Meniscus Tears:
Cartilage Tears in the Knee and How They are Treated

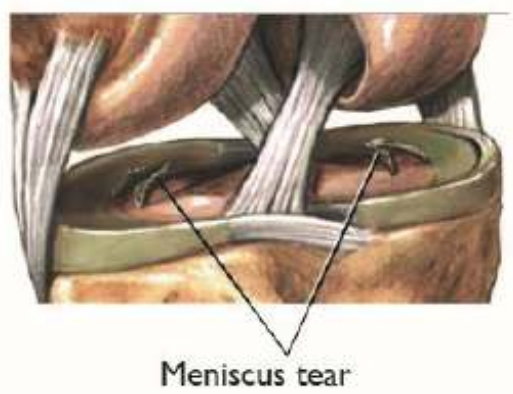
Alan M. Reznik, M.D., MBA

What is a Meniscus?

The **menisci** are gasket like cushions in the knee. They are “c” shaped and positioned between the femur and tibia and they help spread the weight transferred from the larger femur above to the smaller tibia below. The tibia is "at and the femur is curved so the meniscus helps those shapes meet and the knee bend smoothly. Healthy **menisci** convert the "at tibia surface into two (medial and lateral) more stable shallow socket shapes that cradles the curved femur. The **menisci** also help with the stability of the knee joint. Studies have shown that up to 50% of the load transferred across the knee goes through the menisci.

When one or both meniscus is torn the torn edge can **catch** between the two bones and cause pain. The knee may lock or give way. This frequently causes **swelling** and the sense that the knee is unstable. Pain can be worse on bending fully, twisting and with impact load of any type. Recurring swelling is a concern for ongoing damage to the knee as the knee is trying its best to “lubricate” itself without being able to “fix” the problem of the torn fragment getting caught between the bones. Over time this causes **arthritis** and chronic pain. We cannot reverse the damage that a locking or catching fragment causes if we let it go too far. Left alone, over time the constant rubbing of the torn meniscus on the articular cartilage will cause more damage and degeneration of the knee joint. As a result, the knee may also become swollen, stiff and tight. Therefore, to help protect the knee, many feel that correcting the problem is best done sooner than later.

Why do they tear?



Meniscus tear

Meniscal tears can occur in any age group. Tears in the meniscus usually occur as a result of a forceful twisting injury or with hyperflexion of the knee. In younger people, the meniscus is a fairly tough and rubbery structure. In younger age groups, meniscal tears are more likely to be caused by a sports injury. In more mature individuals, the meniscus can be weaker and easier to tear. In those more mature individuals, it can occur as a result of a minor injury, even from the up and down motion of simple squatting. Degenerative tears of the meniscus can also be seen as a part of osteoarthritis of the knee, gout and other arthritic conditions.

In many cases, there is no one associated injury that leads to a meniscal tear. Knee pain is the

most common complaint sometimes with locking, buckling, swelling and giving way. The pain may be felt along the joint line where the meniscus is located. Sometimes the symptoms are more vague and occasionally involve the whole knee. If the torn portion of the meniscus is large enough, locking may occur. Locking simply refers to the inability to fully straighten the knee or loss of the ability to move the knee. Locking occurs when a piece of torn cartilage, or meniscus, is stuck between the bones. In other words, the meniscus is caught in the hinge mechanism of the knee. Once stuck, it will not let the knee straighten out or move completely.

You can see Dr. Reznik's video "the locking knee" on YouTube @ www.youtube.com/DrAReznik.

What are my treatment options?

If the knee is locked and cannot fully straighten out, then trying to force it straight will damage the knee more. In these cases forceful, physical therapy is not a good idea and a locked knee requires surgical (arthroscopic – minimally invasive) treatment. Similarly, a mechanically unstable knee with frequent locking and giving way can put you at risk for a fall down the stairs or while walking in the street. A broken wrist from a fall is a good thing to avoid and **fixing the knee is key** in fall prevention once unstable. In many cases, an MRI is helpful to fully understand if there are other structures damaged in a "locked knee" so everything torn or damaged can be fixed at the same time. **When needed**, Dr. Reznik will order one unless you had one prior to the evaluation.

If there is an ACL or other ligament torn: The treatment of the torn meniscus or cartilage damage is treated arthroscopically at the same time. The results are far better when they are done together than separately since stabilizing the ligaments is important when the meniscus is repaired. Fixing the ligament helps healing of the meniscal cartilage and helps prevent re-injury once repaired.

