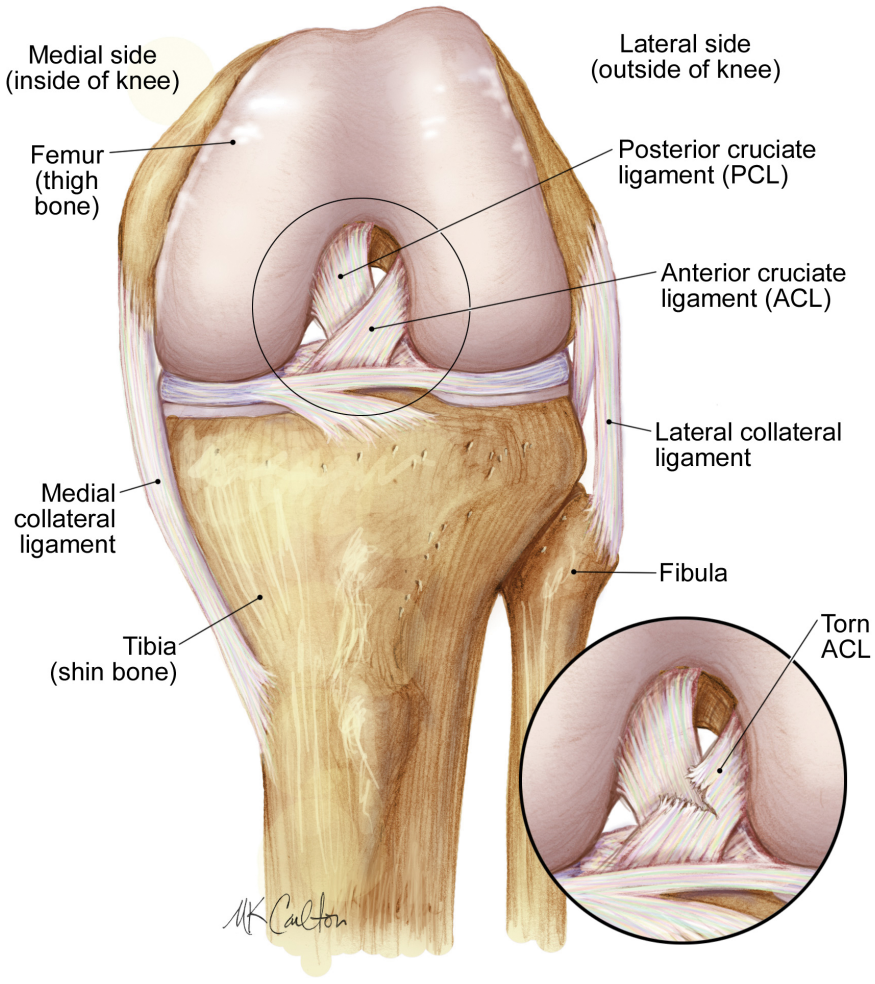
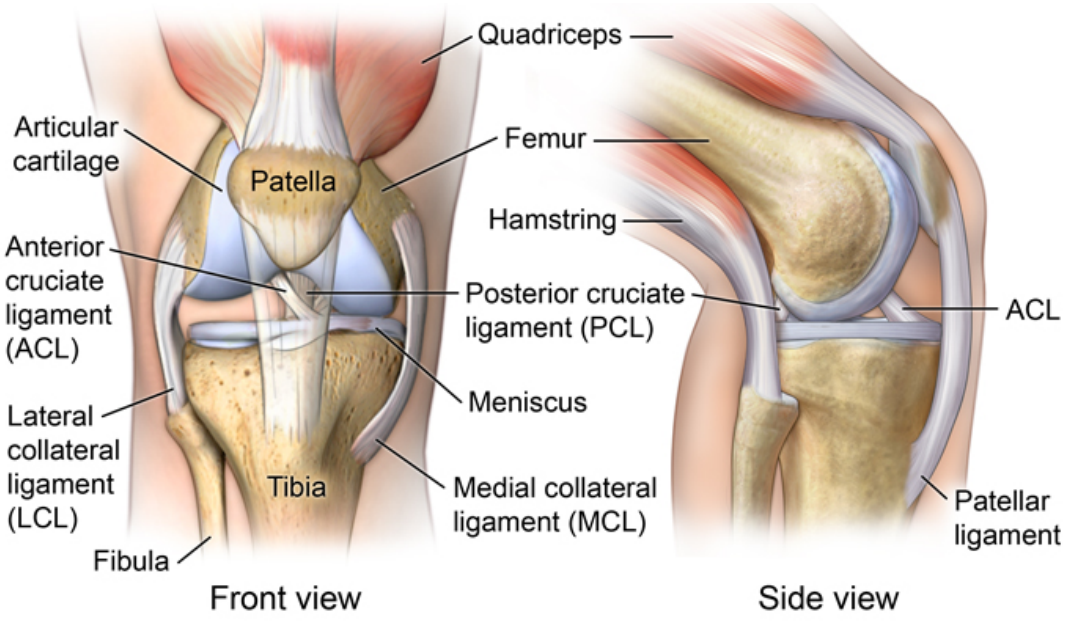
STEWART
ORTHOPAEDICS

