aim to provide the best possible treatment and staff will be happy to answer any questions you may have. If you have any **suggestions** or **comments** about your stay, please either speak to a member of staff; fill in a comment card or contact the Patient Advice and Liaison Service (**PALS**) on 020 8383 0088 or 020 8383 3322. **PALS** staff are able to listen to your concerns, suggestions or queries and help sort out problems on your behalf.

Alternatively, you may wish to express your concerns in **writing** to:
The Chief Executive
Hammersmith Hospitals NHS Trust,
Hammersmith Hospital, Du Cane Road,
London W12 0HS