

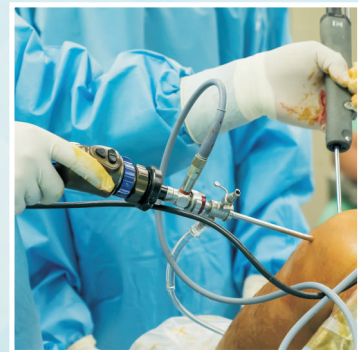
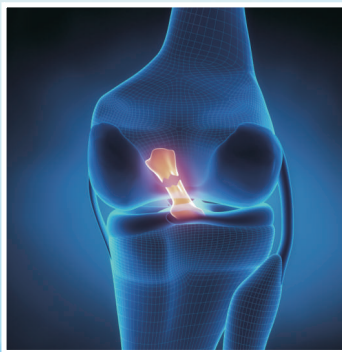


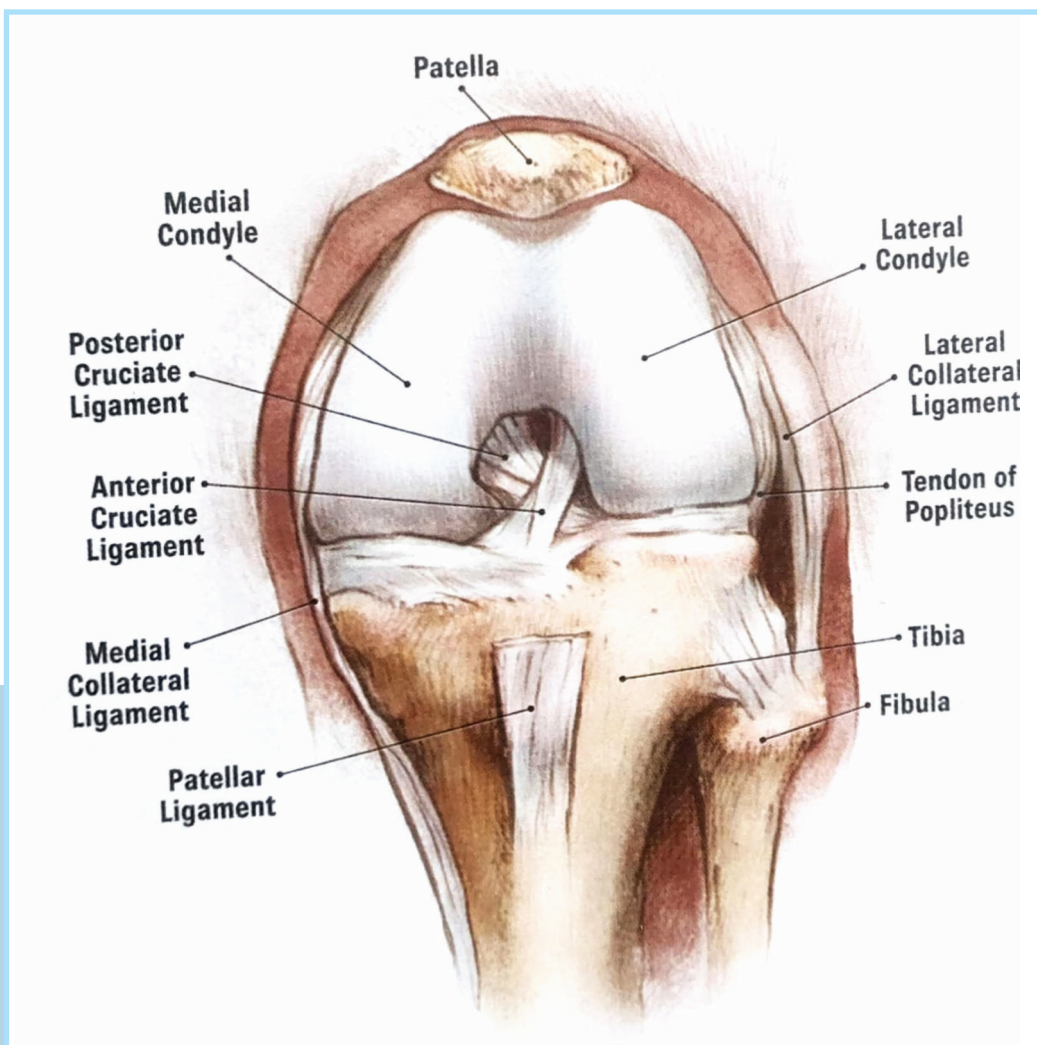
THE ORTHOPAEDIC SPECIALITY CLINIC

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PATIENT'S GUIDE - ACL INJURIES

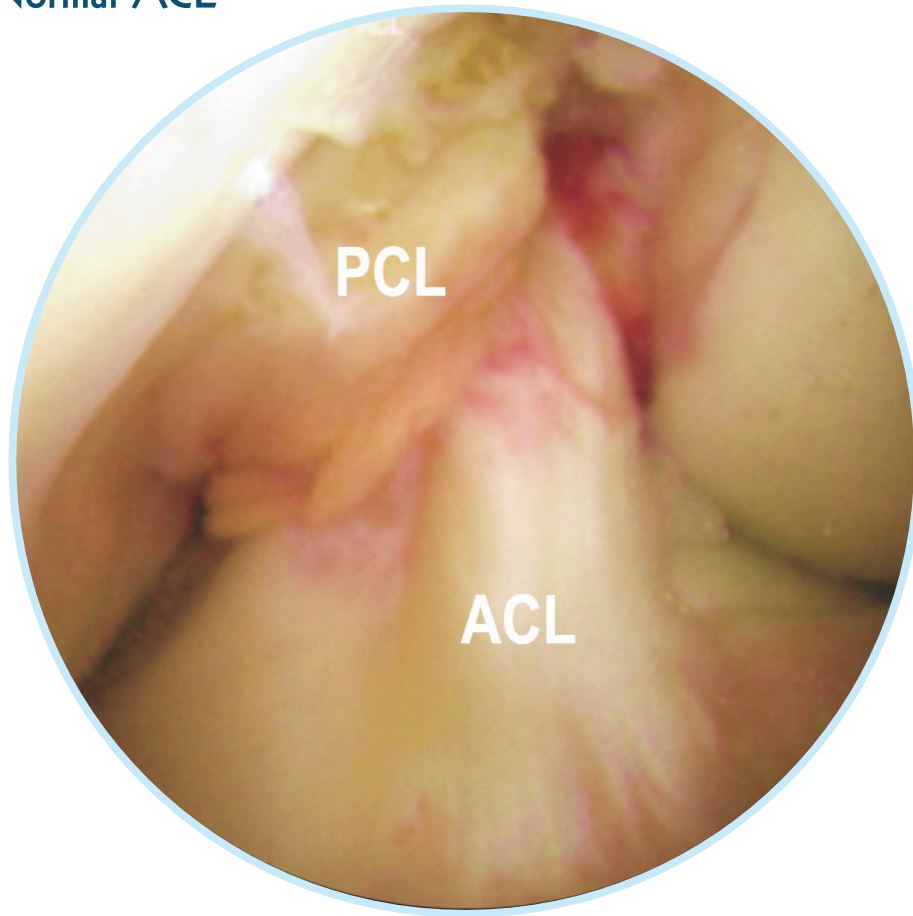




What is the ACL and what does it do ?

The Anterior Cruciate Ligament (ACL) is one of the 4 major ligaments present in the knee which provides stability to the knee. The ACL is a band of strong fibrous tissue about 3-4 cm long, like a rope. It is present inside the joint at the centre and extends from the femur (thigh bone) to the tibia (shin bone). It acts like a restraint to abnormal front-back and pivoting (rotatory) movements of the knee. It also has some neurons (sensors) for proprioception i.e. detecting the position sense of the knee joint during motion.