ACL injury and reconstruction



Normal Anatomy of the knee



The knee joint is a complex weight bearing joint that relies on ligaments and muscles to provide stability. The knee is made up of three bones: The thigh bone (femur), the shin bone (tibia), and the kneecap (patella). There are 4 major ligaments in the knee: the Anterior cruciate (ACL) and posterior cruciate ligaments (PCL), Medial collateral (MCL) and lateral collateral ligaments (LCL). There are a number of other smaller ligaments as well as tendons around the knee which contribute to stability and function.

Inside the joint there are 2 “C-shaped” discs of cartilage attached to the tibia known as the medial and lateral meniscus. The meniscus gives extra cushioning to the cartilage inside the joint to prevent wear and tear.

The Anterior Cruciate Ligament (ACL) is one of the most important and commonly injured ligaments within the knee. The Anterior Cruciate Ligament’s (ACL) purpose is to provide rotational stability to the knee by resisting the motions of anterior tibial translation (tibia moving forward on femur) and internal tibial rotation (tibia twisting inwards).
A torn ACL results in tibial subluxation (partial dislocation) or instability of the tibiofemoral joint, which results in the “pivot-shift” phenomenon.
If left untreated, a torn ACL, may lead to the onset of early osteoarthritis of the knee due to associated instability and cartilage damage. The instability associated with an ACL injury can cause problems with even the most basic of daily activities such as washing, dressing, stairs and walking.

ACL injuries may not occur in isolation. The meniscus is injured 54% of the time and the medial collateral ligament is also commonly injured.

ACL injuries most commonly occur during sports that involve sudden stops or changes in direction, jumping and landing - such as soccer, rugby, hockey, basketball and netball.
At the time of injury many people will hear or feel a "pop" in their knee. The knee may swell rapidly and usually you won't be able to continue with the activity.

Other signs and symptoms include:

- **Swelling -** rapid swelling (usually within a few hours) of the knee is very suspicious of an ACL rupture. The swelling is due to bleeding into the joint from an artery inside the ACL.
- **Pain -** an ACL injury may be painful - this is usually a result of bleeding into the joint with distension of the knee capsule, however, some patients may have no pain.
- **Loss of movement -** the swelling of the knee joint can restrict movement and give a feeling of stiffness
- A feeling of **instability** or **"giving way" -** your knee may occasionally collapse while standing or walking on an uneven surface or you may lose confidence when using your leg during certain activities (such as going down stairs.)

When the ligament is damaged, there is either a partial or complete tear.

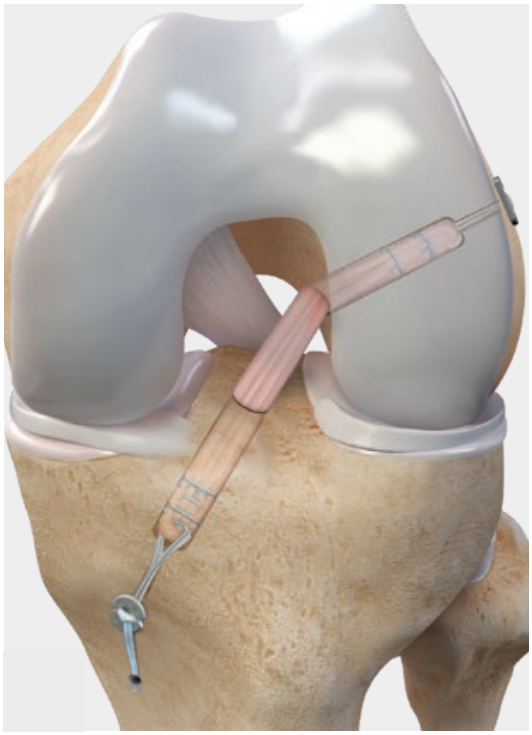
- **Complete tear -** The ligament can pull off the bone on either end or rupture in the middle

- **Partial tear -** during injury the ligament stretches 13% before a partial rupture, the result is that the remaining ligament is loose and non-functional. A partial tear is usually treated like a complete rupture.

Risk factors
There are a number of factors that increase your risk of an ACL injury, including:

- Being female — possibly due to differences in anatomy, muscle strength and hormonal influences
- Participating in certain sports, such as soccer, rugby, basketball, netball, hockey and gymnastics.
- Poor muscle conditioning
- Playing on artificial turf surfaces
- Previous ACL injury with surgical reconstruction.

