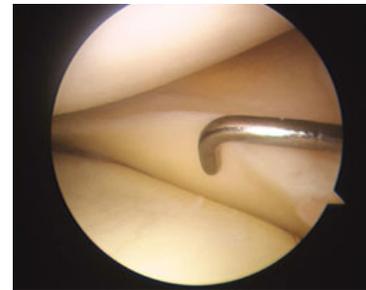
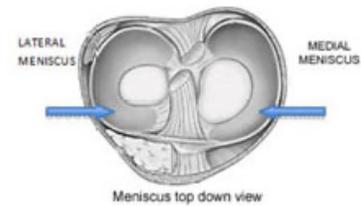


## Arthroscopic Knee Surgery

Arthroscopic knee surgery is often used to repair knee injuries, which are exceptionally common in today's world. This is really no surprise, as people are extremely active well into their advanced years. Unfortunately, our joints are prone to deterioration as we age and the abuse of our bodies in our youth is not as well tolerated in our middle age and senior years.



In particular, our knees have a disappointingly high tendency to develop mechanical problems with the shock absorbing cushion known as the meniscus. The meniscus is a tough, rubbery structure shaped like the letter "C" and is made of fibrocartilage which can tolerate great stress. There are actually two menisci in each of our knees; an outside (lateral) meniscus and an inside (medical) meniscus and they are positioned between the thigh bone (femur) and the shin bone (tibia).



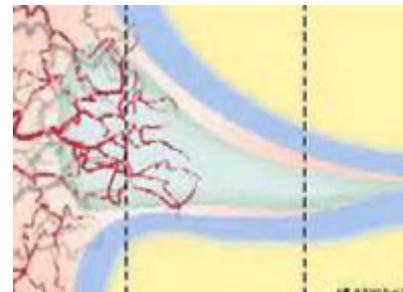
The end of the femur is basically round, and the tibia is flat. The meniscus helps to transition the stresses created by activity from the round surface to the flat surface and are important in distributing the weight and impact loading that crosses the knee in daily activity. This is especially important during increased activity, as in sports, when the loads on the knee are enormous. The menisci add stability to the knee joint. They convert the surface of the tibia into a shallow "socket" which is more stable than it would be if just left flat. Without the menisci, the round femur would slide in a dysfunctional manner across the flat surface of the tibia.

# How the meniscus is injured



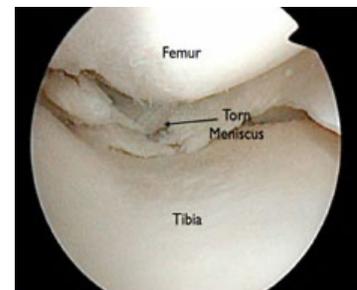
An injury to a meniscus in your knee can occur at any age, but the causes and resultant damage are somewhat different for each age group. In younger people, the meniscus is a fairly tough and rubbery structure. Tears in the meniscus in patients under 30-years old usually occur as a result of a fairly forceful twisting injury. In this younger age group, meniscal tears are more likely to be caused by a sporting activity, as it takes a great deal of force applied to the knee to cause a tear in a healthy meniscus. In addition, the meniscal tears in younger patients are often near the attachment periphery where there is a blood supply from the capsule of the knee. Only the most peripheral 10 – 15% of the meniscus has enough blood supply to allow adequate healing. These peripheral tears often lend themselves to repair rather than resection, but not always.

The meniscus weakens with age, making the menisci prone to degeneration and tearing. People of older ages often end up with a tear as a result of a minor injury, such as from the up-and-down motion of squatting. Most often, there isn't one specific injury to the knee that leads to the "degenerative" type of meniscus tear. These tears of the menisci are commonly seen as a part of the overall condition of osteoarthritis of the knee in older adults and are referred to as "degenerative tears." More importantly, these degenerative type tears through the middle or non-vascularized areas are not able to be repaired and the damaged sections will generally require removal to resolve the pain.



## Symptoms of a meniscal tear

Common symptoms of a meniscus tear are pain, stiffness, swelling, catching or locking of the knee, and the sensation of "giving way." You might actually feel a "pop" when you tear a meniscus, although this dramatic sensation is not common for most patients. Most people can still walk on their injured knee right after the onset of pain and in fact, many athletes keep playing on a knee with a torn meniscus. Over two or three days, your knee will gradually become stiffer and more swollen and greatly limit your activity.



If a tear in the meniscus is small and symptoms resolve in a few weeks, then non-surgical treatment may work well. Unfortunately, a larger tear, particularly the degenerative type, will not heal itself and arthroscopic knee surgery may be required. The meniscus has a very poor blood supply and healing depends on the presence of adequate blood for a tissue to

heal. Since degenerative-type tears in older adults most commonly occur in the areas where the blood supply is quite poor, these types of tears will rarely become asymptomatic on a permanent basis. Sometimes, if a patient cuts way back on their activity, the knee pain will settle down for a time, but once the normal activity increases, the pain from the torn meniscus will again become a problem.

