Hampshire Hospitals
NHS Foundation Trust

Department of Trauma & Orthopaedic Surgery

Having anterior cruciate ligament (ACL) reconstruction

Information for patients, relatives and carers

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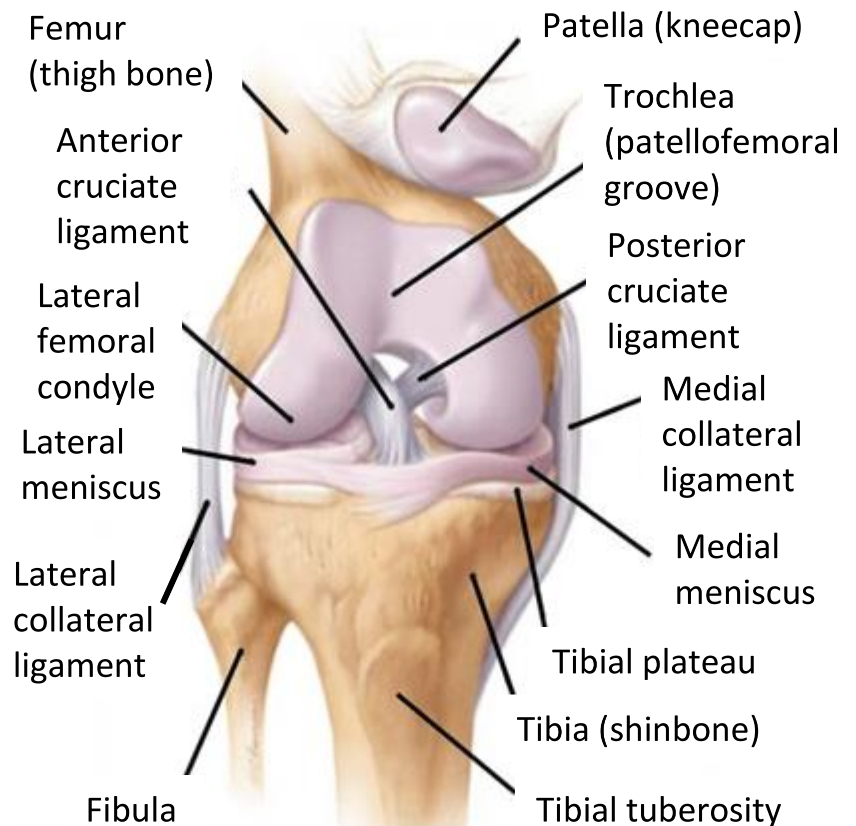
What is the anterior cruciate ligament?

The anterior cruciate ligament (ACL) is an important ligament located in the knee joint.

It is responsible for providing stability and controlling the forward movement of the tibia (shin bone) in relation to the femur (thigh bone).



The ACL is one of the four main ligaments in the knee, along with the posterior cruciate ligament (PCL), medial cruciate ligament (MCL), and lateral collateral ligament (LCL).

The ACL is susceptible to injury, particularly during activities involving sudden stops, changes in direction, or direct impact.

When the ACL ruptures (tears), it can lead to instability in the knee joint.

This then limits your ability to participate in physical activities and increases the risk of further damage to other structures in the knee.

What treatment options are available for my ruptured ACL?

This will depend upon how active you usually are, as well as your age, and any other injuries you may have. Your surgeon will discuss both of the options below with you.

Conservative management

Conservative (non-surgical) management involves using physiotherapy to strengthen the muscles surrounding the ACL and improve the stability of the knee. This may be combined with wearing a knee brace to support the joint during activities.

Surgical management

ACL reconstruction surgery aims to restore knee stability, reduce the risk of further damage, and enable you to return to pre-injury activity levels. It involves replacing the torn ligament with a graft, usually made from your own tissue (known as an autograft) or from that of a donor (known as an allograft).

