Torn Meniscus

Introduction

The meniscus is a commonly injured structure in the knee. The injury can occur in any age group. In younger people, the meniscus is fairly tough and rubbery, and tears usually occur as a result of a fairly forceful twisting injury. In older people, the meniscus grows weaker with age, and meniscal tears occur as a result of a fairly minor injury, even from the up and down motion of squatting.

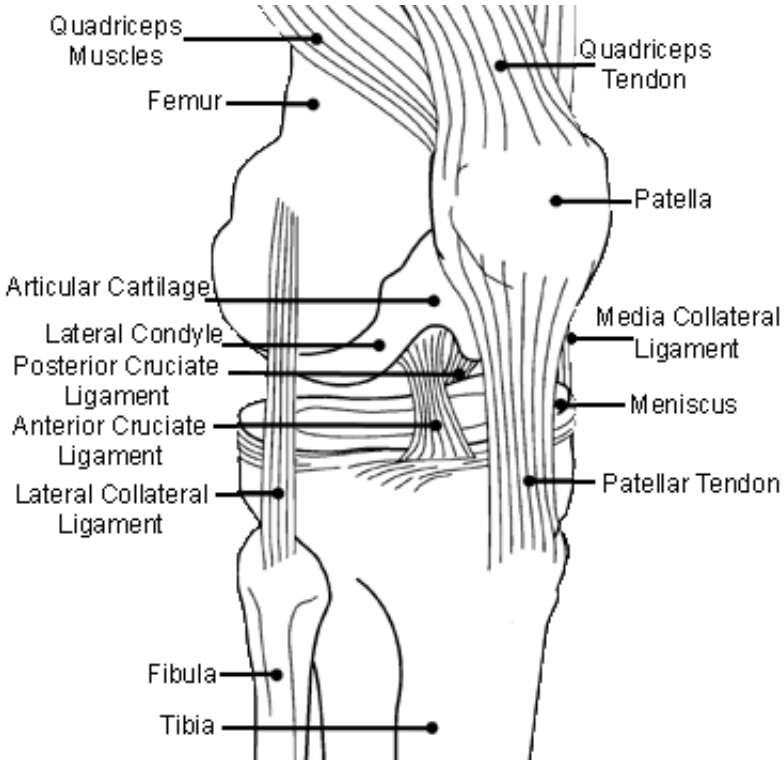
Anatomy

There is a meniscus on either side of the knee joint. The meniscus acts like a gasket between the femur and the tibia to spread out the weight being transferred from the femur above to the tibia below. The knee anatomy section points out that articular cartilage covers the ends of the bones that make up the joint. The articular cartilage surface is a tough, very slick material that allows the surfaces to slide against one another without damage to either surface. This ability of the meniscus to spread out the force on the joint surfaces as we walk is important because it protects the articular cartilage from excessive forces occurring in any one area on the joint surface. Without the meniscus, the concentration of force into a small area on the articular cartilage can damage the surface, leading to degeneration over time.

Remember also that the meniscus helps with the stability of the knee joint. The meniscus converts the tibial surface into a shallow socket. A socket configuration is more stable than a flat surface. Without the meniscus, the round femur would be free to slide on top of the flat tibial surface.

The meniscus can be torn in several ways. The entire inner rim of the medial meniscus can be torn in what is called a bucket handle tear. The meniscus can also have a flap torn from the inner rim, or the tear can be a degenerative type tear where a portion of the meniscus is frayed and torn in multiple directions but usually as we get older the tear is described as a horizontal cleavage tear.

You can download an .avi movie of a flap tear of the meniscus and also a brief movie of using the instruments to remove the meniscal tear.



Causes

Meniscus injuries can occur in any age group, but the causes are somewhat different for each age group. In younger people, the meniscus is a fairly tough and rubbery structure. Tears in the meniscus in patients under the age of thirty usually occur as a result of a fairly forceful twisting injury. In the younger age group, meniscal tears are more likely to be caused by a sport activity.

In older people, the meniscus grows weaker with age. The tissue that makes up the meniscus becomes degenerative and is much easier to tear. Meniscal tears in the older age group occur as a result of a fairly minor injury, even from the up and down motion of squatting. Degenerative tears of the meniscus are commonly seen as a part of the overall condition of osteoarthritis of the knee in the older population. In many cases, there is no one associated injury to the knee that leads to the meniscal tear.

Symptoms

The most common problem caused by a torn meniscus is pain . The pain may be felt along the joint line where the meniscus is located or may be more vague and involve the whole knee. If the torn portion of the meniscus is large enough, locking may occur. Locking simply refers to the inability to completely straighten out the knee. Locking occurs when the fragment of torn meniscus gets caught in the hinge mechanism of the knee and will not allow the leg to straighten completely. (Imagine sticking a pencil between the hinges in a door and trying to close it.)

There are long term effects of a torn meniscus as well. The constant rubbing of the torn meniscus on the articular cartilage may cause wear and tear on the surface, leading to degeneration of the joint. The knee may swell with use and become stiff and tight. This is usually because of fluid accumulating inside the knee joint - sometimes called water on the knee. This is not unique to meniscus tears, but occurs whenever the knee becomes inflamed.

Diagnosis

Diagnosis begins with a history and physical. The examination will try to determine where the pain is located, whether or not locking has occurred, and if you have any clicks or pops as the knee is moved. X-rays will not show the torn meniscus. X-rays are mainly useful to determine if other conditions are present. The MRI scan is very good at showing the meniscus. The MRI (Magnetic Resonance Imaging) machine uses magnetic waves rather than x-rays, to show the soft tissues of the body. With this machine, we are able to "slice" through the area we are interested in very clearly. Usually, this test is done to look for injuries, such as tears in the menisci or ligaments of the knee. This test does not require any needles or special dye, and is painless. Here the MRI scan shows a tear in the meniscus. If there is a uncertainty in the diagnosis following the history and physical examination, or if other injuries in addition to the meniscal tear are suspected, the MRI scan may be suggested.

If the history and physical examination strongly suggest that a torn meniscus is present, then arthroscopy may be suggested to confirm the diagnosis and treat the problem at the same time. Arthroscopy is a type of an operation where a small fiberoptic TV camera is placed into the knee joint, allowing the orthopedic surgeon to look at the structures inside the knee joint directly. The arthroscope allows your doctor to actually look into the knee joint and see the condition of the articular cartilage, the ligaments and the menisci .

Treatment

Initial treatment for a torn meniscus usually is directed towards reducing the pain and swelling in the knee. Your physician may recommend crutches for resting the knee for several days and suggest ice to reduce the pain and swelling. If the knee is locked and cannot be straightened out, surgery may be recommended as soon as reasonably possible to remove the torn portion that is caught in the knee joint. Once a meniscus is torn, it will most likely not heal on its own.

If the symptoms continue, surgery will be required to either remove the torn portion of the meniscus or to repair the tear. Most

meniscus surgery today is done using the arthroscope. Small incisions are made in the knee to allow the insertion of a small TV camera into the joint. Through another small incision, special instruments are used to remove the torn portion of meniscus while the arthroscope is used to see what is happening.

In some cases, the meniscus tear can be repaired. The arthroscope is used to view the torn meniscus. Sutures are then placed into the torn meniscus until the tear is repaired. Repair of the meniscus is not possible in all cases. Young people with relatively recent meniscal tears are the most likely candidates for repair. Degenerative type tears in older people are not usually repairable.