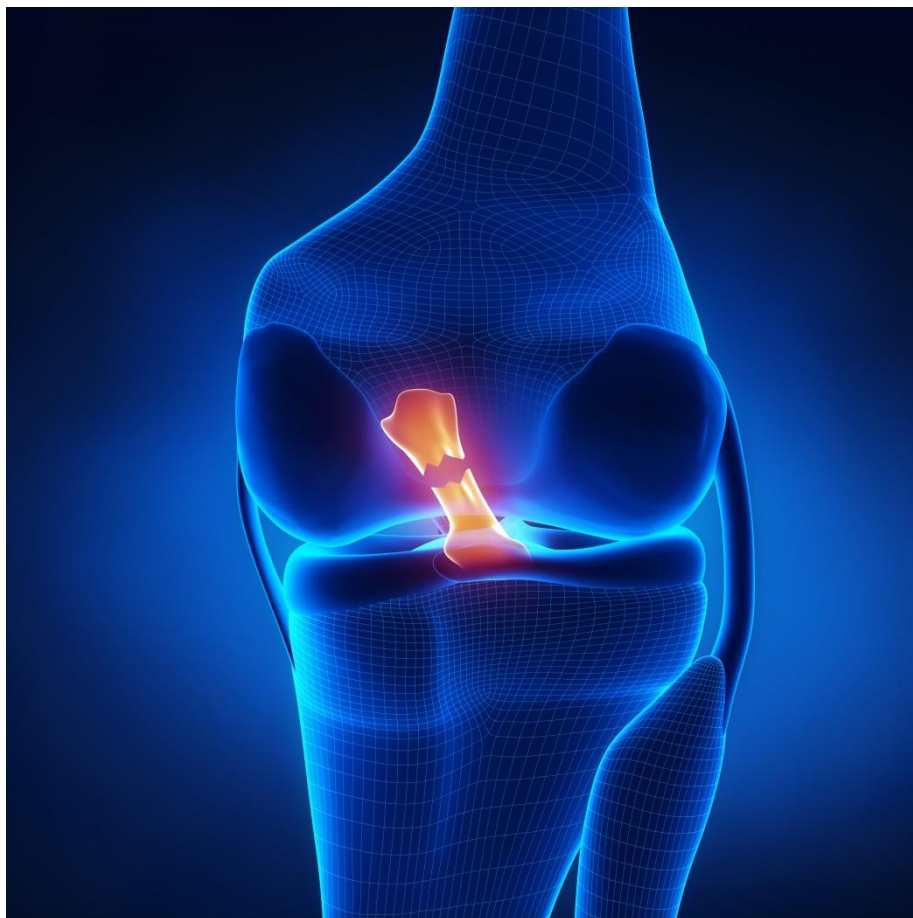




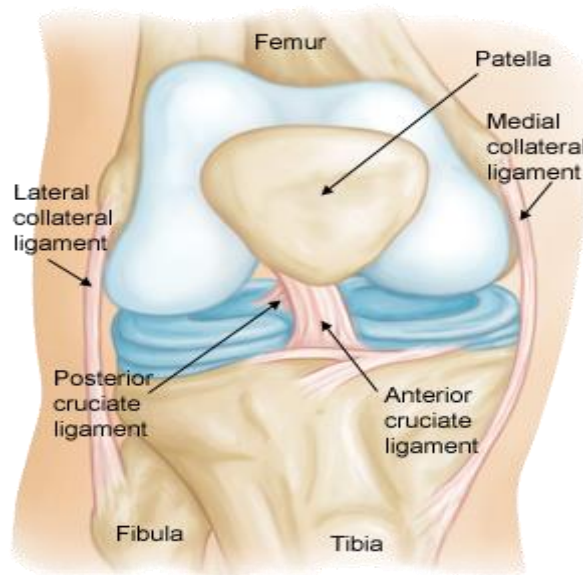
ANTERIOR CRUCIATE LIGAMENT (ACL) INJURY

Information for patients



What is the ACL?

The ACL (Anterior Cruciate Ligament) runs through the centre of the knee from the back of the femur (thigh bone) to the front of the tibia (shin bone).



The ACL is a major stabiliser of the knee along with other ligaments and knee muscles. Its main function is to prevent the tibia from sliding forwards. It is also very important in controlling rotational movements of the knee such as twisting and sudden changes of direction.

In addition, the ACL provides very important feedback information regarding balance and movement of the knee joint. This feedback significantly contributes to the control of movement and coordinated muscle activation and strength around the knee.