FYI: Many insurers now have minimal requirements to pre-approve surgical treatment in knees with torn cartilage. They may include no advanced arthritis (see treatment below), at least six nonsurgical treatments such as anti-inflammatory medications (Advil, Aleve, Motrin, ibuprofen, etc.) and doctor directed therapeutic exercises or formal therapy (if you have done a home exercise program or PT already, let Dr. Reznik know). An injection of cortisone or draining the knee may also be helpful in some cases for a swollen knee before considering surgery. That is a clinical decision made in the office depending on your history, physical exam and X-rays.

When there is advanced arthritis already: The options for the torn meniscus are limited since the arthritis itself, may be the primary cause of the pain. In those cases, injections, lubricant, PRP (platelet rich plasma), therapy, glucosamine/chondroitin and braces have been used. Cortisone may last 6 months or more, lubricant 9-12 months, sometimes much longer. PRP is

not covered by insurance and has gained popularity in its underlying theoretical benefits. Many star athletes have turned to PRP for treatment with some regularity. The data is mixed.

In an already arthritic knee, sometimes arthroscopic treatment, unless there are mechanical signs and symptoms related to loose fragments that catch or lock, can make some knees feel worse in time (50% of patients feel better, 50% feel worse). If there is already bone on bone in your knee and you have chronic pain, pending your age, a replacement may be a better option over arthroscopy.

If you have no other options, there is a lot of recurring swelling and the lining is inflamed (so called “synovitis”) an arthroscopic “wash out” may give up to 6 months or more of relief. If you are younger and have a known inflammatory disease like **rheumatoid or psoriatic** arthritis a **synovectomy (arthroscopic removal of the inflamed lining)** often gives good relief for 6 months or more and may reduce your need for high-powered arthritic medications at least for that time.

Cartilage Repair or Removal?

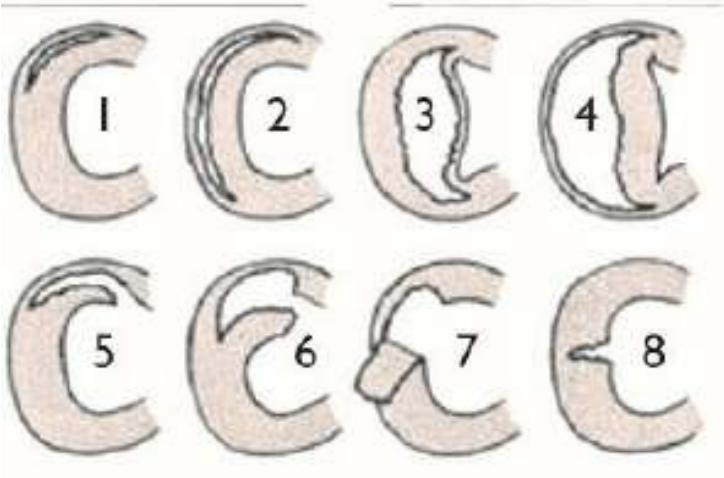
Meniscal Repair vs. Partial Meniscectomy

Once a meniscus is torn, it won’t heal on its own. The torn fragment will intermittently trap between the bones causing unpredictable locking, giving way and swelling. Continued swelling is often a sign that further damage is being caused to the knee. Arthroscopic surgery may be required to either remove the torn portion of the meniscus **(Partial Meniscectomy)** or repair the tear **(Meniscal Repair).**

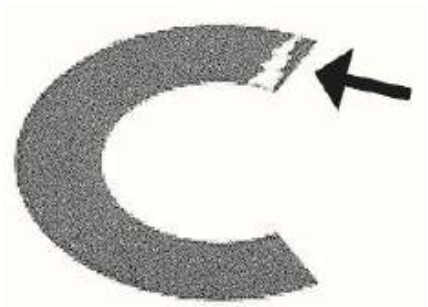
Repair of the meniscus depends on the overall condition of the cartilage and where the blood supply is the best. A better blood supply will improve the chance of healing. This is seen more frequently in patients under age forty and when tears are in areas referred to as “Red on Red zone” or “Red on White zone”. The red zone of the cartilage is usually the outer 1/3 on the medial side of the knee and the same in the posterior lateral meniscus (cartilage). The inner 1/3 is the white zone; there is no blood "ow in this zone and as a result, little to no healing will occur. The zone in-between is the “Red on White zone”. There is an intermediate chance of healing in this zone. If the cartilage can be repaired, Dr. Reznik uses the arthroscope to place tiny sutures or stitches to fix the tear. Sometimes Dr. Reznik is able to supplement the repair (particularly in the red on white zone) with a clot made from your own blood. The clot contains your own platelet rich factors and aids in the healing of the cartilage tear.

