

Anterior Cruciate Ligament Reconstruction

The term knee reconstruction is commonly used to refer to reconstruction of the anterior cruciate ligament (ACL). This ligament is in the middle of the knee and controls the movement of the two main bones of the knee, the tibia and femur (Fig.1). It is particularly important for twisting and turning movements that occur in football, netball, basketball and snow skiing.

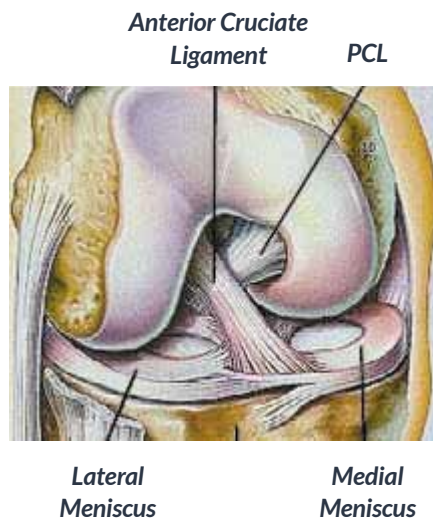


Figure 1: Anatomy of the knee joint showing the anterior cruciate ligament (ACL)

Rupture (tearing) of the ACL can therefore lead to instability. This is felt as giving way with certain activities, usually those that involve a sudden change in direction. When giving way occurs, there is a risk of damage to the cartilages (menisci) and this in turn puts the knee at risk of developing premature osteoarthritis. Although it is an aim of reconstructive surgery, it is unclear whether anterior cruciate ligament reconstruction actually reduces the risk of developing osteoarthritis.

The main reason for reconstructing the ACL is to stop or to prevent instability. In many situations this instability can be predicted soon after the injury occurs and a decision made to operate without waiting for the instability to develop. However, in other cases it may be less clear and people may choose to rehabilitate their knee and try

to return to their normal activities without surgery. Whether they can get back to their normal activities without surgery depends on many factors – how much healing of the torn ACL takes place, other injuries to the knee, the intrinsic stability of the knee, rehabilitation, and the individual’s ability to modify their activities.

It is important to remember that ACL reconstruction is almost always an elective procedure. From a medical point of view, there is no rush to make a decision, provided the knee is not giving way. If ACL reconstruction is to be performed, it is essential to prepare the knee for surgery. The key is to get back full extension (straightening) of the knee. Although it may feel that there is something in the front of the knee that is blocking full extension, this is rarely the case, particularly after the initial injury. A key component is to reduce swelling by regular icing and wearing a compression bandage or sleeve. Having the heel supported on a rolled towel and using the quadriceps muscle at the front of the thigh to lock the knee out straight is the key exercise (Fig.2). Flexion (bending) is also important and riding an exercise bike will help this, together with strengthening the quadriceps muscle.

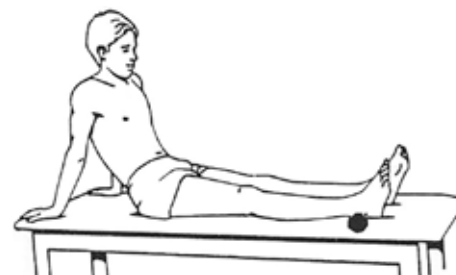


Figure 2: Knee locking exercise using a towel to support the heel

SURGERY

The technique for reconstruction involves taking a piece of tendon (usually from the same knee, but sometimes from the other knee) and using this to replace the torn ligament (Fig.3). The tendon graft is usually taken from the hamstrings on the inside of the thigh or from the patellar tendon at the front of the knee. It can also be taken from the quadriceps tendon, just above the patella (kneecap). Occasionally allografts are used. These are tendon grafts taken from cadavers (people who have died). In recent years there has been increased interest and media coverage of synthetic grafts, specifically the LARS device. The role of the LARS remains unclear, but there are concerns because of problems seen when synthetic ligaments were used in the late eighties.

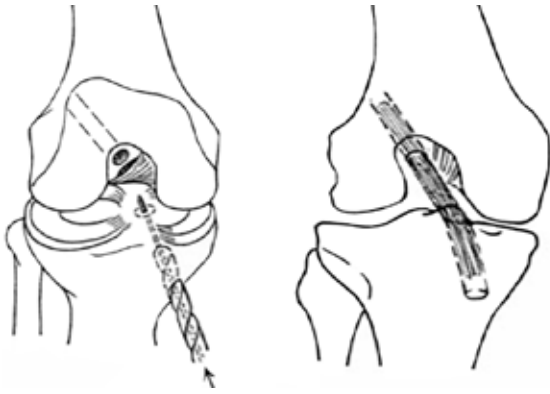


Figure 3: A. Drilling. B. Tendon graft in place.