ACL Injury

The ACL is classically injured during a sudden change of direction, twisting or jump landing that has gone wrong. It is often associated with a “popping” sensation, giving way of the knee and large swelling over subsequent hours. Initially you may not be able to weight bear.

Associated injuries

You may have associated injuries alongside your ACL injury. These may include tears to the shock absorbers in your knee (the menisci), cartilage (osteochondral) defects or additional ligament injuries. These associated injuries may alter your management and timescales for recovery.



The implications of ACL injury

When the ACL has been injured, activities and sports which involve twisting, pivoting, jumping and sudden changes in direction can become difficult. You *may* find that your knee gives way or you have a lack of trust in your knee and therefore be unable to return to your usual activities.

Repeated giving of the knee *may* lead to injury of the cartilage (smooth covering of bone) and / or of the menisci. These secondary injuries are associated with higher risk of osteoarthritis later in life.

Can the ACL heal?

In a full thickness rupture, the ACL is normally torn at its femoral (thigh bone) attachment or mid substance and causes bleeding into the knee joint. Sometimes the ACL attaches to the PCL (Posterior Cruciate Ligament) to provide limited stability but it does not usually heal once pulled off the femur or divided mid-substance.

Does a partial injury exist?

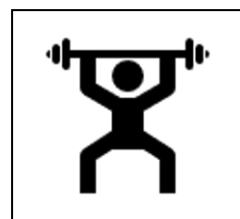
Yes. Although this is a rare injury. In this scenario the ACL can heal reasonably well as there are still some fibres remaining intact which act as a scaffold for the healing process. Treatment depends on the clinical stability of the knee and in these cases; patients will be given a bespoke treatment pathway dependent on their needs and expectations.

Management of ACL injuries

Not all ACL injuries require surgery. After the initial injury, pain and swelling will normally settle and it is usual to be able to return to walking and straight line running with physiotherapy guidance.

Non-operative management

After an ACL injury, it is important to restore normal movement, muscle strength and proprioception (balance and movement control). You will therefore be offered physiotherapy which will involve graded exercise and education.



With appropriate rehabilitation focusing on strength and single leg control, some patients are able to achieve functional stability without an ACL reconstruction. Decisions are made on an individual basis and it is our aim to provide a bespoke treatment pathway.



Surgical management

Surgical management is advised for patients with functional instability or those who wish to return to at risk sports and activities (e.g. Netball, basketball, football, rugby).

The primary aim of surgery alongside post-operative rehabilitation is to stop the knee giving way. Other aims include:

- To allow individuals to return to their normal daily and sporting activities.
- To increase the confidence an individual has in their knee.
- To be “chondro protective”: to protect against potential secondary injuries of the menisci and cartilage.

It is important to understand that good surgery and rehabilitation does not result in a “normal” knee. However, published research shows that approximately 80-90% of individuals consider their knee to function normal or nearly normal following surgery. Return to sport can be more variable and is influenced by the length of time since injury, fear of re-injury and personal / work factors.

It must be emphasised, that reconstructing the ligament alone does not guarantee success. Surgery without appropriate post-operative rehabilitation can result in a higher risk of failure, ongoing instability and anterior knee pain. You are expected to follow an exercise programme as guided by your physiotherapist three-four times per week for a minimum of **1 year** depending upon your individual goals.

ACL Reconstruction

Pre-operative preparation

You will be advised on appropriate pre-operative rehabilitation to “get the knee ready” for surgery.

Before surgery can be considered there must be good range of movement, with the knee being able to lock out fully (full active extension) and minimal swelling.

It is also important to maximise the strength of your quadriceps, hamstrings and gluteal muscles prior to your surgery. Research suggests this will help optimise your post-operative outcome.

The surgery:

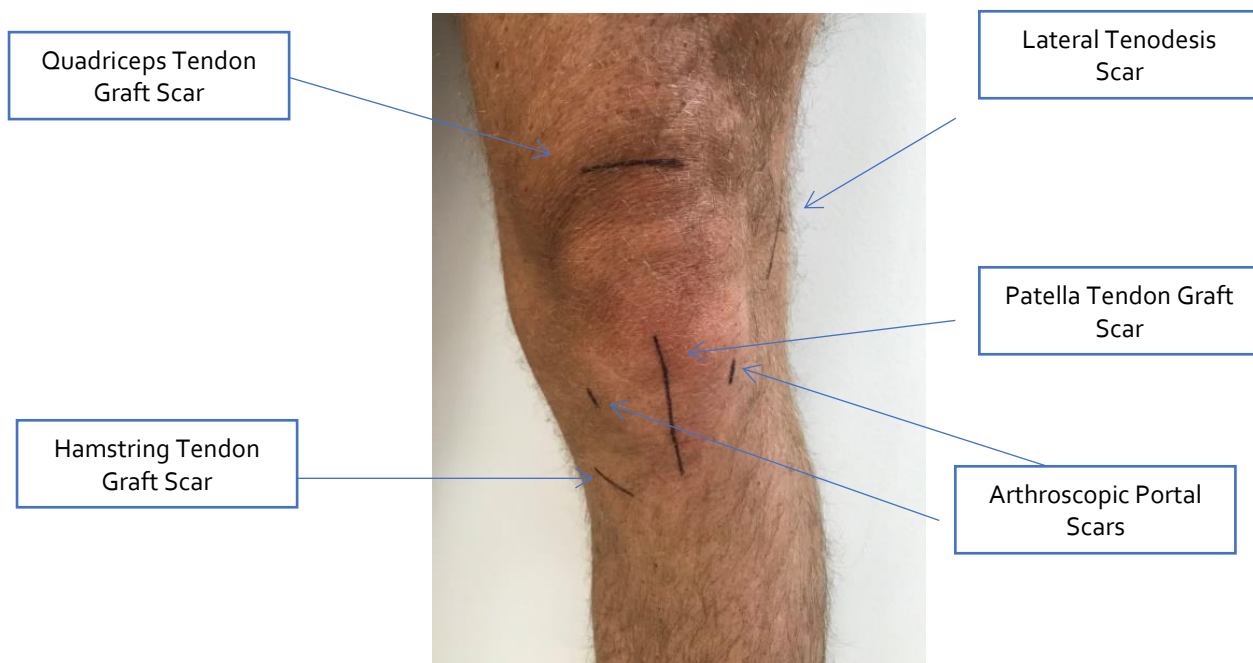
The operation takes approximately 60 to 90 minutes and is performed arthroscopically (key-hole). In general the ACL is replaced with a graft from your own tissue. The procedure is performed in Day Surgery and you normally go home the same day.



Graft choices:

- 1) *Hamstring tendons* (semitendinosus and/or gracilis). These two tendons are usually taken through a small incision on the front, inner aspect of the tibia (shin bone).
- 2) *Patella tendon (Bone Patella Tendon Bone)*. The patella tendon graft is made from the central strip of the patella tendon that runs from the patella (knee cap) to the tibia (shin bone). A small piece of bone is kept attached at either end. This involves a larger incision which runs vertically down over the knee cap.
- 3) *Quadriceps tendon*. This graft is taken from a small incision above your knee cap and is made from the central strip of the quadriceps tendon which attaches your quadriceps (thigh muscle) to your patella (knee cap).
- 4) *Allograft*: this is a donor graft. It is used in rare circumstances.

Your surgeon will discuss graft choices with you and choice may depend on your examination and sports.



The new graft is inserted into the knee through a tunnel in the tibia and secured into a femoral tunnel. The graft is secured either with screws or another fixation device which usually remains in place and rarely needs to be removed.

Lateral Tenodesis

Some patients are offered an additional procedure called a Lateral Tenodesis. This involves a lateral incision (on the outside of your knee). A 1cm strip of the Iliotibial Band (ITB) is then taken and passed deep to your Lateral Collateral Ligament (LCL) and attached to your femur (thigh bone).

The aim of this procedure is to provide extra stability to the knee in individuals who are undergoing revision ACL reconstruction surgery or who may be hypermobile (have extra movement). Your consultant will discuss this with you if deemed appropriate. Having a lateral tenodesis often can slow your rehabilitation down in the early phases.



Risks

Fortunately serious complications are rare. It is important, however, that you look after your knee and, if possible, identify any problems early so that they can be treated quickly.

- Superficial wound infection (which is rare occurring in less than one in 500 patients).
- Deep infection: this is a rare but very serious complication. If it occurs you will require multiple surgeries to wash out the knee and a long course of antibiotics.
- Deep Vein Thrombosis (DVT) is rare.
- Numbness or altered sensation on the outside of your knee and or shin due to irritation of the infrapatellar branch of saphenous nerve.
- Anterior knee pain (pain at the front of your knee / around your kneecap) can occur in one in four individuals and can persist for up to nine months. This usually improves with specific rehabilitation and more importantly can be prevented by appropriate early rehabilitation.
- Re-rupture of the graft can occur in 5-8% of operations in the longer term. This is similar to the risk of rupturing the ligament in the other knee. Failure to adhere to the rehabilitation programme leads to an exponential rise in the re-rupture rate.

