

MENISCAL TEAR

Knee injuries are pretty common problems - and not just in athletes. Oftentimes, the cartilage is to blame.

The knee is a hinge joint, formed by the ends of two bones. There are two bones in the lower leg: the tibia, which is the larger of the two bones, and the fibula. The bone in the upper leg is called the femur. The end of the femur sits on the upper end of the tibia, which contains two cartilages, or *menisci*, that act as shock absorbers between the femur and tibia. The tibia and femur are held together by ligaments, on the inside and outside. These ligaments control motion in certain directions, so that only a very specific range of motion is permitted. It is these ligaments and other tissues that keep your knee from bending "backwards" or giving out to either side.

The menisci sit between the bones and each one looks a bit like a horseshoe. The medial meniscus is on the inner side and is attached to the tibia and the medial collateral ligament. The lateral meniscus is on the outer side of the knee and is attached to the tibia but not to the corresponding lateral collateral ligament. Because of this, it is less prone to tears than the medial meniscus just because it is more mobile. Each meniscus is thicker where it attaches to the joint lining and thinner as it gets nearer the middle of the joint.

The menisci serve several important functions. First, they provide stability to the knee by giving the femur a deeper socket on the tibia to fit into. This means the knee doesn't slip and slide all over the place. Second, the menisci help distribute the body weight; they keep the bones from rubbing together. By acting as spacers between the femur and tibia, the menisci let the normal joint fluid spread around the joint, passing its nutrients into the tissues, or articular cartilage, that cover the end of each bone. And, keeping those tissues healthy is essential in preventing degenerative arthritis. And third, the menisci act as shock absorbers. Every time we walk, run, or jump the medial meniscus and the lateral meniscus help absorb the full pressure exerted across the knee joint.

Causes of Meniscal Tears

Injuries to the meniscus are usually called tears and they can happen to anyone. Any sudden twisting or blunt forces exerted onto the meniscus can result in damage. Sometimes, though, we might not even notice that we've done anything to cause the tear.

In people under the age of 30, the meniscus is fairly tough and rubbery. Tears are not that common unless there is a fairly forceful twisting injury such as can occur in sports. In some instances, a tear can heal itself if it is small and is located on the edges of the meniscus. If the tear is closer to the middle, there is no blood supply, so healing will not occur.

As we get older, though, the meniscus weakens and tears can occur more easily - even from something as simple as squatting or stepping of a curb onto an uneven surface. These tears can even occur as a gradual result of a degenerative condition such as osteoarthritis, rather than as the result of a specific injury.

Meniscal tears can occur in several locations. Sometimes a tear happens along the periphery or rim of the meniscus, creating kind of a flap in the tissue. When this happens, it's called a "bucket-handle" tear. Of course, the whole rim can also be torn. Then there are degenerative tears that can happen anywhere in the meniscus. When that happens, the meniscus can be torn in several directions and appear as if it were frayed, like a pair of cut-offs. Or a tear can occur across the center of the meniscus.

Symptoms of Meniscal Tears

Generally, when someone has a torn meniscus there is significant pain at the joint line. But, sometimes, symptoms may not appear for days or even weeks. And, even if swelling occurs immediately, many people pay little attention to the pain and go about their regular activities. As time passes though, the pain can become more bothersome, and may be fairly severe when the knee is straightened possibly with immediate or delayed swelling. There may also be stiffening and/or a

"popping" noise when the knee moves. Sometimes the joint locks up; this is the result of torn pieces of the meniscus getting caught between the femur and tibia. Remember, it's a pretty small space the menisci are situated in, so fragments of a meniscus or even a flap of a tear can get caught and cause this stiffening.

If your physician notices these symptoms of a meniscal tear, x-rays are used to rule out any possible fracture or other problem. Assuming there is nothing on the x-rays, then the MRI (magnetic resonance imaging) can be very helpful if a meniscal tear is suspected. An MRI uses magnetic waves and "slice" through an area of the body, allowing the physician to see a cross-section of the affected area, including bones and soft tissues. If classic symptoms are present such as a "clunking" sensation, locking and pain at the medial joint line, then an MRI may not be necessary.

Treatment of Meniscal Tears

Initial treatment of a tear usually focuses on controlling inflammation and pain. RICE is the standard treatment form then. RICE stands for rest, ice, compression, and elevation. In essence it means to give the knee a chance to recover by limiting how active it is. At the same time, for the first few days, apply ice to the knee every three or four hours - and leave it on for about 20 or 30 minutes. This should help lessen the swelling and ease some of the discomfort. Wrapping the knee in an elastic bandage works to compress the area and this too helps keep swelling to a minimum. Taking a non-steroidal anti-inflammatory - something like ibuprofen - can help with the swelling and pain, too. Then gradually, as you're able, you can try returning to normal activity.