The graft will be placed, as far as possible, in the position of the normal ACL. It will be held in place by blocks of bone already attached to the graft, screws, or special ACL 'buttons'.

Several graft options are available, each with benefits and risks. The most commonly used graft in the UK is the hamstring graft. Ultimately, the best graft for you will depend on your age and activity level, your surgeon's preference of graft, and potential risks.

There have been several studies comparing grafts, which have shown no significant difference between them. In up to 10% of patients the new graft does not attach to the bone fully. This prevents it from maturing appropriately and the knee is subsequently left with some looseness that may cause it to feel unstable. You can help minimise these risks by doing the exercises that will be given to you by the physiotherapy team.

Hamstring autograft

This involves using one of the hamstring tendons, usually from the same leg as the ruptured ACL. Benefits include a reduced risk of donor site morbidity (infection, pain, and altered sensation from where the graft has been taken) compared to patellar tendon graft, less pain after surgery, and a quicker recovery.

Patellar tendon autograft

With this method, the middle third of the patellar tendon, along with bone from the patella and tibia, is used as the graft. Benefits include predictable graft strength. However, there may be an increased risk of anterior (front) knee pain, patella tendonitis (pain from the kneecap to the shinbone), patellar fracture (broken kneecap), and discomfort when kneeling.

Quadriceps tendon autograft

The quadriceps tendon, which runs from the front of the thigh to the kneecap, along with bone taken from the kneecap, is used in this type of graft. Benefits include a more predicable graft size, potentially a quicker recovery, and less anterior (front) knee pain compared to a patellar graft tendon graft. However, there may be an increased risk of patellar fracture (broken kneecap) and donor site morbidity (infection, pain, and altered sensation from where the graft has been taken).

Allografts

These are grafts taken from deceased tissue donors. Benefits include avoiding donor site morbidity (infection, pain, and altered sensation from where the graft has been taken) and shorter operating time. However, there is a slightly higher risk of infectious disease transmission from the donor, higher risk of the graft re-tearing in certain patients, and these grafts take longer to attach to the bone.

What risks are associated with ACL reconstruction surgery?

As with any anaesthetic and operation, there are risks associated with this type of surgery. We will discuss risks specific to you at your pre-assessment clinic appointment a few weeks before surgery.

Risks associated with ACL surgery include:

- Wound infection
- Chest infection (usually treated with antibiotics and breathing exercises). If you have stopped smoking and are free of COVID-19 (coronavirus) symptoms for at least six weeks before surgery, your risk is lowered considerably.
- Stiffness (arthrofibrosis) preventing full straightening or full bending of the knee. This usually improves with physiotherapy, but you may need a further operation
- Ongoing instability of the knee, due to gradual stretching of the graft during activities, or further sports injury.

Additional risks

Deep vein thrombosis (DVT) and pulmonary embolus (PE)

The risk of having a DVT (blood clot in the veins of the leg) or PE (blood clot in the lungs) is increased in certain circumstances. We will assess the risk specific to you before surgery. It is very important that you tell us if you have ever had a DVT or PE previously, or if any family member has ever had one.

We always try to reduce the risk of DVT and PE, initially by using special pumps for your feet or calves (which also help to reduce post-operative swelling in the leg) and encouraging you to start walking around as soon as possible after surgery. We may also give you blood-thinning injections or tablets. We will discuss this with you and tailor it to your individual needs.

Haematoma

It is common for bruising to develop around the wound and extend down towards your knee. This is usually not a problem and should improve within a few weeks. However, occasionally a more significant bruise (known as a haematoma) occurs under the wound, and this can delay healing. If this happens, you may need to have a small operation to release the blood that has collected under the wound. A haematoma may slow your recovery, but it rarely affects the outcome of the operation

A haematoma is more likely if you are taking blood-thinning medication such as apixaban, rivaroxaban, aspirin, warfarin, or anti-inflammatory medicines (such as ibuprofen or Voltarol). Please tell us if you are taking this type of medication when you come in for your pre-assessment appointment. Stopping the medication for a period of time before your operation usually reduces this risk. We will advise you if and when you need to do so.

