

ACL Reconstruction

For a serious knee injury



A speedy return to the activities you love

After an ACL injury, to help your speedy recovery, knee surgery is often the best option. Let's explore this injury and its treatment...

Are you experiencing the following symptoms?

- Shooting pain in your knee joint
- Swelling of the knee limiting your ability to fully bend it
- Instability when moving
- Inability to weight-bear

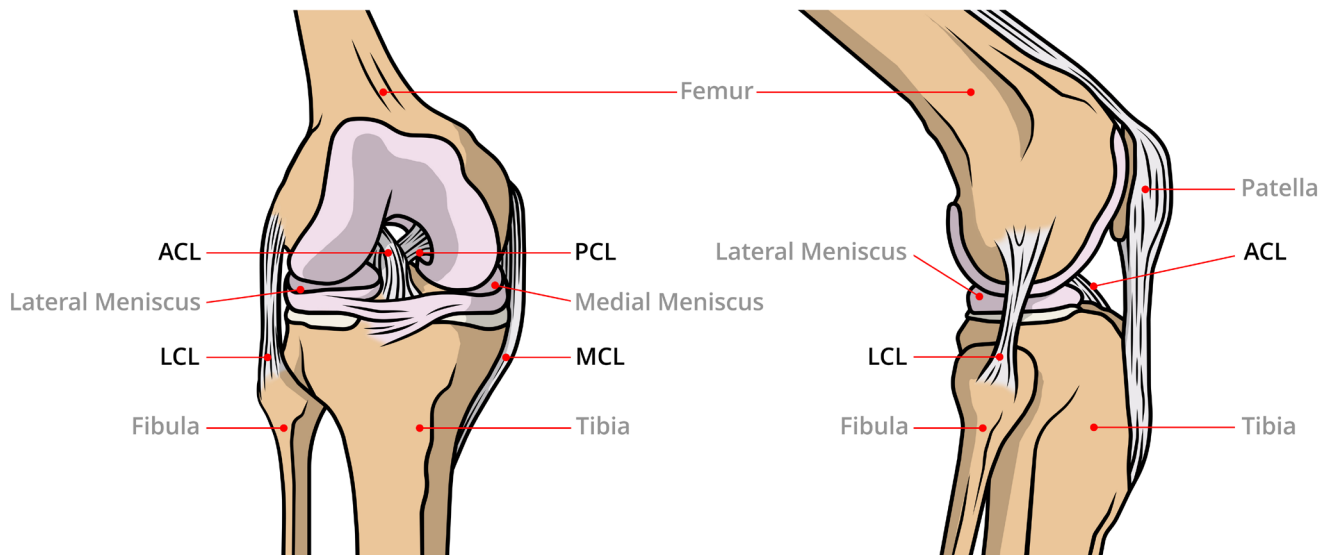
These symptoms are likely caused by damage to your Anterior Cruciate Ligament (ACL). When your ACL is torn, partially or completely, or when one end of the ligament and a bone fragment separate from the rest of the bone, then knee surgery is the best option.

Consequences of ACL rupture

- The immediate consequence of ACL rupture is loss of constraint on the forward movement of the tibia with respect to the femur.
- In the long term, if the injury is not attended to, because of the loss of constraint on the tibial movement the joint may become gradually looser leading to its instability, and a curtailed quality of life.

What is the ACL? And what is a ligament?

- A ligament is a strong band-like structure that is made of a protein called collagen and connects two bones of a joint.
- Four ligaments control the movement of the knee bones and stabilise the joint (see the following image).
- The Anterior Cruciate Ligament (ACL) is one of those four ligaments that connect the knee bones, the Femur (thigh bone) to the Tibia (shin bone).
- The primary function of the ACL is to control/constrain/limit the forward movement of the tibia against the femur and so it contributes to the stability of the knee.



ACL injury

- An ACL partial tear or complete rupture is a knee injury that occurs frequently on the sporting field, but also to people from all walks of life in road traffic and other accidents.
- As the ACL contributes to the knee stability, a tear or rupture requires reconstruction.

Statistics

- The true number of ACL worldwide injuries is unclear, but anecdotally, it is estimated that, 600,000 ACL reconstruction procedures are performed each year worldwide. The number of injuries will naturally exceed the number of reconstructions.
- It is estimated that there are 75 ACL injuries per 100,000 of the population of which 45 are reconstructed

Most publications on the subject report local studies ie in individual countries. These are easily searchable on the internet.