When the tear is in an area of poor blood supply (the “white zone”), chronic in nature or

a degenerative tear, a suture repair of the meniscus is not possible. In this case, arthroscopic surgery is required to remove the torn, impinging fragments of the meniscus. Removal of the loose, not repairable fragments frequently resolves the mechanical problems caused by the tear. This is necessary to return the knee to good function. Examples of tears that cannot be repaired are seen in images three, five, six and seven below. The tears that are more often repairable are seen in images one, two and four. Radial tears (image eight) can be repaired on rare occasions.



Special Uncommon Case: Meniscus Root Tear



More recently we have found some patients have torn their meniscus at the attachment to the bone. When this happens, it is like a suspension bridge with its cable cut. The meniscus no longer bears any weight and it is the same as if we took the entire meniscus out. When this happens, a root repair is required to save the meniscus and restore its load sharing function. As it turns out this also requires special type of repair that means non-weight bearing for at least six weeks and a protective brace for 4 months after surgery. The good news is when this works well it is very helpful in protecting the knee for the long-term effects of losing the entire meniscus on the injured side. When Dr. Reznik does this type of repair, he will order a special brace to help protect it afterward that will allow for good motion while helping the knee to heal correctly.

Connecticut Orthopaedics

Meniscal Recovery Plan:

Pain Control: Take pain medications as prescribed by Dr Reznik. Please call our office with any questions regarding your medication. Ice as needed (never place ice directly on skin) and elevate leg above heart level using 2-3 pillows. This will also decrease swelling.

Lungs: After surgery it is important to do **deep breathing exercises**. This is done by taking at least **5 deep breaths** holding for **2-5 seconds** with rest in between each breath. This should be done **3-4 times daily** to prevent possible post-anesthetic pneumonia.

You must **STOP ALL SMOKING**; smoking slows the healing process by interfering with the making of new DNA. Smoking also increases the risk of infection and pneumonia after surgery by slowing your body's white cells.

Diet: You may resume a regular diet when you return home. Start with tea or broth and advance slowly with crackers or toast, then a non-spicy sandwich. If you become nauseated, return to clear liquids. You can also try Tums, Zantac or Pepcid AC to help settle your stomach.

Dressing: The dressing is to remain clean and dry. After 48 hours, you may remove the dressing and the small yellow xeroform strips. You may shower after 48 hours. Lightly wash the incisions. Pat dry and replace the dressings with Band-Aids.

Crutches:

Partial meniscectomy patients need two crutches usually for only a few days. They can advance to one crutch for a few days and are frequently off of crutches by the end of a week. Partial meniscectomy patients do not have the same restrictions as Meniscal repair patients. They can fully weight bear as tolerated, bend as the knee feels comfortable and increase their activities as pain and comfort allow without a brace or immobilizer. In general, they are not to run, jump or do heavy labor for at least six weeks after surgery.

Meniscal Repair patients are to use two crutches for the first week. They are to have the immobilizer on at all times and may put light weight on the operative leg with each step. You may then advance to using one crutch for the next few days and then a cane if needed. The knee immobilizer will be on for 3 weeks, then you will switch to a small bending brace that will keep you from fully flexing the knee. You cannot squat, kneel or force flexion of the knee past 120 degrees for 4 months post-op to protect the repair *(note: In the special rare case of a root repair the precautions are a little stricter. You will be in the immobilizer for 3 weeks, non-weight bearing for 6 weeks post-op and an "unloader" brace from week 4 to 16. You cannot weight bear at all for six weeks and after only with the unloader brace on.)*

Connecticut Orthopaedics

Immobilizer: The knee immobilizer is for meniscal repair patients only. This is to be worn full time for three weeks. This includes while sleeping. **It is to be removed only for physical therapy directed exercises and showers.**

NOTE: Patients should not flex the knee past 90 degrees for the first 3 weeks. After 3 weeks, you will change from the immobilizer to a knee hinged brace (this is normally done by the physical therapist). You can then start bending the knee from 90 degrees to a maximum of 120 degrees. When switching to the knee hinged brace, using crutches again will help with balance if needed.