Normal ACL



How does the
ACL
get injured ?

Injuries to the ACL are common amongst those indulging in contact sports like football or also some non-contact sports involving twisting movements like tennis. When the body is in motion, momentum is developed and a sudden impact on the knee (like a tackle in football) or uncontrolled landing from a jump (like in badminton) can cause the ligament to tear.

Two wheeler accidents are also an important cause of ACL injury in India.

Torn ACL



What are the
symptoms of an
ACL injury ?

Swelling of the knee, which develops gradually in hours, is an early feature. This is due to the bleeding which occurs inside the knee joint. Some patients may hear a **snapping or a popping** sound when the ligament tears. Pain is present only initially and may not allow full weight bearing comfortably. Persistence of pain for several days after the injury is an ominous sign and is usually due to an associated meniscus tear or a cartilage injury. **Instability** is the commonest symptom due to ACL deficiency. The knee buckles during walking or more commonly, while turning. This is due to the loss of control of these movements when the ACL is torn.

Why should ACL tears be treated ?

ACL tears cause symptoms of instability or pain. These are not pronounced in a patient with low-demand physical activity. Patients with high-demand activities like sportspersons or those into regular exercises, gymming, cycling, etc. feel disabled due the recurrent instability and are not able to perform at the desired level.

1. To restore stability

2. To optimize function to the pre-injury level

An unstable knee can lead to two important but devastating sequelae. Firstly, a knee which keeps buckling repeatedly can tear the menisci cushion shock absorbers within the joint. Secondly, the uncontrolled mobility can damage the cartilage the smooth gliding surface of the joint. Both menisci and the cartilage do not have blood supply. Hence injury to either cannot heal naturally. These issues may lead to degenerative arthritis of the knee over a period of a few years and further increase the disability.

Can ACL tears be managed without surgery ?

Some partial ACL tears, in which most fibres of the ligament are intact, do not require surgery. They usually do not cause instability. The presence of a partial tear needs to be accurately diagnosed by a high resolution MRI scan. Sometimes, a special MRI called the Porto-KT MRI is needed to quantify the instability and help in decision making. Tears in patients who lead a sedentary lifestyle can also be treated without surgery. All such patients require special bracing and a specific physiotherapy programme. This programme is aimed at reducing swelling, achieving full range of motion, restoring muscle power and proprioception (balance).

What is the surgical treatment of ACL tears ?

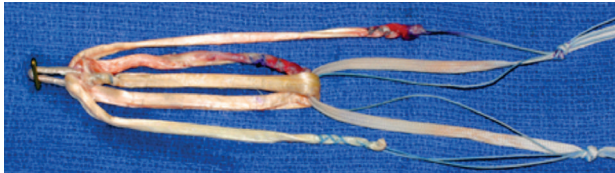
The aim of operating an ACL tear is to achieve stability and restore function. The decision to operate is made for patients who have high demand on their knees, are not willing to modify their activity level or have failed a trial of conservative treatment. Prior to surgery, rehabilitation by physiotherapy is often prescribed to reduce swelling, achieve range of motion and muscle power. This is called the **ACL Perturbation Program**.

Once the knee is ready to be operated for ACL reconstruction, you will be required to get blood tests and other investigations done. Thereafter, a physician consultation is needed to obtain approval for surgery. Surgery for ACL is performed by arthroscopy (key-hole surgery). Since this ligament does not heal well when repaired, it is reconstructed by using the body's own tissue, called a graft. The grafts used for this reconstruction are expendable i.e. their removal does not cause any residual deficits and they are able to function like the ACL when implanted.

The three commonly used grafts are:

1. Hamstring tendons -

The hamstrings are taut cord like structures present on the inner side of the knee and thigh. These are folded and prepared to form either a 5 or 6 fold graft.



Hamstrings graft

2. Bone - patella tendon - bone

This graft includes a part of the bone from the knee cap, the tendon from the front of the knee and another piece of bone from the shin bone.