From your point of view, there is a vertical or oblique scar on the front of the knee together with two small scars from stab incisions that allow the arthroscope and surgical instruments to be introduced into the knee. If additional surgery is required to repair a cartilage, a further incision may be made towards the back of the knee on either the outside or inside. A small area of the skin on the outside (lateral side) of the knee is usually numb after surgery.

Sometimes there is numbness on the shin. Although the numbness can be permanent, the area of numbness usually gets smaller with time and does not usually cause any problems.

Surgery is usually performed under a general anaesthetic. At the end of the operation the area affected by the surgery is infiltrated with local anaesthetic. Sometimes an epidural block or a femoral nerve block is also used. If this is the case you will notice numbness and tingling in your legs when you wake up. This gradually wears off over 8 hours or so. After leaving the recovery area pain control can usually be achieved with tablets alone. Anti-inflammatory medication is often used to help with pain control, so it is important that you tell your anaesthetist if you have ever had a history of stomach ulcers or bleeding, as this medication may not be appropriate in that situation.

You will be awake within 20 minutes of the operation and should be able to eat and drink after approximately 2 to 3 hours. On return to the ward after the operation, an inflatable cuff (Cryo-Cuff) is placed around the knee. This is filled with iced water to help control swelling. Patients find this very comfortable. Depending on your surgeon's preference, you may have 1 or 2 drains placed in the knee joint so that unwanted blood does not accumulate and inhibit recovery. These drain tubes are usually removed six hours after surgery.

A physiotherapist will teach you exercises to get the knee out straight (extension) and regain function in the quadriceps muscle at the front of the thigh as well as make sure that you are confident walking with the aid of crutches. A brace or splint is not usually required.

You will usually go home on the morning after surgery, although sometimes the surgery is performed as a day procedure. Following surgery you will be provided with information regarding rehabilitation. This outlines the rate of progression. Rehabilitation can be undertaken either independently or under the supervision of a physiotherapist.

It is very important to rest during the first week after surgery in particular. This means spending most of the time on a bed or couch with the leg elevated and regular icing of the knee. The main aim during this phase is to restore full extension of the knee.

The time off work that is required will vary according to your job. If it is mainly deskwork, then patients may be able to work within 2 weeks. If heavy manual work is involved, it may be 2 to 3 months before one can consider return to work. In general, crutches are required for up to 2 weeks.

In terms of returning to sport most patients are able to recommence some of their activities by 4 months. By 6 months the majority of patients are able to gradually resume training for their original sports with a view to returning to play from 9 or 10 months. However, improvement continues for another 6 to 12 months after that.

COMPLICATIONS

While most patients are happy with the outcome of their surgery, there are nonetheless some risks, which need to be borne in mind.

ANAESTHETICS

Always involve some kind of risk, but these are statistically minimal.

INFECTION

Antibiotics are given at the time of surgery to reduce the risk of infection. Despite this infection of the wound can occur. This is usually easily treated with antibiotics. However, sometimes the infection gets into the joint. This is a serious complication and requires admission to hospital, additional surgery and intravenous antibiotics.

VENOUS THROMBOSIS

A thrombosis is a blood clot that may form in the veins in the legs. This can cause persistent swelling of the foot and ankle and can also be dislodged and be carried to the lungs (pulmonary embolus), resulting in chest pain and breathing difficulties. However, the risk of thrombosis is statistically very low.

DONOR SITE

If you have a hamstring graft it is very common to experience the sensation of tearing something at the back of the knee around 3 to 8 weeks after surgery. This is just stretching of the scar tissue being laid down in the tendon harvest site. Although it may be associated with some pain and bruising, this usually settles over a few days and do not affect the long-term outcome. If you have a patellar tendon graft there can be pain at the lower end of the patella. This can occur as late as 9 to 10 months after surgery but usually settles with time.

HARDWARE

Occasionally one of the devices used to hold the graft in place while it heals to bone may become prominent some months after surgery. If problematic, the hardware can be removed without risk to the graft.

OTHER

Persisting problems can occur as a result of poor compliance with rehabilitation, failure of the graft, or significant additional damage to the knee from the original injury such as torn ligaments or cartilages or osteoarthritis.

These notes have been prepared by orthopaedic surgeons at OrthoSport Victoria. They are general overviews and information aimed for use by their specific patients and reflects their views, opinions and recommendations. This does not constitute medical advice. The contents are provided for information and education purposes only and not for the purpose of rendering medical advice. Please seek the advice of your specific surgeon or other health care provider with any questions regarding medical conditions and treatment.