Wound and chest infections

To help prevent infection, we will take swabs from your skin and nose to check for MRSA/MSSA bacteria and make sure that there are no cuts, wounds, or infections on your skin before your operation. We will give you prophylactic (preventive) antibiotics to reduce the risk of infection during surgery.

We will also encourage you to mobilise (move around) as soon as possible after your operation.

What type of anaesthesia is used for ACL reconstruction surgery?

ACL reconstruction is normally done while you sleep under a general anaesthetic. Local nerve blocks (anaesthetic to numb specific areas) and/or regional (spinal) anaesthesia (where your legs and lower body are numbed) may also be used during the operation so that you will be in less pain when you wake up. You will meet the anaesthetist just before the operation, who will discuss your options, and help to advise you.

Risks associated with having a general anaesthesia

- Risk of urinary retention (difficulties emptying your bladder), especially in men. You may need a catheter (a tube inserted into your bladder to drain your urine) for a short time.
- Potential damage to teeth or crowns and/or a sore throat due to the tube the anaesthetist places in your throat to keep you asleep during the operation.
- Risk of nausea (feeling sick) and vomiting (being sick).
- You may need oxygen for a short time to support your breathing after surgery.
- When you regain consciousness (wake up) in the recovery room, you may be in pain.

How long will my ACL reconstruction last?

This varies from person to person and will depend on your age, weight, activity levels and any other medical conditions that you have.

Understanding rehabilitation for ACL injury

For your surgery to be successful, it is essential for you to understand the role of the muscles surrounding your knee. You will need to take part in a comprehensive rehabilitation programme (physiotherapy exercises) that target these muscles and to improve stability, strength, and functional recovery of the knee joint.

The **quadriceps femoris** are a group of four muscles at the front of the thigh which assist in straightening the knee (also known as knee extension). It is important after ACL surgery to focus on regaining full range of motion and strength of these muscles, to stabilise the knee and prevent further injury.

The **hamstrings** are a group of three muscles at the back of the thigh which help with bending (also known as knee flexion) and stabilising the knee. Rehabilitating and strengthening your hamstrings after surgery is essential for restoring balance and reducing the risk of re-injury. If using a hamstring graft, only one of the hamstring tendons (which attach the hamstring muscles to your bones) will be used.

The **gastrocnemius** muscle in the calf also helps with bending the knee (knee flexion) and contributes to overall lower limb stability. Strengthening the gastrocnemius is important for restoring your ability to bend your knee normally and preventing strain on your knee joint.

Is there anything I should do to prepare myself for surgery?

While you are waiting for your ACL reconstruction, there are a few things you can do that may help you to recover more quickly from surgery.

Exercise

The physical condition of your knee at the time of surgery is critical to your recovery.

We may ask you to attend for physiotherapy before your operation to:

- ✓ Strengthen your hamstrings, which work with the quadriceps to help with bending and balance
- ✓ Strengthen your quadriceps, which assist in stability and straightening your leg
- ✓ Improve proprioception (your body's ability to adjust position to balance)
- ✓ Achieve full range of movement
- ✓ Minimise swelling.

General health

Keeping yourself as fit and healthy as possible before your operation will help with your recovery afterwards. If you develop any new health problems or any other pre-existing medical conditions get worse, please see your GP so that they can be treated before your operation.

If you are a smoker, we strongly recommend that you stop smoking or at least cut down before your operation. This is because you are more likely to get a chest infection if you smoke, and the nicotine can affect wound and bone healing. For help with quitting smoking, contact Smokefree Hampshire on 0800 772 3649 or visit their website at www.smokefreehampshire.co.uk

If you drink alcohol, please do not drink more than 14 units a week, as this can also affect wound healing.