IMPORTANT: Meniscus (cartilage) Repair patients cannot do twisting, pivoting, squatting, deep knee bends or impact activities for four months to avoid reinjury to the repaired cartilage.

It is vital that meniscus repair patients do not squat for at least four months after the repair.

Physical Therapy: Vital to your recovery of good knee function is a graduated activity and exercise program to increase muscle strength and motion. To avoid post-operative complications, follow-up appointments with your physician are also required to monitor your progress.

Return to Work:

Partial Meniscectomy patients can return to work within a week. Exceptions are for people who may have long commutes. By staying still for long periods, you may be at increased risk for blood clots.

Meniscal Repair patients with light work (desk work with no squatting, kneeling or lifting) can return to work within a week to ten days with the immobilizer on. ***** Remember: Meniscal repair patients cannot do twisting, pivoting, squatting, deep knee bends or impact activities for four months to avoid reinjury to the repaired cartilage.**

Patients with active office work or very light labor with variable tasks can sometimes return to work at 2 to 3 weeks depending on lifting requirements. Heavy work (lifting or unprotected heights) cannot usually return before 6 weeks. Most will need to be cleared by their physical therapist.

Driving: Right knee patients and left knee patients with a standard transmission car cannot drive until out of the knee immobilizer (for meniscal repair patients), o# all pain meds and can fully weight bear without pain.

Blood Clots:

<u>Patients at higher risk for blood clots include:</u>

- Have long car or train commutes
- May be overweight
- Have a history of cancer
- Women on birth control pills
- Males over the age of 40
- History of a prior clot or genetic abnormality in clotting (Factor V Leiden, Protein S deficiency)

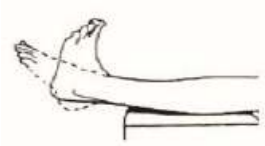
These patients should be taking 1 aspirin per day (unless allergic) for about 6 weeks depending on risk factors. Patients with genetic factors may need a specific anticlotting agent like Coumadin, Lovenox, Eliquis or Xarelto. Doing the exercises that Dr. Reznik prescribed will also reduce the risk of blood clots.

Call your physician if:

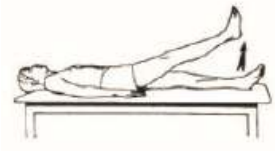
- You develop excessive, prolonged nausea or vomiting
- You develop a fever above 101
- You develop any type of rash
- You experience calf pain

Post-Operative Exercises

Start doing exercises while still in the recovery room. Dr. Reznik or your nurse will instruct you. At home, while resting in bed after surgery do the following every hour or with each set of TV commercials.



Ankle Pumps: Pump your ankle up and down (like pressing on the gas pedal). This will increase circulation and reduce the risk of developing a blood clot.



Straight Leg Raises: Tighten your quads (muscle in the front of your thigh) first, then raise with the knee immobilizer on (for meniscal repair patients) and raise your leg 8-12 inches off the bed. Start slowly working toward three sets of 8-12 by the end of the first two weeks.

Side Raises: While laying on your side, lift the leg 12-24 inches off the bed. Start slowly working toward three sets of 8-12 by the end of the first two weeks.

Knee Bends / Heel Slides: With your heel on the bed, bend your knee while sliding your heel toward you as comfort allows.
Meniscal Repair patients should only start with bending 30-45 degrees and work toward 90 degrees during the first week. Your physical therapist will advise you when to advance with bending.

If you find yourself in bed or resting frequently, move your arms regularly. You can use light weights for upper arm exercises to keep your muscles ready for the demands of using crutches.

Add other exercises as your doctor prescribes.

About the author of this educational booklet:

Alan M. Reznik, MD, MBA, FAAOS, specializes in sports medicine and arthroscopic surgery as well as shoulder and knee injuries. He takes care of working, casual, and competitive athletes of all ages. He has been rated Top Doc in CT 17 times and MD nationally recognized for his patient education writings. He has written two books and he received the Connecticut Press Club Award.

He volunteers his time to the American Academy of Orthopaedic Surgeons (AAOS) as a member of the AAOSNow Editorial Board, AAOS Communications Cabinet, and the National Committee on Research and Quality. An inventor and orthopedic innovator, he holds patents for orthopedic instruments used all over the world. Dr. Reznik is Chief Medical Officer of Connecticut Orthopaedics, Associate Professor of Orthopaedics at Yale University School of Medicine, and a consultant.