

Posterior Cruciate Ligament Injuries

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Introduction

The posterior cruciate ligament (PCL) is one of the less commonly injured ligaments of the knee. Understanding this injury and developing new treatments for it have lagged behind the other cruciate ligament in the knee, the anterior cruciate ligament (ACL), probably because there are far fewer PCL injuries than ACL injuries.

This guide will help you understand

- where the PCL is located
- how a PCL injury causes problems
- how doctors treat the condition

Anatomy

Where is the PCL, and what does it do?

Ligaments are tough bands of tissue that connect the ends of bones together. The PCL is located near the back of the knee joint. It attaches to the back of the femur (thighbone) and the back of the tibia (shinbone) behind the ACL.

The PCL is the primary stabilizer of the knee and the main controller of how far backward the tibia moves under the femur. If the tibia moves too far back, the PCL can rupture.

The PCL is made of two thick bands of tissue bundled together. One part of the ligament tightens when the knee is bent; the other part tightens as the knee straightens. This is why the PCL is sometimes injured along with the ACL when the knee is forced to straighten too far, or hyperextend.

Related Document: [A Patient's Guide to Knee Anatomy](#)

Causes

How do PCL injuries occur?

The most common way for the PCL alone to be injured is from a direct blow to the front of the knee while the knee is bent. Since the PCL controls how far backward the tibia moves in relation to the femur, if the tibia moves too far, the PCL can rupture.

Sometimes the PCL is injured during an automobile accident. This can happen if a person slides forward during a sudden stop or impact and the knee hits the dashboard just below the kneecap. In this situation, the tibia is forced backward under the femur, injuring the PCL. The same problem can happen if a person falls on a bent knee. Again, the tibia may be forced backward, stressing and possibly tearing the PCL.

Other parts of the knee may be injured when the knee is violently hyperextended, but other ligaments are usually injured or torn before the PCL. This type of injury can happen when the knee is struck from the front when the foot is planted on the ground.

Symptoms

What does an injured PCL feel like?

The symptoms following a tear of the PCL can vary. The PCL is not actually enclosed inside the knee joint like the ACL. So unlike an ACL tear, which swells the joint with blood, PCL injuries don't make the knee swell as much. Most patients with a PCL injury sense a feeling of stiffness and some swelling. Patients may also have a feeling of insecurity and giving way of the knee, especially when trying to change direction on the knee. The knee may feel like it wants to slip.

The pain and moderate swelling from the initial injury will usually be gone after two to four weeks, but the knee may still feel unstable. The symptom of instability and the inability to trust the knee for support are what requires treatment. Also important in the decision about treatment is the growing realization by orthopedic surgeons that long-term instability leads to early arthritis of the knee.

Diagnosis

How do doctors identify the problem?

The history and physical examination is probably the most important tool in diagnosing a ruptured or deficient PCL. During the physical examination, the doctor will check to see if the tibia moves too far back on the femur. Tests are also done to see if other knee ligaments or joint cartilage have been injured. The doctor may order X-rays of the knee to rule out a fracture. Ligaments and tendons do not show up on X-rays.

The magnetic resonance imaging (MRI) scan is probably the most accurate test without actually looking into the knee. The MRI machine uses magnetic waves rather than X-rays to show the soft tissues of the body. This machine creates pictures that look like slices of the knee. The pictures show the anatomy, and any injuries, very clearly. This test does not require any needles or special dye and is painless.

In some cases, arthroscopy may be used to make the definitive diagnosis if there is a question about what is causing your knee problem. Arthroscopy is a type of operation where a small fiber-optic TV camera is placed into the knee joint, allowing the surgeon to look at the structures inside the joint directly. The vast majority of PCL tears are diagnosed without resorting to this type of surgery, though arthroscopy is sometimes used to repair a torn PCL.

Treatment

What can be done for the condition?

Nonsurgical Treatment

Initial treatment for a PCL injury focuses on decreasing pain and swelling in the knee. Rest and mild pain medications, such as acetaminophen, can help decrease these symptoms. You may need to use a long-leg brace and crutches at first to limit pain. Most patients are given the okay to put a normal amount of weight down while walking.

Less severe PCL tears are usually treated with a progressive rehabilitation program. Patients intending to return to high-demand activities may require a functional knee brace before returning to these activities. These braces are designed to replace knee stability when the PCL doesn't function properly. They help keep the knee from giving way during moderate activity, but they can give a false sense of security and won't always protect the knee during sports

that require heavy cutting, jumping, or pivoting. These braces are not the type you can buy at the drugstore. Most orthopedists will recommend wearing a brace for at least one year after a reconstruction, so even if you decide to have surgery, a brace is probably a good investment.

Most patients receive physical therapy treatments after a PCL injury. Therapists treat swelling and pain with the use of ice, electrical stimulation, and rest periods with your leg supported in elevation.

Exercises are used to help you regain normal movement of joints and muscles. Range-of-motion exercises should be started right away with the goal of helping you swiftly regain full movement in your knee. This includes the use of a stationary bike, gentle stretching, and careful pressure applied to the knee by the therapist.

Exercises are also given to improve the strength of the quadriceps muscles on the front of the thigh. As your symptoms ease and strength improves, you will be guided in specialized exercises to improve knee stability.

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