

## Meniscal Injury

### Knee Anatomy

Knee injuries are fairly common problems, not just in athletes. 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.

### What Are Menisci?

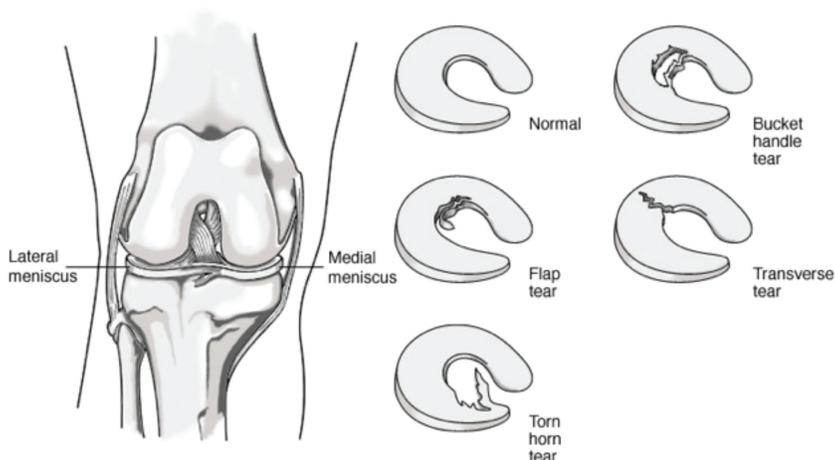
The menisci sit between the bones and each one looks a bit like a horseshoe. The medial meniscus is on the inner side and is attached to the tibia and the medial collateral ligament. The lateral meniscus is on the outer side of the knee and is attached to the tibia but not to the corresponding lateral 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 and 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. Keeping those tissues healthy is essential in preventing degenerative arthritis. Finally, 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 we might not even notice that we've done anything to cause the tear.

For 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 the meniscus weakens and tears can occur more easily, even from something as simple as squatting or stepping off 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 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. 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. 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.

### **Diagnosis of a Meniscal Tear**

If Dr. Gudeman notices the 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 "slices" through an area of the body, allowing him to see a cross-section of the affected area, including bones and soft tissues. The MRI is not perfect in diagnosing a meniscal tear. Therefore, its result must be correlated with a patient's history and exam.

### **Non-Surgical Treatment of Meniscal Tears**

Initial treatment of a tear usually focuses on controlling inflammation and pain. RICE (rest, ice, compression and elevation) is the standard treatment. In essence it means to give the knee a chance to recover by limiting how active it is. 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. Dr. Gudeman may also suggest a home exercise program and/or formal physical therapy to address strength deficits, improve range of motion or to control swelling. Then gradually, as you're able, you can try returning to normal activity.

### **Surgical Treatment of Meniscal Tears**

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.

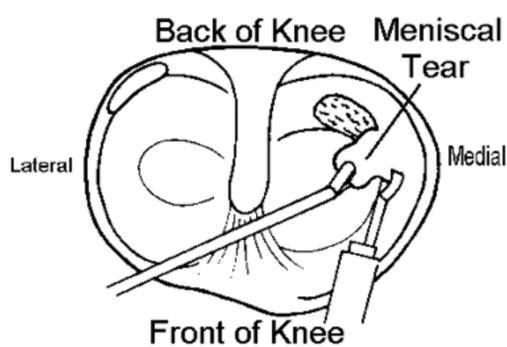
As pointed out earlier, the menisci are important pieces in the knee. When they're damaged, the whole knee can become unstable and arthritis can be a result or pre-existing arthritis can worsen. And while it's natural to want to explore options other than surgery, there are times when surgery is the 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. The Greek words “arthro” and “skopein” means “to look within the joint.” You’ll still need a general, spinal or a local anesthetic, but it’s an outpatient 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. Dr. Gudeman 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 three small incisions with a few stitches.

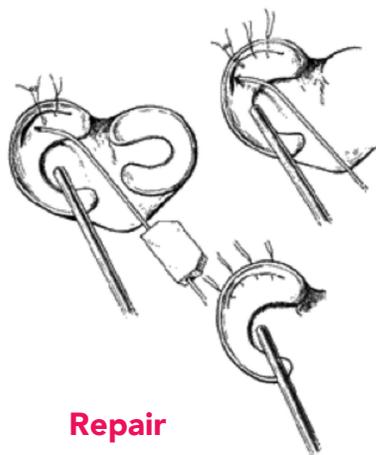
### Repair Versus Meniscectomy

If a tear is seen with an arthroscope, Dr. Gudeman can then determine whether it is repairable or if part of the meniscus should be removed. Clearly, repair is preferable when possible. In those cases, another small incision is made so he can insert the miniature surgical instruments needed for the repair. In general, if the meniscus is in good shape, despite the tear, partial removal or repair is 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 percent of all meniscus tears are repairable in this manner.

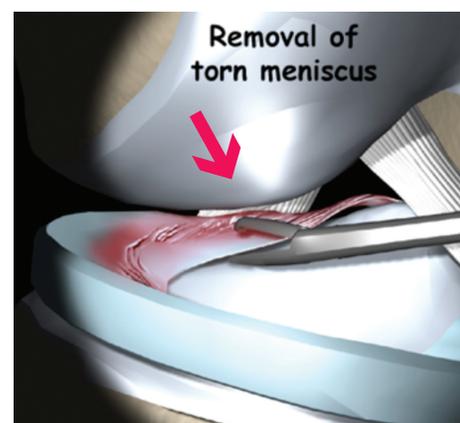
It is more often that a partial meniscectomy will be needed. This means the damaged part of the meniscus is removed, leaving the healthy tissue intact. Recovery from this process is quicker than the repair but has certain ramifications. The loss of meniscus tissue means there is less protection between 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 partial removal of the meniscus.



**Meniscal Tear**



**Repair**



**Meniscectomy**

### Post-Operative Expectations

In general, recovery from arthroscopic surgery takes three to six weeks. If a repair is done though, the recovery time can last four to six weeks in a brace and on crutches and the rehabilitation period is extended.

The age of a patient does play an important role. As one 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. These individuals may be better candidates for a partial removal of the meniscus.

Rehabilitation should include an exercise program to increase muscle strength, range of motion and control swelling. Positions of extreme knee flexion should be avoided. This rehabilitation should be gradual, in order to reduce the risk of worsening the injury or re-injuring the area. Swimming may be recommended as part of a rehabilitation program, as it reduces stress on the knee during exercise. Time to return to full activity without restrictions is variable. Return to full activities, after partial removal of the meniscus, (meniscectomy) may take up to four to six weeks. Whereas for a meniscal repair, the time to return to full activity may be three months.

If recurring pain, stiffness or “popping” occur, you should inform Dr. Gudeman or his staff.

### **Possible Complications of Meniscal Tear Surgery**

Although surgery for meniscus repair or partial meniscectomy 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, development of arthritis, injury to nerves and blood vessels, fracture, weakness, stiffness or instability of the joint, pain, inability to repair a meniscus, inability of the repair to heal, re-tear 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.

### **Informative Websites**

[www.saveyourknees.org](http://www.saveyourknees.org)

[www.orthoinfo.org](http://www.orthoinfo.org)

[www.sportsmed.org](http://www.sportsmed.org)

[www.aana.org](http://www.aana.org)

Helping you achieve the optimal activity level  
for your lifestyle is my first priority.

- Scott Gudeman, MD



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