Bone - patella tendon - bone graft

3. Central quadriceps tendon -

It is from a part of the quadriceps tendon from the front of the thigh, just above the knee, with or without a piece of bone from upper part of the knee cap.



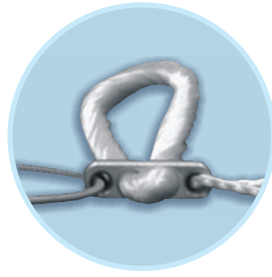
Central quadriceps tendon graft

The decision to use a particular graft is individualized for every patient and is determined by type of sports, associated injury, etc.

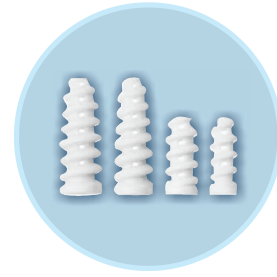
The graft is prepared and fashioned like the native ACL. By arthroscopic surgery, tunnels are drilled to place the ACL graft. The graft is then inserted inside the joint. It is fixed to the thigh bone on top & shin bone below, most commonly with biodegradable screws but sometimes, metal screws or buttons may be used. The biodegradable screws degrade within the bone and do not require removal at a later stage. The titanium metal screws are insert and MRI compatible. They do not require removal.



Titanium Screw

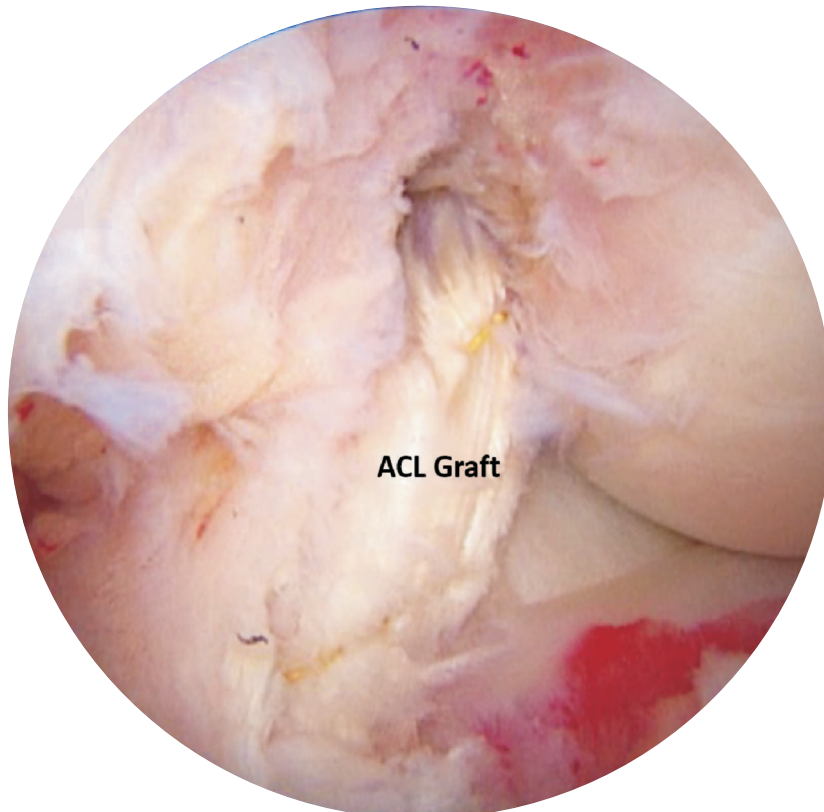


Suspensory Button



Bio Screw

Reconstructed ACL



What is the hospital procedure if I plan to undergo ACL reconstruction ?

For an ACL reconstruction, admission in the hospital is usually on the day of the surgery. After completing the admission procedure, you will be shifted to your allotted room. You will be explained and requested to sign a consent for the surgery. An anesthesiologist will examine you prior to the surgery. ACL reconstruction is usually done under spinal anesthesia, but general anesthesia may also be used. These options will be explained to you and an informed consent is obtained for the same. You will be shifted to the OT when it is ready. The surgical time for a typical ACL reconstruction is about 45 minutes, but the total duration in the operation theatre, from anaesthesia to recovery is about 2 hours.