Treatment Options

- **Conservative:** by this we mean no surgery is performed, and you, the patient would be recommended to have physiotherapy and exercise to strengthen the extensor knee muscles, the quads.
- **Surgical:** Reconstruction of the ACL is a well-developed surgical procedure that's frequently performed especially on active individuals, especially in sport or intense physical job.

Materials surgeons use for ACL reconstruction

You may be the recipient of ACL reconstruction with any of following materials:

- **Synthetic devices:** The most commonly used devices are made from polyester, which is a biocompatible material i.e. well tolerated by the human body
- **Autologous tissue:** This is the patient's (your!) own tissue which the surgeon 'harvests' during surgery. This can be either two of the hamstrings, or a strip of your patellar ligament (normally its middle third) with two small bone blocks attached to it, one either side. One of the two bone blocks is taken from the patella (your kneecap), the other from the tibia (your shin bone). This graft is known as a BTB graft.
- **Allograft:** This is tissue similar to the above that has been obtained from a deceased donor (a dead person) and preserved for surgery on a living patient.

So what are the merits of a synthetic graft?

A lot! It eliminates or reduces the need to harvest a patient's own tissue, which means:

- Less time under anaesthetic and less risk of infection.
- No anterior knee pain or restriction on the ability to kneel, when a BTB graft is your own tissue.
- Much reduced scarring at harvest site.
- It eliminates the risk of cross-infection from allograft donor tissue.
- Our synthetic device has consistent stable strength, that permits early movement and faster return to work and sports activities. Unlike autologous tissue, whose initial strength decreases over the first 6 month of implantation before it recovers.

- The human body responds well to the synthetic graft material and colonises overgrows it with native tissue.
- The Device is readily available in abundance (in different strengths) and so permits multi- ligamentous reconstruction. By contrast autologous tissue available for harvesting is limited.

Our solution: The JewelACL

The JewelACL: The longstanding XIROS synthetic graft solution

- In use since 2011
- With proven equivalence to other types of graft
- With all the advantages of a synthetic graft listed above

The JewelACL is the latest generation of our ACL products

- With the same basic structure as the earlier generation, but more easily implanted and has a much simpler fixation technique to the bone

JewelACL Appearance and strength

- A soft flexible open weave tubular structure made from a biocompatible material called Polyethylene Terephthalate (PET); brand name is Polyester
- JewelACL possesses strength matching that of the natural ACL in the body

How is it used?

- The one-size-fits-all design principle makes surgery simpler and faster
- If surgeon chooses, the device can be used in conjunction with one hamstring

What happens to you after surgery?

- Your surgeon will prescribe a rehabilitation regime of exercises to follow under the supervision of a physiotherapist.

Number of procedures performed, and complaints received

- 5384 by September 2021
- Number of complaints 15

Rate of success

- A surgeon have performed more than 1000 procedures over the past 11 years
- In this surgeon's series, the rate of rupture of the JewelACL is 4.8% at five to eight years after surgery
- With autologous tissue the rate of rupture is 12.5% at five years after surgery

Results are dependent on many factors

- Precise surgical procedure is vital
- Closely following the prescribed rehabilitation regime
- The state of the injured joint; what more may need doing beside ACL reconstruction?
- Timing of the surgery; how soon will the surgery take place after the injury?
- Sometimes the longer this period the less optimal the results
- If damage has occurred to the menisci and either or both were removed, damage to the articular cartilage is very likely and further deterioration will occur with time.

Post Surgery Physiotherapy

The JewelACL reassuringly allows for your surgeon and physiotherapist to guide you through the pathway of a standard ACL rehabilitation protocol.

Due to the high strength of JewelACL, an advantage that stands out is early weight-bearing and movement. Your stable knee should tolerate an accelerated timeline in comparison to other treatment methods.

An example programme developed in conjunction with Ian Horsley MSc, MCSP, Clinical Lead Physiotherapist, English Institute of Sport, BackinAction Physiotherapy and Sports Injury Clinic, Wakefield, UK, is available for download

The rehabilitation programme should be supervised by a specialist physiotherapist. All mobilisation and exercises should be performed within the pain free range of movement.