

Kalyani knee & shoulder clinic

Surgical treatment of ACL deficient knee

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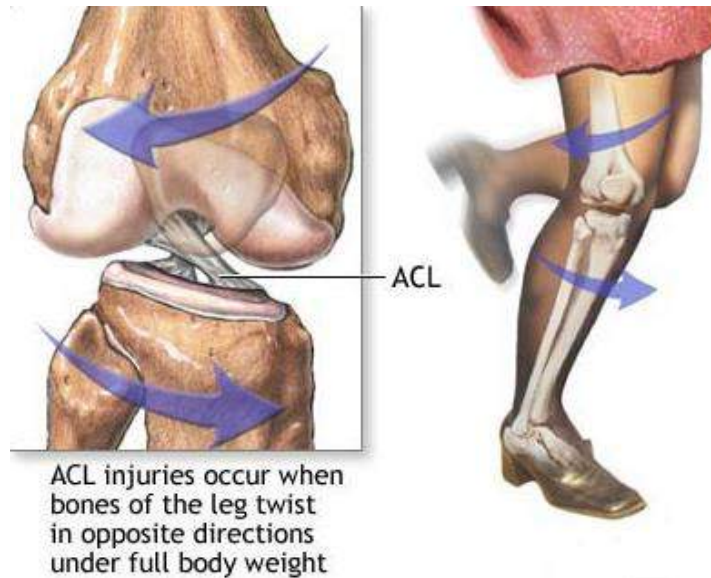
What is ACL?

ACL is short name for a ligament of the knee called Anterior Cruciate Ligament. Ligaments are tough, chord – like structures, which connect bones. There are four such ligaments in the knee- one on the inner side, one on the outer side, and two in the middle (fig-1). The two middle ligaments cross each other, and are called cruciate ligaments. Of these, the one in front is called Anterior Cruciate Ligament or ACL.



What happens if ACL is torn?

The usual history is twisting injury of the knee followed by pain and swelling. Often, a cracking sound is heard. The patient may experience that his knee moved in an odd way. X-rays are usually normal, and hence this injury is often considered a ‘minor’ sprain. The patient may feel ‘normal’ for a long time, before his knee starts feeling unstable. It is only at this stage that the ligament injury is diagnosed.



Feeling of instability of the knee prevents one from rigorous activities such as running, jumping etc. Once torn, ACL does not heal. People with low-level physical activity may be able to manage despite a ruptured ACL, but in others the knee feels weak. One may feel unsure of the knee, or the knee may give-way. Each episode of ‘giving-way’ causes further damage to the knee by rupturing the meniscus (cushions). This, in turn, causes injury to the soft caps covering the bones, the cartilage (fig-1). The natural sequel of such continuing insult to the knee is early wear and tear of the knee (osteoarthritis), which becomes a source of constant pain and swelling.

MRI is one way to confirm the diagnosis of a torn ACL. Often, it is not possible to differentiate a partial tear from complete tear. Clinical examination, followed by arthroscopic viewing, is the only sure way of diagnosing a torn ACL.

What are the different ways of treating an ACL deficient knee?

Treatment with exercises: Not all knees with torn ACL need surgery. In patients with low level of physical activity (office kind of job), treatment with physiotherapy may ‘tune’ the knee to control itself. Nearly 80% of these patients may lead a normal life, and may not feel the need to go for surgery.

Reconstruction of ACL: If a patient’s body does not adapt to a torn ACL, the only option is to make a new ligament (reconstruction). This is done by replacing the torn ligament with a substitute (graft). The graft is taken from tendons of the knee and fixed where the original ligament was (fig-2). With time, the ‘new ligament’ gets incorporated in the knee, and functions somewhat like the original ligament.

How ACL is reconstructed?

ACL reconstruction is done by two methods: open surgery or key-hole (arthroscopic) surgery. Today, arthroscopic surgery has become preferred operation. The operation consists of the following steps:

- A diagnostic arthroscopy to confirm the diagnosis, and take stock of the damage.
- Graft harvested from the knee.
- Graft prepared to fit as a ligament.
- Tunnels are drilled in the bone to pass the graft into the knee.
- The graft is fixed at two ends.

All this is done arthroscopically (with telescope), without opening the knee. There are minimum scars (fig-3)



The technique of arthroscopic ACL reconstruction is constantly evolving. The basic differences in all the available techniques are as follows:

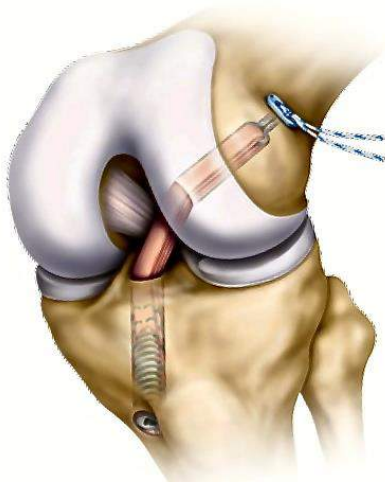
(a) *The source of the graft:* The graft may be taken from the knee-cap tendon (patellar tendon) or from the tendons at the back of the knee (Hamstring tendons).