If you are overweight, losing weight will be of benefit before and after your operation, as it will reduce the load (weight) taken through your knee. It will also mean that the surgeon can make a smaller incision (cut) for your operation, and you will have a smaller scar. Larger legs are more likely to have wound problems and have a higher risk of infection. Your GP may be able to refer you to a supervised weight loss programme (such as WW or Slimming World) or provide medication that helps with losing weight. Some patients may benefit from considering weight-loss surgery.

Pain relief

If your knee is painful and you are not taking anything for it, or the medication you are taking is not working, talk to your GP as they may be able to prescribe something to help relieve this.

Foot care

It is very important that you look after your feet, as minor wounds, sores, or infections may result in your operation being cancelled. If you visit a chiropodist, please make sure that you tell them you are going to have surgery. If you have any concerns about your feet, please make an appointment with your GP.

Skin care

If you have any cuts, abrasions (grazes), rashes, or other skin conditions, please see your GP as these may also delay your operation if left untreated.

What happens before my operation?

Pre-assessment clinic

A few weeks before your operation, staff from the pre-assessment clinic will contact you and ask you to complete a questionnaire. This is to check you are medically fit for the operation and the anaesthetic. If needed, they will arrange routine tests such as blood, urine, ECG (heart trace) and x-rays.

They will also take skin swabs to test for MRSA (methicillin resistant staphylococcus aureus) and MSSA (methicillin sensitive staphylococcus aureus). These are both normally harmless bacteria that can sometimes cause wound infections. To help minimise the risk of wound infection, they will give you special soap to wash with.

This will get rid of any MSSA before your operation. If you test positive for MRSA, we will admit you to a side room during your hospital day, to prevent spread to the other patients on the ward.

The pre-assessment team will give you instructions on when to stop eating and drinking before your operation, and whether you need to stop taking any medication.

They will ask you to sign a consent form for the surgery to confirm that you understand the risks, benefits, and alternatives to the proposed treatment. This is also an opportunity to ask any remaining questions that you may have.

All arrangements for your discharge home after surgery **must** be made before you come into hospital. You will be able to return home the same days as your operation unless you are planned for an overnight stay as discussed with your consultant. If you think there may be a problem making these arrangements, please tell us as we can help.

What to bring with you on the day of surgery

- ✓ Any regular medication you take, in its original boxes or containers if possible.
- ✓ Appropriate footwear (trainers or well-fitting shoes that can easily be put on using a shoehorn, **not** mules, sandals, or flip flops).
- ✓ Nightwear, underwear, toiletries, and a change of clothes if we have advised you will need to stay overnight.
- ✓ Mobile phone/tablet and charger(s).
- ✓ Something to read.

What to leave at home

- ✗ Valuables such as jewellery and watches (except wedding rings, which can be taped into place).
- ✗ Contact lenses (please wear glasses instead).
- ✗ Large amounts of cash.

Please **do not** wear make-up on the day of surgery and remove all nail polish from your fingers and toes.

What will happen on the day of surgery?

We will admit you to the ward on the day of your operation.

Nursing assessment

A nurse will welcome you to the ward, check your details and complete a nursing assessment. They will record your temperature, pulse, respiration rate, oxygen saturation levels and blood pressure. If the anaesthetist has prescribed any pre-medication for you, the nurse will administer it. Please do ask any questions you may have.

We will give you a pair of foot or calf pumps. These are inflatable devices which help with your circulation, reduce leg swelling and help to prevent deep vein thrombosis.

Anaesthesia

The anaesthetist will visit and examine you to make sure you are fit for surgery. They will discuss with you the type of anaesthesia that will be used, the methods of pain control available, and prescribe any medication to be taken before your operation.

Surgical team

Your consultant (or a member of their team) will mark the appropriate leg for surgery and ask you to confirm your consent to have the operation.

Therapy

A therapist will give you a pair of elbow crutches adjusted to your requirements and show you how to use them. They will discuss what to expect from rehabilitation after surgery and answer any questions you may have.