Is this surgery a painful undertaking ?

Is this surgery a painful undertaking ?

Some pain after any surgery is inevitable. However, with the current tools at our disposal, post-operative pain, is minimal and not bothersome. You will be discharged on some pain medications which will enable you to perform activities of daily living and physiotherapy without much discomfort.

What about recovery after surgery ? Will physiotherapy be needed ?

Physiotherapy starts on the day of surgery with an aim to rehabilitate your knee. The operated knee is placed in a long knee brace, for full time wear, for about 3 weeks. A small suction drain is placed inside the joint to drain any collected blood and this is removed the next day. Your knee will be placed in a continuous passive machine (CPM) by the physiotherapist to move the knee, which helps to reduce the swelling. Weight bearing is usually allowed from the next day. No walking aids are necessary but one may use an elbow crutch for comfort. Icing the knee using a Cryocuff helps to reduce pain and swelling. Discharge from the hospital is usually after one or two days.



**Long
Knee
Brace**

(Usually worn for
the first 3-4 weeks)

**Hinge
Knee
Brace**

(Usually worn for 1-2 months
after 1 month post surgery)

The aim of the therapy is to achieve knee motion, muscle strength, and reduce swelling. Adherence to the physiotherapy protocol helps in faster recovery and reduces complications. At around 3 weeks after surgery, the long knee brace is changed to a hinged knee brace, which is used only while standing and walking for about 3 months. Therapeutic gym program is also started and you may be fit to join office or studies at this point. Driving is started after 4 weeks, which is when the knee starts feeling "normal". Swimming can be started after 2 months and running after 3 months.

Sports specific training is initiated after 6 months and return to competitive sports is after 9 months. These milestones in recovery are modified and are usually delayed in those who have concomitant injuries, like a meniscus tear or another ligament injury.

What are the complications of ACL surgery ?

Arthroscopic ACL reconstruction is a safe surgery if the patient is optimized prior. However, every surgical procedure has some risks. General complications like adverse reactions to drugs and anaesthetic agents or an acute cardiac event are no greater than for any other surgery. Deep vein thrombosis or clotting in calf veins is unusual after an ACL reconstruction, but possible, especially in smokers and those on oral contraceptive pills.

Specific complications include:

Infection: The incidence of infection after arthroscopic surgery is about 0.5%. Though every care is taken in terms of a sterile operating room environment, prophylactic antibiotics before surgery, etc., this cannot be brought down to zero. Superficial infections can be treated with oral antibiotics alone. However, deep infections have to be managed by hospital admission, surgical wash-out and intravenous antibiotics. Prolonged antibiotics for 3-4 weeks and repeat surgery may also be required in some cases.

Bleeding: Bleeding from the joint is uncommon. Normally the drain which is placed inside the joint removes all collected blood. Excess bleeding is seen in smokers and those on blood thinning medications like aspirin.

Nerve injury: A small nerve, present on the inner side of the thigh may get injured while removing the hamstring tendons. This causes numbness on the lower and outer side of the knee. This does not cause any significant problems and gradually recovers over a period of 3-4 months.

Stiffness: This is very rare after ACL surgery and usually due to noncompliance with rehabilitation physiotherapy. Recovery of motion by physiotherapy is possible. Non responsive patients may be taken up for knee manipulation under short anesthesia as a day care procedure.

Graft failure: Recurrent trauma can cause the graft to rupture. The knee can swell up again and movements become painful. Instability may develop. Such patients have to undergo a revision ACL reconstruction surgery.

Special Interest

- Sports Injuries & Arthritis
- Advance Knee / Shoulder Arthroscopy
- Primary / Revision Joint Replacement
- Joint Preservation

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Lane Before Gold Field Plaza,
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Patient education initiative by "Tapasvi Charitable and Medical Center"