1. Hamstring graft (preferred)
2. Bone patella tendon Bone (BPTB) graft

(b) *Single or double incision:* Graft fixation at two ends can be done through two separate incisions or one incision.

(c) *The fixation devices used:* A host of fixation devices are used to fix the graft. These are made of metal or self dissolving plastic.

Endo – CL with Bio-screw (widely accepted worldwide)



How much does the surgery cost?

The cost of treatment varies with technique of surgery. The costs also depend on whether the surgery is done by single-incision technique, in which expensive devices are used to fix the graft. Cost may vary depending upon what additional problems (meniscus tear etc.) may be detected during the operation, or use of some special implants as may be necessary during surgery.

What are the results of ACL surgery?

ACL surgery is one of the very successful operations. But in a surgery which involves healing of tissues and creation of substitute of natural body parts, a lot depends upon a patient's healing potential. Even in the best of hands this operation is successful in 85% of cases. In others, it may be partially successful, or may not work. In most cases, instability is controlled. However, in some, the result may be less than satisfactory.

What is the procedure of operating?

You are admitted to the hospital for one day. Some tests are conducted on you to make sure that your body is fit for anaesthesia. The operation is usually carried out under a spinal anaesthetic (an injection in your back) or sometimes under general anaesthetic.

Before Surgery, Tell us if you have had:

- An allergy or bad reaction to antibiotics, anaesthetic drugs, or other medicines, surgical tapes or dressings.
- Prolonged bleeding tendency or excessive bruising when injured.
- Recent or long-term illness.
- Psychological or psychiatric illness.
- Excessive scar formation or poor healing of wounds after previous surgery.

Before undergoing surgery you may be prescribed medication. Give us a list of ALL medicines that you are taking or have recently taken, as there may be cross reaction between medicines.

On the day of surgery, You may have to keep fasting for 4-6 hours before surgery. The operation takes about 45 min+/- 15 minutes, but you will be in a operation theatre complex for nearly 4 hours.

After surgery, nurses observe your recovery to make sure that your blood pressure, pulse, other vital signs, and the operated site are normal. In the recovery ward, you may have a bandage or temporary brace on your knee.

Care after surgery: You will be advised regarding the following:

- Application of ice packs for 20 minutes four times daily for the first few days.
- The use of crutches and occasionally a knee brace for a variable period
- Medication to relieve pain and discomfort.
- Antibiotics to reduce the risk of infection.

You will be sent home next day after surgery, and rest of the treatment will be at home. Depending on the type and extent of the surgery, you will be advised when you can resume your normal activities. An approximate recovery schedule is as shown in table-1. The time needed for the healing of the grafted tendon may be six months or more. You may have to wait up to 12 months before returning to sports. Heavy manual work, lifting and strenuous exercise may be restricted for longer period.

Follow-up appointment: Two or more follow-up appointments will be necessary every 2-weekly, depending upon your case.

Physiotherapy and long-term follow-up: A physiotherapy and home-exercise program is important to achieve a successful outcome. Follow it carefully.

Physiotherapy and exercise assist in restoring blood supply to the reconstructed ligament. Most recovery takes place in the first six months, with range of motion and strength continuing to improve. Be careful that you do not stress your knee during rehabilitation even if progress appears to be ahead of schedule and the knee feels strong. Often a year or more of rehabilitation is needed for the knee to feel strong with a good range of movement.

All this is a part of the healing process, and differs from patient to patient. This can not be inferred as something lacking in the operation. With perseverance and additional help and

time, most of these problems get resolved, but in some cases a second operation may be necessary.

The possible complications of ACL reconstruction

Surgery to reconstruct the ACL is safe and effective. But like all operations, does have risks despite the highest standards of surgical practice. It is not usual for a doctor to outline every possible side effect or rare complication. However, it is important that you have enough information about common complications. The following possible complications are listed to inform and not to alarm.

General risks of surgery

- Wound infection; treatment with antibiotics for long period may be needed.
- Haematoma (an accumulation of blood inside the knee and around the surgical site) may need aspiration under local anaesthesia.
- Slow or poor healing (most likely in smokers, people with diabetes, and in elderly people).
- Risks of anaesthesia: Anaesthesia techniques have become fairly safe now, but an odd patient still runs the risk.

Specific risks of ACL surgery

- The graft may fail to revascularise, and may not give the desired strength.
- Injury to a minor nerve around the knee may produce a small patch of anaesthetic skin. It mostly recovers over a period of time.
- Persistent low-grade pain in front of the knee occurs in about one out of ten patients, compliance with the physiotherapy program usually helps to control it.
- Persistent joint effusion, a varied response to healing may occur, usually resolves with time or may need aspiration.
- Terminal loss of knee motion occurs in about five out of 100 patients, usually responds to prolonged physiotherapy, may need manipulation.

Report to your surgeon: Tell your surgeon at once if you develop any of the following:

- Temperature higher than 100 degree F or associated with chills.
- Severe or persistent pain, tenderness or increased swelling in the knee or calf.
- Continued discoloured drainage and bleeding from the arthroscopy wounds.

We encourage you to clear all doubts before you decide to undergo surgery. You may like to learn more about the operation from the net. We also encourage you to meet other patients who have undergone similar operation. Assuring you of best care, we wish you a speedy recovery.

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