Going to theatre

We will ask you to put on a theatre gown. Theatre staff will collect you from the ward and take you to theatre for your anaesthetic before the operation begins.

What happens immediately after my operation?

You will wake up in or be taken to the recovery area. Your wound will be covered with a dressing and the inflatable foot/calf pumps will be on your feet/lower legs. You may have an oxygen mask on your face and be connected to an intravenous drip to prevent dehydration. If you have had other knee procedures done at the same time as your ACL operation, such as a meniscal repair, you may also have been fitted with a brace.

If you have had regional (spinal) anaesthesia, your leg will feel weak and numb due to the local anaesthetic (known as nerve blocks) that the anaesthetist injected before your operation. This can take a few hours to wear off. You will remain in the recovery area until your condition is stable, and your pain is well controlled.

If you have had a general anaesthetic, and we have used nerve blocks or spinal anaesthesia for additional pain relief, your leg(s) will feel weak and numb. You will remain in the recovery area until your condition is stable, and your pain is well controlled.

Back on the ward

Nursing staff will regularly check your temperature, pulse, respiration rate, oxygen saturation level and blood pressure (known as 'obs' or observations). They will also monitor your pain control and give you pain relief as needed. We will encourage you to start drinking fluids straight away and to gradually start eating again.

Your therapist will help you to stand and walk with crutches as soon as possible after surgery. You will need to stay on crutches for at least two weeks until your physiotherapist has assessed your progress.

Although this may be painful to start with, moving around will speed up healing and aid your recovery. It will also improve circulation and reduce swelling. Ice packs will also help to manage swelling and the pain associated with it.

It is important that you do the exercises at the back of this booklet three to four times a day, starting on the same day as your surgery. We will refer you to your local physiotherapy department for an ACL rehabilitation programme.

If you do not feel that your pain is being managed adequately, please speak to one of the doctors or a nurse.

When can I go home?

You will be ready for discharge when the nurses, doctors, and therapy team (physios and therapists) have checked that you are ready and safe to go home. **Most people are able to go home on the same day as their operation.**

Before leaving the hospital, you should:

- ✓ Be walking safely with crutches, and have practiced going up and down stairs
- ✓ Understand your home exercise programme and what you should avoid doing for the next week.

On discharge from the ward, the nursing staff will give you:

- ✓ Medication as appropriate
- ✓ A copy of your discharge letter
- ✓ A fit note (sick certificate) for your employer if required
- ✓ Instructions about follow-up care for your wound, removal of stitches, and any further appointments, such as for physiotherapy.

When you walk, you can put as much weight on your leg as you can tolerate, unless we have told you not to. Putting weight on your leg will not damage the reconstruction.

However, **standing still for long periods and/or walking too much will cause swelling and slow down your recovery**. It is equally important not to rest for long periods of time with your knee bent, as this will prevent it from fully straightening, which is essential for rehabilitation.

It is important that you follow the exercise programme in the booklet we have given you.

Please rest and elevate (raise) your leg as much as possible for the first two weeks after surgery. Do not place a pillow under your knee when elevating your leg, as this can make it harder to fully straighten your knee. Instead, place the pillow under your calf muscle and ankle, leaving a gap under your knee.

How should I look after my knee at home?

Ice therapy

Using ice packs for 10 to 15 minutes every one or two hours will help to manage your pain. To prevent ice burns, first wrap the ice pack in a clean towel before applying it to your knee.

Walking

Unless your surgeon has advised you not to, you will be able to put as much weight on your knee as is comfortable. It is important that you use crutches to support your knee in the early stages, and to avoid putting additional weight on your other leg when walking.

Your physiotherapist will advise when you can stop using crutches. This is usually when you are in less pain, and you can walk comfortably without a limp.

It is important to keep mobile (move around) after your surgery, as this will minimise the risk of post-operative complications.

Wound care

You may have some numbness on the outside of your wound and the area around your scar may feel warm.