Treatment
Globally, the "Gold Standard" treatment for an ACL rupture is surgical reconstruction. Non-surgical management increases the risk of cartilage or meniscus damage with progression onto osteoarthritis, therefore, there are very few indications for non-surgical management.

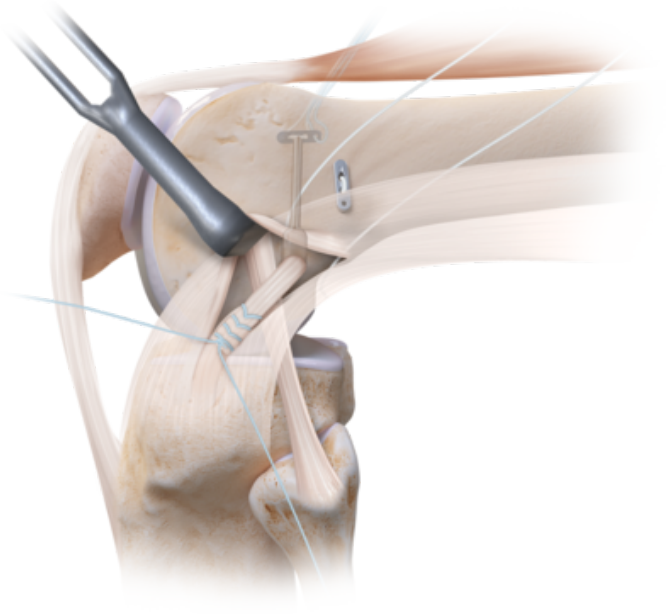


Surgical reconstruction:

Why reconstruction? Why not repair?
Repair of a ruptured ACL has an unacceptably high failure rate. This is partially due to the poor healing potential of the repaired ligament. Reconstruction with a 'new' ligament has a far higher success rate with fewer re-ruptures.

Surgical reconstruction of the ligament involves taking a donor tendon from your same leg (or opposite leg) and using it as a ligament graft. The graft is placed into the knee joint and secured in bone tunnels using devices such as metal buttons or screws. An ACL can be reconstructed using a minimally invasive "keyhole" technique. Keyhole surgery, also known as arthroscopy, allows the surgeon to look inside the joint using a camera, and repair any structures through very small incisions. Minimally invasive surgery typically results in less injury to surrounding tissues, resulting in less postoperative pain, a shorter hospital stay and a quicker recovery time than traditional "open surgery". Surgical scars may differ depending on which tendon graft is used.

Currently the three most popular tendon grafts used are: Hamstrings, Quadriceps tendon, and patella tendon. At present, in South Africa, we do not use donor grafts from cadavers due to the risk of infection transmission.



Lateral tenodesis

Additional stabilising procedures

Patients who are at a higher risk of re-rupture may require an additional procedure at the time of surgery to reduce their risk of re-injury. This procedure is called a **“Lateral Tenodesis,"** which involves redirecting a ligament on the outside of the knee joint to ‘tighten up’ the outside of the knee and prevent rotational instability and re-rupture. Patient who may benefit from this procedure include:

- Young patients
- An ACL re-rupture
- Patients who have ligamentous laxity, or very ‘loose joints’

Should you decide on surgical management you will be admitted into the hospital on the morning of the surgery.

Please take note of the following:

- Ensure that you do not eat or drink anything on the day of surgery, unless otherwise instructed by Dr. Stewart or his receptionist. You can drink a small amount of water to take your chronic medicine on the day of surgery.
- Remember to bring all your chronic medication with you for your hospital stay.
- If you are taking any “blood thinners” such as Warfarin, Ecotrin, Plavix or Xarelto - please inform Dr. Stewart of this and please consult with your physician or cardiologist who prescribed the medication. This medication needs to be stopped five days prior to surgery.
- Please ensure that you have received medical aid pre-authorisation prior to the day of surgery. It is your responsibility to contact your medical aid to obtain pre-authorisation. Please forward the authorisation number to admin@stewartorthopaedics.co.za at least one day before admission.

On the day of surgery you will be seen by an anaesthesiologist who will discuss the anaesthetic with you. The surgery takes approximately 2 hours, depending on exactly what procedures are being done. After the surgery you will overnight in hospital and physiotherapy will commence the following day.