## Diagnosis of a meniscal tear



The most useful information to determine the presence of a torn meniscus comes from a good history provided by a patient and a thorough physical exam done by the physician. Common findings on physical exam are tenderness at the joint line and pain with full flexion of the knee (squatting down). Although these positive findings are very supportive to the diagnosis, they can also be indicative of and associated with other problems (i.e., ligament injury). For this reason, various imaging studies are typically obtained as well. Typically a plain multi-plane X-ray series of the knee is obtained. Although X-ray images do not show meniscal tears, they may show other causes of knee pain, such as osteoarthritis, which in its early phases can be a contributing factor to a torn meniscus. A more specific study that can identify meniscal injury and articular surface pathology is a magnetic resonance scan (**MRI**). A high quality MRI scan can give very clear images of the meniscus and will often clinch the diagnosis of a meniscal tear as the cause of your painful knee.

## Non-surgical treatment of torn meniscus

The majority of meniscus tears, though very painful at first, will settle down with time to a less painful level. The typical treatments to help lessen the pain are: **Rest, Ice, Compression, and Elevation** — the well-established **RICE** treatment of a skeletal injury. In addition, the benefits of non-steroidal anti-inflammatory medications (NSAIDs) like Celebrex, Mobic, Aleve, Voltaren, Ibuprofen, or even aspirin, help to reduce the pain and swelling.



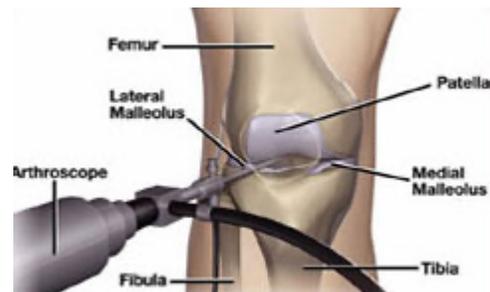
Once the initial pain has subsided, physical therapy can start under the guidance of a trained professional therapist. The goals of therapy will be to regain full motion in the knee and keep the strength of the supporting musculature high to prevent atrophy. But remember, despite this very conservative approach, most meniscal injuries will not heal and may cause symptoms of pain again in the future, requiring arthroscopic knee surgery.

It remains a point of discussion as to whether or not you will do damage to your knee if you leave a torn meniscus untreated in your knee. Most surgeons agree that you are not causing your knee to become arthritic if it is not already afflicted with this problem. Patients who delay surgery to see if they can live with this injury are not doing themselves any harm, but since these injuries will not truly heal, the unpredictable nature of the injury leads most patients to arthroscopic knee surgery to repair the tear.

## Arthroscopic knee surgery

Arthroscopic knee surgery to repair a torn meniscus is one of the most commonly done surgical procedures each year in this country, with estimates of over 1 million of these procedures annually. It is performed using a camera on a long fiber optic lens called an arthroscope, inserted through small 5mm incisions near the front of your knee. This arthroscope provides a clear view of the inside of your knee. In addition, the actual repair and removal work is done with the aid of a variety of miniature surgical instruments inserted near the arthroscope. To maintain a clear view, water is constantly being pumped under pressure into the knee and evacuated through the arthroscope, along with any debris such as loose articular cartilage, pieces of the meniscus and blood.

The great advantage of arthroscopic knee surgery is that major work on your knee that used to require a wide open incision and a long recovery, now can be done through very small incisions. This dramatically lessens the post-operative pain and hastens the recovery for most patients.



Try to understand that the small nature of the incisions does not lessen the intensity of the work done to your knee. Patients have a tendency to assume that because the incisions are small, that the work done in the knee is trivial. This mis-assumption will lead patients to underestimate the time it takes to recover from arthroscopic knee surgery. Generally, it is best to assume that it will take at least 4-6 weeks from arthroscopic knee surgery to be back to most sports. Typically patients will be able to return to a low physical demand job, sitting most of the day, in just a few days.

The actual arthroscopic knee surgery procedure starts with you lying comfortably on an operating table. The anesthesiologist will put you to sleep. This is **general anesthesia**. At this point the surgeon and his team will once again check that the knee chosen for surgery is actually being addressed. The knee will be injected with a long-acting **local anesthetic** to make the knee more comfortable upon waking.



Once anesthetized, the knee will be secured to the operating table, surgically scrubbed for sterility and draped with sterile drapes. The two surgical portals (~5mm) for the arthroscope and instruments will be identified, anesthetized, and opened, at which point the arthroscope is inserted into the knee. The surgeon is able to see the inside of your knee while watching a nearby TV monitor. Throughout the arthroscopic knee surgery, water is being pumped through the arthroscope under slight

pressure to keep a clear picture and to help remove the debris generated during the procedure.