If your surgeon has used glue to seal your wound, you can resume showering at home. You do not need to keep the wound dry, so if the dressing gets wet, replace it with a new one. It is there for your comfort, rather than to protect the wound.

If your surgeon has used clips or stitches, please try to keep the wound dry until it heals. You will need to be more careful while getting washed.

Swelling

It is **normal** to have some swelling around the knee after ACL reconstruction. However, excessive swelling can slow down your recovery. You can help reduce swelling by doing the following:

- × **Do not rest with your knee bent for long periods**, as this will prevent it from fully straightening, which is essential for rehabilitation.
- ✓ **Elevate** (raise) **your leg** above heart level. Ideally, lay flat in bed with your leg on two or three pillows. Avoid placing a pillow directly under your knee, as this can make it harder to fully straighten your leg.

- ✓ **Do your exercises** daily as prescribed. This will help to reduce your swelling.
- ✓ **Gently massage** your knee, moving up towards your hip. This can help to shift fluid and reduce swelling.

Is there anything I need to watch out for at home?

Contact the orthopaedic elective ward you were on if you have any problems with your wound, or if you have increased pain and swelling in your calf. Evenings and weekends, please contact your GP or call 111 for advice if you are worried.

When can I get back to normal?

Driving

It is possible to start driving again two weeks after surgery, only if you are able to do an emergency stop safely. It is important that you advise your insurance company that you have had surgery to ensure that you would be covered in the event of a claim.

Returning to work

This will depend upon the physical requirements of your job. If you are unsure, please discuss with your consultant.

If you have a sedentary (sitting down) or office job, then you may be able to return to work between four and six weeks after surgery.

If you do heavy manual work, you may need to take three months off.

Returning to sport

You can start swimming six weeks after your operation. Please avoid doing breaststroke initially.

Running, playing sports, and other impact activities can be started only when recommended by your physiotherapist. This is usually no earlier than four months after surgery, and only after regular check-ups.

Will I need to return to the hospital?

Yes.

- About two weeks after leaving hospital, you will have an appointment at the **outpatient physiotherapy clinic** for a check-up and to progress your exercise programme.
- As part of your rehabilitation programme, we will ask you to attend **weekly exercise classes** at your local physiotherapy department.
- You will also have an **outpatient appointment** with your consultant, or a member of their team, about six weeks after your operation.

Contact us

If you have any questions, problems or need advice once you are at home, please do not hesitate to contact us

Basingstoke and North Hampshire Hospital

- Orthopaedic Ward (D5):
  Switchboard: 01256 473202, then ask for the Elective Orthopaedic Ward
- Orthopaedic Therapy Services (occupational therapy and physiotherapy)
  Telephone: 01256 313205
- Physiotherapy Outpatient Department
  Telephone: 01256 314707
- Email: oefujointreplacementclinic@hhft.nhs.uk

Royal Hampshire County Hospital

- Elective Orthopaedic Ward
  Switchboard: 01962 863535, then ask for the Elective Orthopaedic Ward
- Orthopaedic Therapy Services (occupational therapy and physiotherapy)
  Telephone: 01962 825670
- Physiotherapy Outpatient Department
  Telephone: 01962 824818
- Email: oefujointreplacementclinic@hhft.nhs.uk

Alton Community Hospital

- Physiotherapy Outpatients
  Telephone: 02382 310383
- Email: Therapy.ServicesAlton@hhft.nhs.uk

Your feedback is important to us

Comments, concerns, compliments, and complaints

If you have any comments, concerns, compliments, or complaints about your care, please let us know as soon as possible. Please speak to the nurse in charge, ward sister or matron so that we can help to resolve your concerns quickly.

PALS and complaints

You can contact the PALS and complaints team by telephone on 01256 486766 or via email at PALSandcomplaints@hhft.nhs.uk

This booklet is available in other formats, including large print and Easy Read, from the PALS team.

www.hampshirehospitals.nhs.uk

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