After Surgery

After surgery you will wake up in the ward and your knee will be in a Range of Motion (ROM) brace. You will have a padded dressing on your knee which will be removed before you go home and you will be given an above knee compression stocking which should be worn for 4 weeks.
A physiotherapist will see you in the ward after your surgery where they will teach you exercises which you are required to do at home approximately 3 - 4 times per day.
You will be discharged from hospital the day after surgery provided your pain is well controlled. In the immediate post operative period you will experience some pain and discomfort in the knee which can last up to 6 weeks, however it should improve after the first 2 weeks. You will be discharged with medication prescribed for the pain, please ensure that you take it as prescribed. Should you require additional analgesia then you can either contact Dr. Stewart's rooms or your GP.
You will be given an Ice-pack during your hospital stay. Please ice your knee 5 - 6 times per day for a 20 min duration.

You will be allowed to shower or bath, however do not get the dressing wet - use a black rubbish bag sealed at the top or a silicone sleeve. When showering - put a plastic chair in the shower so that you do not slip. Be careful when getting in and out of the shower.

Wearing your brace - Your brace will need to remain on 24 hours a day, even at night while you are sleeping. The only time you may remove your brace is to shower and do your physiotherapy exercises. For an isolated ACL reconstruction you will be required to wear the brace for 2 weeks. If a meniscus repair was performed at the same time you will be required to wear the brace for 6 weeks

Driving - Driving is not recommended for the first 6 weeks after surgery. The only exception to this is if the surgery was performed on your left leg and you drive an automatic vehicle.

Follow up - Please make an appointment between 10-14 days after the surgery to see Dr. Stewart in the rooms for a wound inspection and to remove the stitches. Please do not remove your wound dressing until he has seen you. If the dressing comes loose then a similar wound dressing can be purchased from your nearest pharmacy.
Dr. Stewart will review your progress every 6-8 weeks for approximately 9 months, or longer if required.

Returning to work - Most patients will be able to return to light office work between 4-7 days after the surgery. If your job requires any form of manual labour then it is unlikely you will be able to return to normal duty for approximately 6 months. If you are required to perform these duties at work then you should discuss the availability of an alternative role at the workplace with your employer.

Complications

All surgeries carry the risk of potential complications. In most cases the decision to proceed with surgery is made because the advantages of surgery outweigh the potential disadvantages.
The potential complications associated with ACL reconstruction surgery are rare, however, in order to make an informed decision the following complications are the most common:

Stiffness - Almost all patients will experience some degree of stiffness, mostly mild and lasting only a few weeks. Severe or prolonged stiffness can be prevented by strict adherence to the physiotherapy protocol.

Infection - All efforts are made to minimise the risk of infection, however, some patients, especially diabetics and smokers, are at an increased risk of getting an infection. In order to prevent the risk of infection the surgical procedure is performed in a sterile environment. Antibiotics are given at the time of the procedure and occasionally for 24hours afterwards and occlusive dressings are used until the wound has healed.
Post surgical infection may be a simple infection involving only the skin and wound edges, but sometimes it may involve the bone or joint. Despite adequate antibiotic treatment, a post surgical infection often requires additional surgical procedures in order to remove any infected tissue or fluid.

Deep Vein Thrombosis (DVT) - This term refers to a blood clot which forms in the deep veins of your leg. Risk factors include smoking, being overweight, the use of the oral contraceptive pill and prolonged periods of inactivity. Blood clots are incredibly uncommon after shoulder surgery. Treatment of a DVT involves taking blood thinning medication for between 3 - 6 months to try and dissolve the clot. If a blood clot comes loose it may lodge itself in your lungs resulting in a pulmonary embolism which can have devastating results. During your hospital stay you will be given a daily injection (Clexane) to prevent a DVT. When you are discharged you will be given a tablet or an injection to take home with you which must be used for 4 weeks.

Anaesthetic complications - Your anaesthesiologist will explain the most common potential complications.

Nerve injury - Most patients who have had a hamstring tendon graft will experience a small patch of numbness on the front of their leg below the incision. This is usually

temporary and will resolve within 6 - 12 weeks, however, occasionally it is permanent. It does not affect the outcome of the surgery and will not cause any weakness in the leg.

Other rare or unusual complications which haven't been discussed here can result from surgery or anaesthesia. If you are concerned about any specific complication or the advantages and disadvantages of the decision to proceed with surgery you can discuss these with me before the operation.

Recovery

In order to ensure the best possible outcome following surgery, it is essential that you visit a physiotherapist regularly as well as complete a home based rehabilitation program on a daily basis. A physiotherapist and biokineticist play a vital role in ensuring that your shoulder returns to normal function. A complete recovery can expect to take in excess of 9 - 12 months.

Return to sport - Return to sport will only be allowed after 9 months of adequate rehabilitation

Re-rupture - Globally the re-rupture rate is approximately 10%. This risk increases if you return to sport before 9 months, or before completing the rehabilitation program. The same risk factors for a first ACL rupture will also increase your risk of a re-rupture.