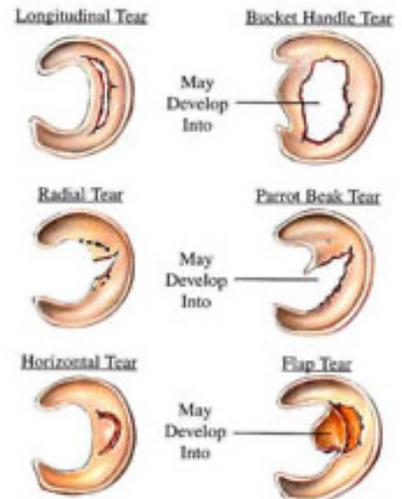
During arthroscopic knee surgery, the arthroscope is moved around the various compartments of your knee in a careful and methodical manner to evaluate all aspects of the knee. The surgeon is looking for several things in your knee, including any loose pieces floating around your knee, the surfaces of the joint, the ligaments in your knee, and of course the medial and lateral menisci of your knee. Various probe-type instruments are used, much like a dentist will use a probe to look for cavities or soft spots in your teeth. Once the problem area has been identified, the work to repair the torn meniscus can begin.

The meniscus can tear in a variety of different ways. The disrupted or torn part of the meniscus will become trapped between the moving surfaces of the knee. When your femoral surface “rolls over” the trapped part of the meniscus, trapping it against the tibial surface, it causes great pain that is perceived by the nerves in the bone itself. This movable part of the torn meniscus is referred to as the “unstable” portion of the meniscus.

Each type of tear is addressed with different instruments, but in general the goal of arthroscopic knee surgery is to remove the torn, “unstable” part so that it won’t trap between the two joint surfaces as you move around. Just how much to remove is a matter of experience and is a decision made by the surgeon at the time of the procedure.

Although the MRI can give a good idea of how much meniscus is torn, the decision at the time of arthroscopic knee surgery is made as to how much meniscus should be removed to leave a functioning meniscus behind. In most cases, the amount removed is less than 20% of the entire meniscus. What remains is commonly more than enough to provide the cushioning effect of a normal, intact meniscus. For the surgeon, trying to decide how much meniscus to take is not an exact science, but with years of experience the surgeon knows what level of resection is likely to solve the problem.

### MENISCUS TEARS



On occasion, however, the majority of the meniscus is just too badly damaged to be useful to the knee and it is better to remove a large portion, if not all of the meniscus. This is only done when there is really no chance that the meniscus will work as designed and leaving it behind will continue to cause pain. This occurs when the knee has moderate to advanced osteoarthritic wear and the arthroscopy is the last attempt to salvage the knee before a knee replacement is the only likely solution in the future.



Once the surgical resection has been completed, the instruments are removed from the knee, the portals are stitched up, and the knee wrapped with a sterile dressing. You are awakened from the anesthesia and taken to the recovery area where the nurses will provide supportive care until you are wide awake. At this point, you are moved to an area where your family will be waiting for you.

Once the anesthesiologist and recovery nurses feel you are fully recovered, you will be allowed to go home with a companion. General criteria used to establish when you can leave include you are able to urinate, take fluids orally, and able to ambulate with the assistance of a walking aid – cane, crutch, or walker. You must have a responsible adult to assist you at home as you cannot drive yourself nor be left alone for the first 24 hours. Ordinarily, arthroscopic knee surgery, from check-in to departure from the center, takes about 2.5 to 3 hours.

## Recovery & rehabilitation

For most patients, recovery from arthroscopic knee surgery done for a partial meniscectomy is relatively quick. Most patients are able to bear weight on the surgical knee immediately after surgery with no assisting support or at most with the aid of a cane. Although the knee can be painful, for the most part it is tolerable for most patients, and low level narcotic pain meds or Tylenol will usually suffice for pain control.

What really helps in keeping the knee comfortable is covering it with an ice blanket or ice packs to keep it chilled. This will help keep the swelling to a minimum. Swelling is in large part what causes a great deal of the discomfort and ice application will control much of the expected post-op pain.

Physical Therapy is an important part of recovery from any joint surgery. Stiffness, weakness, and persistent pain can result on a long term basis without therapy. For most patients, however, physical therapy can be done with some basic guidance if the patient is willing and motivated to do the therapy. Our program will give you the exercises that have been



approved by therapists and the American Academy of Orthopaedic Surgeons as the ones which, if done, have the highest probability of returning you quickly to your chosen activity.

One of the best exercises to regain motion is pedaling on a stationary bike for 30 minutes a day. This helps to move the fluid out of your knee and as this happens your motion improves. Also, simple walking makes the muscles of your lower leg squeeze the fluid out of your legs and increases your tolerance and endurance. Additional exercises will be presented to you at the appropriate time after surgery.



In summary, Arthroscopic Knee Surgery for a torn meniscus in the knee is one of the most common orthopaedic procedures currently being done, since a torn meniscus is one of the most common joint problems afflicting the middle-aged and senior adult population. This surgery has a high success rate in resolving pain and restoring function to your knee.

The professionals at the Zehr Center for Orthopaedics are highly experienced in performing this surgical procedure and in the care of the patient post-operatively. We want you to get back into action with a pain-free knee!