

Collateral Ligament Injuries

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Introduction

The collateral ligaments are commonly injured parts of the knee. An injury to these ligaments usually involves a significant force, such as a fall while skiing or a direct impact to the side of the leg.

This guide will help you understand

- where the collateral ligaments are located
- how a collateral ligament injury causes problems
- how doctors treat the condition

Anatomy

Where are the collateral ligaments, and what do they do?

Ligaments

are tough bands of tissue that connect the ends of bones together.

There are two collateral ligaments, one on either side of the knee, that limit side to side motion of the knee. The medial collateral ligament (MCL) is found on the side of the knee closest to the other knee. The lateral collateral ligament (LCL) is found on the opposite side of the knee.

If an injury causes these ligaments to stretch too far, they may tear. The tear may occur in the middle of the ligament, or it may occur where the collateral ligament attaches to the bone, on either end. If the force from the injury is great enough, other ligaments may also be torn. The most common combination is a tear of the MCL and a tear of the anterior cruciate ligament (ACL). The ACL runs through the center of the knee and controls how far forward the shinbone (tibia) moves in relation to the thighbone (femur).

MCL tears are more common than LCL tears, but a torn LCL has a higher chance of causing knee instability. One reason for this is that the top of the shinbone (called the tibial plateau) forms a deeper socket on the side nearest the MCL. On the other side, near the LCL, the surface of the tibia is flatter, and the end of the shinbone can potentially slide around more. This difference means that a torn LCL is more likely to cause knee instability.

Related Document: A Patient's Guide to Knee Anatomy

Causes

How do collateral ligament injuries occur?

The collateral ligaments can be torn in sporting activities, such as skiing or football. The injury usually occurs when the lower leg is forced sideways, either toward the other knee (medially) or away from the other knee (laterally). A blow to the outside of the knee while the foot is planted can result in a tear of the MCL. Slipping on ice can cause the foot to move outward, taking the lower leg with it. The body weight pushing down causes an awkward and unnatural force on the whole leg, much like bending a green stick. The MCL may be torn in this instance because the force hinges the medial part of the knee open, putting stress on the MCL.

The LCL is most often injured when the knee is forced to hinge outward away from the body. It can also be torn if the knee gets snapped backward too far (hyperextended).

Symptoms

How do collateral ligament injuries cause problems?

An injury violent enough to actually tear one of the collateral ligaments causes significant damage to the soft tissues around the knee. There is usually bleeding and swelling into the tissues surrounding the knee. The damage may also cause bleeding into the knee joint itself. The knee becomes stiff and painful. As the initial stiffness and pain subside the knee joint may feel unstable, and the knee may give way and not support your body weight.

Chronic, or long-term, instability due to an old injury to the collateral ligaments is a common problem. If the torn ligament heals but is not tight enough to support the knee, a feeling of instability will continue to be felt. The knee will give way at times and may be painful with heavy use.

Diagnosis

How do doctors identify this problem?

The initial physical examination usually gives a very good indication of which ligaments have been torn in and around the knee. In some cases, there is too much pain and muscle spasm to completely tell what is damaged in your knee. Your physician may suggest a period of rest with a knee splint and then reexamine the knee in five to seven days. This will allow some of the initial pain and spasm to decrease, and the exam may be more reliable.

X-rays may be required to rule out the possibility that any bones have been damaged. Stress X-rays may be useful to confirm that one of the collateral ligaments has been torn. Stress X-rays are plain X-rays taken with someone attempting to open the side of the joint that is suspected of being unstable. The X-rays will show a widening of the joint space on that side if instability is present.

Magnetic resonance imaging (MRI) may be ordered if there is evidence that multiple injuries have occurred, including injury to the ACL or meniscus (a special type of ligament in the knee joint). The MRI machine uses magnetic waves rather than X-rays to create pictures that look like slices of the knee.

This test does not require any needles or special dye and is painless. If there is uncertainty in the diagnosis following the history and physical examination, or if other injuries in addition to the collateral ligament tear are suspected, an MRI scan will probably be suggested.

Treatment

How do doctors treat collateral ligament injuries?

Nonsurgical Treatment

An isolated injury to the LCL or MCL rarely requires surgical repair or reconstruction. Significant tears to the LCL are usually treated by holding the knee straight in a cast or brace for three weeks, but most doctors opt not to immobilize the knee in a cast when the MCL is torn. Some doctors prefer to issue their patients a knee brace after the injury if there is significant pain and instability.

Initial treatments for a collateral ligament injury focus on decreasing pain and swelling in the knee. Rest and anti-inflammatory medications, such as aspirin, can help decrease these symptoms. You may need to use crutches until you can walk without a limp.

Most patients receive physical therapy treatments for collateral ligament injuries. Therapists may 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 knee movement. Range-of-motion exercises should be started right away with the goal of helping you swiftly regain full knee movement. This includes the use of a stationary bike, gentle stretching, and careful pressure applied to the joint by the therapist.

Exercises are also used to improve the strength of the quadriceps muscle on the front of the thigh. As your symptoms ease and strength improves, you will be guided through advancing stages of exercise.

When you get full knee movement, your strength is improving, and your knee isn't giving way, you'll be able to gradually get back to your work and sport activities. Some doctors prescribe the use of a functional brace for athletes who intend to return quickly to their sport. These braces support the knee and protect the collateral ligaments.

Patients who continue having periods of swelling or instability in the knee may need surgery to correct their problem.