Potential problems associated graft choice:

Hamstring Tendons: medial hamstring pain and / or ongoing weakness can occur in one out of three patients during their rehabilitation phase. This is minimised by following your post-operative rehabilitation.

Patella Tendon (Bone Patella Tendon Bone B-PT-B): increased risk of anterior knee pain especially when kneeling in the longer term. Patella fracture is a rare complication. In the event of a patella fracture you would need surgery for fixation of the fracture. Patella tendon rupture is rare.

Quadriceps tendon: there is a risk of anterior knee pain but this is thought to be lower than the risk in B-PT-B. Like the B-PT-B, Patella fracture and Quadriceps tendon rupture is a rare complication. It is important to understand this is a relatively new graft and so long term data is limited.

Immediate Post-Operative Management

After surgery you will have a padded dressing covering your knee. This will be removed before discharge. Pain following surgery varies considerably between individuals but you are most likely to have some soreness within your knee and from the graft harvest site. You will be advised on appropriate pain medication before discharge.

It is very important to control your knee swelling by resting and elevating your leg as much as possible for the first 48 hours. You should also apply ice regularly, wrapped in a damp tea-towel, for no longer than 20 minutes at a time, repeating every two hours. You need to keep your dressing dry however.



The Rehabilitation

The rehabilitation following ACL reconstruction is a 9-12 month programme broken into 4 main stages which overlap. You will be guided through the phases by your physiotherapist.



- 1. Recovery from surgery:** swelling management, early motion and basic movement retraining, including gait (walking) re-education.



- 2. Progressing limb loading, basic strength training + neuromuscular control (balance and movement).** Regain cardiovascular fitness.



- 3. Return to running and jump-land control.** Focus on preparation for return to running and sport. This involves higher level rehabilitation including plyometric (jumping / hopping) drills.



- 4. Athletic enhancement and return to sport.** To ensure you are ready to return to sport you will need to pass our return to sport criteria which includes strength measures, movement control analysis and hop testing.

Early Post-Operative Recovery

You will be seen by a physiotherapist who will explain your post-operative exercises and precautions, as well as supplying you with elbow crutches to aid walking. You are allowed to put as much weight through your leg as you can tolerate unless advised otherwise by your physiotherapist.

Discharge Instructions

- Keep your wound dry until healed. Showering is possible if you have a waterproof dressing but this should not be removed until you come back to clinic within 14 days of surgery.
- Continue with your exercises you have been shown.
- Continue with your swelling control through regular ice application and elevation of your leg.



Outpatient Physiotherapy

You may choose to have your outpatient physiotherapy here at Chelsea and Westminster Hospital or more locally if it is more convenient for you. If you choose to have your physiotherapy at Chelsea and Westminster Hospital you will be contacted and will have your initial appointment within 7-14 days.

Orthopaedic Knee Team Follow-up appointments

You will be reviewed by one of the Orthopaedic Knee Team at 2 weeks, 6 weeks and 3 months post-surgery. You are then reviewed in our Physiotherapist led Knee Review Clinic at 6 months and 12 months post-surgery.

National Ligament Registry

For information on Anterior Cruciate Ligament injuries and to enter your data on the registry please visit www.uknrlr.co.uk.

Approximate Timescales for return to activities

These timescales provided are for guidance purposes but require confirmation by your surgeon and/or physiotherapist.

Activity	Approximate Timescales
Work	Sedentary work: 3-4 weeks Manual jobs: 6-12 weeks
Static Cycling	From 4 weeks
Driving	4-6 weeks as a rough guidance. You need to notify your insurance company of your operation.
Swimming	6 weeks (front crawl leg kicking only with knee locked straight)
Cross trainer/Rowing machine	From 6 weeks
Road cycling	From 3 months
Jogging	From 4 months (after passing return to run criteria)
Golf	From 6 months
Contact sports	From 9 months (after passing return to sport criteria)
Skiing	From 9 months (after passing return to sport criteria)



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Patient Advice & Liaison Service (PALS):

If you have concerns or wish to give feedback about services, your care or treatment, you can contact the PALS office on the Ground Floor of our hospitals near the main reception.

Alternatively, you can send us your comments or suggestions on one of our comment cards, available at the PALS office, or on a feedback form on our website
www.chelwest.nhs.uk/pals.

We value your opinion and invite you to provide us with feedback.

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