In some cases though, arthroscopic surgery may be necessary. Sometimes this surgery is needed just to see if there is a tear that's causing the pain and often, it's the best course of action for dealing with the tear.

As pointed out earlier, the menisci are pretty important pieces in the knee. When they're damaged, the whole knee can become unstable and arthritis can be a result. And while it's natural to want to explore options other than surgery, there are times when surgery is the best alternative to save the knee from further damage and later problems.

Arthroscopic surgery is about as non-invasive as you can get for a surgical procedure. It's from a couple of Greek words, "arthro" and "skopein" and literally means "to look within the joint." You'll still need a general, spinal or a local anesthetic, but it's a day surgery procedure so you're in and out of the hospital in the same day. After the anesthetic the knee is cleaned and then flushed with a clear solution and distended so that the knee may be visualized. The doctor uses an arthroscope, a small fiber-optic telescope about the size of a pen, to look into the knee joint. When the surgery is over, you'll have one or two small incisions with a few stitches.

If a tear is seen with an arthroscope, the surgeon can then determine whether it is repairable or if the meniscus should be removed. Clearly, repair is preferable when possible. And, in those cases, another small incision is made so the surgeon can insert the miniature surgical instruments needed for the repair.

In general, if the meniscus is in pretty good shape, despite the tear, partial removal or repair are preferable to complete removal.

A meniscus repair involves suturing the torn edges of the meniscus back into place and letting the meniscus mend itself. But only about 10% of all meniscus tears are repairable in this manner. It is more often that a partial meniscectomy will be needed. This means the damaged part of the meniscus is removed, leaving the healthy tissue intact. Recovery from this process is quicker than the repair but has certain ramifications. The loss of meniscus tissue means there is less protection between the femur and tibia, and if a significant amount of the meniscus is removed, the protective surfaces of each bone, or the articular cartilage, may begin to degenerate. In some people, arthritis may set in 10 to 15 years after removal of the meniscus.

If one tears the meniscus, the easiest to deal with is the peripheral menisco-capsular tear. This particular tear occurs on the outer edges of the meniscus, called the menisco-capsular junction. At this location in the meniscus there is a small blood supply and because of this, arthroscopic repair can be done leaving the meniscus to heal itself.

On the other hand, bucket handle tears can be excised or repaired. Partial excision leaves the rest of the meniscus intact. This partial removal has a short recovery time. Repairs are often treated with a combination of sutures that are inserted into the torn cartilage.

Tears that run vertically through the thickness of the meniscus can often be repaired, leaving the entire meniscus intact.

In general, recovery from arthroscopic surgery takes one-to-two weeks. If a repair is done though, the recovery time is longer - up to 6 weeks in a brace and on crutches - and the rehabilitation period is extended.

Repairs tend to be most effective for people under the age of 30 who have the procedure done within two months of the first injury.

The age of a patient does play an important role. As he gets older, the likelihood that a repair will work lessens simply because the meniscal tissue has started to naturally deteriorate anyway.

Degenerative types of tears, however, tend not to be good candidates for surgical repair, due to the nature of the tear and the healing potential of the weakened tissues.

Rehabilitation should include an exercise program to stretch and build the leg muscles. Positions of extreme knee flexion should be avoided, however. This rehabilitation should be gradual, in order to reduce the risk of worsening the injury or re-injuring the area. Full return to activity should be delayed until all signs of injury, including pain and swelling, are gone and you have full range of motion without pain. Swimming may be recommended as part of a rehabilitation program, as it reduces stress on the knee during exercise.

If recurring pain, stiffness, or "popping" occur, you should see your doctor.

Possible Complications of Meniscal Tear Surgery

Although surgery for meniscus repair is usually without any significant problems, there occasionally may be unforeseen complications associated with anesthesia, including respiratory or cardiac malfunction. The surgery itself may be complicated by infection, injury to nerves and blood vessels, fracture, weakness, stiffness or instability of the joint, pain, inability to repair a meniscus, re-rupture, or the need for additional surgeries.

Finally, not all meniscus tears are repairable. If a significant period of time has passed since the meniscus was torn, the cartilage may have simply worn away, and what cartilage remains is not strong enough to hold sutures. In these circumstances, the surgeon will simply remove all the torn cartilage and fix any other problems in the knee.

If initial surgical attempts to treat meniscus tears fail to give you a useable knee, there are other extensive procedures available. Remember that all surgical procedures are tailored to meet individual needs, and that recovery depends not on surgery alone but also on commitment to the rehabilitation process.

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