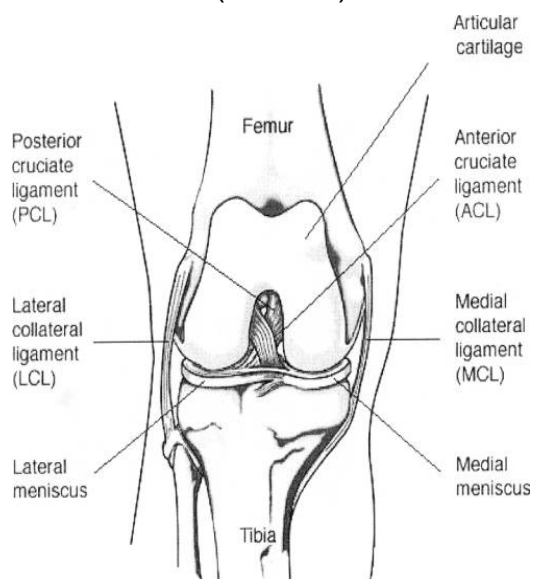


Anterior cruciate ligament (ACL) injury: Conservative management

What is the ACL?

The anterior cruciate ligament (ACL) is one of the main stabilising ligaments in the knee. It runs diagonally through the centre of the knee joint and attaches to the back of the femur (thigh bone) and to the front of the tibia (shin bone). It passes in front of the posterior cruciate ligament (PCL), a similar structure that runs in the opposite direction. These two ligaments cross near the centre of the knee; it is this crossing of the ligaments that gives them their name (cruciate).



What does the ACL do?

The main function of the ACL is to stabilise the knee, especially during rotation, sidestepping, and pivoting movements. It also provides significant feedback information to the muscles surrounding the knee to help control balance (proprioception), thereby allowing coordinated activities. Your ACL cannot repair itself, so this means that when the ACL is injured (ruptured or torn), the tibia can move abnormally on the femur and the knee can often buckle. The main feeling is often a sense of the knee giving way during twisting or pivoting movements (instability) and a sense of not trusting the knee when turning. Sometimes patients may experience pain or an ongoing lack of confidence (proprioception) in their knee.

How do you injure your ACL?

The ACL is commonly injured during sporting activities that involve pivoting or twisting movements, e.g. football, netball, basketball or skiing, where there is sudden twisting of the knee whilst the foot is fixed. In contact sports the ACL can be injured when a direct blow is applied to the outside of the knee. Sometimes, the ligament is damaged in isolation and sometimes in combination with other structures inside the knee e.g. other ligaments, menisci (shock absorbing cartilages), or joint surface articular cartilage.

How do you diagnose an ACL injury?

Typically patients experience knee pain and early swelling after a twisting injury to the knee. Sometimes they feel (or even hear) a 'pop' or a click inside the knee. Often they are unable to continue with the game and have to stop the activity. This typical history would alert your doctor to an ACL injury. Examining a knee acutely injured is sometimes difficult due to pain and swelling and examination findings often become easier to elicit a few weeks after the initial injury. Sometimes your consultant will investigate the knee injury with an MRI scan which shows the structures inside the knee which are damaged and can aid treatment decisions.

If scans are equivocal sometimes an examination under anaesthetic and a diagnostic arthroscopy (keyhole operation) is used to get more information about the injury before making a definitive treatment plan.

How is an ACL injury treated?

All patients need to recover from the acute knee injury with common sense measures to reduce swelling and pain. These would include

- rest (+/- crutches)
- elevation
- regular ice packs
- anti-inflammatory medication .
- simple painkillers

This phase of treatment is usually guided by a physiotherapist with a specialist interest in knee injuries.

You will then be reviewed in the orthopaedic clinic by your consultant or a member of their team. Further options regarding management of your knee will be discussed as necessary at this meeting. Treatment options are very much tailored to the individual patient and are dependent on lots of factors including severity and frequency of ongoing symptoms, response to physiotherapy, age, sporting aspirations and damage to other structures.

It is important that you are fully informed of all the options available and the advantages and disadvantages of the different treatments so that together with your consultant and physiotherapist you can select the best treatment path for you.

Not everyone who has an ACL rupture ends up with a problem. The older and less sporty you are, the less likely it is to go on causing trouble. Nevertheless, the majority of people with a rupture of their ligament will notice looseness but for a proportion of people this can be overcome with conservative management via physiotherapy including strengthening and proprioceptive exercises.

Treatment options

Non-operative (conservative) treatment

Physiotherapy

Initially, conservative treatment by physiotherapy is aimed at reducing swelling, restoring the range of movement at the knee and restoring full muscle power. It can also help to improve confidence in walking and regaining trust in your knee. Once your knee is more settled, a large part of physiotherapy management is aimed at addressing any muscle weakness present around the knee, hip, spine and pelvis and any deficits in proprioception. Proprioception can be re-trained using exercises designed to test your balance and coordination. Stability of the knee can be improved with intensive physiotherapy exercises - not just for strengthening the muscles at the front (quadriceps) and the back (hamstrings) of the knee but more importantly for improving balance (proprioception) and the ability to “hold on to your knee”. Good muscle performance and enhanced proprioception are both key factors in a successful conservative management approach to ACL injury. Adjustments may be required to daily activities and sports whilst having physiotherapy. A gradual return to daily activities and carefully graded progression back to competitive sport will be planned, if this is your goal.

Some people seem to gain benefit from and respond well to this physiotherapy and can manage very well without their ACL. Additionally, some patients choose to give up certain sports that require more pivoting movements (e.g. football) and prefer to continue with sports which involve moving in straight lines, e.g. running and cycling.

Bracing

Sometimes knee braces are used to facilitate physiotherapy. Bracing is another way of stabilising the knee without surgery and there are purpose made ACL braces which protect the joint and can be very valuable during certain sports. The braces are rather too cumbersome to wear day to day and in some contact sports the braces are banned for obvious reasons. But in sports such as tennis and squash and for skiing and snowboarding, they can be particularly useful if these are the occasions that the knee tends to give out. Wearing a brace does not appear to weaken the knee.

The use of slim Neoprene sleeves appears to improve patients balancing skills very slightly and some people use them but their benefit is very difficult to actually measure.

Operative treatments

Operative treatments are based around a procedure called an ACL reconstruction. This surgery involves replacing the damaged ligament with a new 'graft'. Usually the hamstring tendons (from the same leg) are used to make a new graft and via a special technique the graft is placed across the knee and secured in the femur and tibia by screws and buttons. This stabilises the knee. Postoperatively there is a big commitment to rehabilitation and further physiotherapy for up to 9-12 months to see the maximum benefit from the surgery. Should it be decided that you need to follow the operative pathway, there is a separate information sheet available to explain the surgery.

Summary

ACL injury is fairly common and needs to be managed carefully by a consultant orthopaedic surgeon with an interest in knee surgery and a specialist knee physiotherapist. Treatment options vary depending on the individual patient. Patients need to be fully informed of these options before deciding how they are managed.

Further information

For more information about the Trust, visit our website www.royalberkshire.nhs.uk

This document can be made available in other languages and formats upon request.

Debbie Burden (Orthopaedic Specialist Physiotherapist)

Sean O'Leary FRCS (Trauma & Orthopaedic Surgeon)

Nev Davies FRCS (Trauma & Orthopaedic Surgeon)

Reviewed: November 2016.

Review due: November 2018.