Montefiore Pediatric Orthopedic and Scoliosis Center

Children's Hospital at Montefiore

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MENISCUS TEAR

Description

The meniscus is a **C**-shaped cartilage structure in the knee that sits on top of the leg bone (tibia). Each knee has two menisci, an inner and outer meniscus. The meniscus functions like an adapter between the rounded thigh bone (femur) and flat tibia. It also serves to help distribute the forces between the two bones over a greater area (rather than point to point), helps supply nutrition to the cartilage that lines the bones (articular cartilage), and helps stabilize the knee. The meniscus is rubbery tissue that loses its elasticity (rubberyness) with age. Nonetheless, each individual meniscus can be torn. Meniscus tears are very common, occurring in up to one third of all sports injuries. The inner meniscus is injured most often.

Common Signs and Symptoms

- Pain, especially with standing on the affected leg and squatting, and tenderness along the joint of the knee
- Swelling of the affected knee, usually starting 1 to 2 days after the injury (may occur right after the injury)
- Locking or catching of the knee joint, causing an inability to straighten the knee completely
- Giving way or buckling of the knee

Causes

- Direct blow to the knee, twisting, pivoting, or cutting (rapidly changing direction while running), as well as kneeling or squatting
- Without injury, due to aging

Risk Increases With

- Contact sports (football), sports in which cleats are used with pivoting (soccer) or sports in which good shoe grip and sudden change in direction are required (racquetball, basketball, squash)
- Previous knee injury
- Associated knee injury, particularly ligament injuries
- Poor physical conditioning (strength and flexibility)

Preventive Measures

- Appropriately warm up and stretch before practice or competition.
- Maintain appropriate conditioning:
- Thigh, knee, and leg strength
- Flexibility and endurance
- For jumping sports (basketball, volleyball) or contact sports, protect vulnerable joints with supportive devices, such as wrapped elastic bandages, tape, or braces (these have not been proven effective).
- Wear proper protective equipment and ensure correct fit, including proper cleats for the surface.

Expected Outcome

Some meniscal injuries can heal on their own, and some do not heal but may not cause any symptoms. However, the only definitive treatment for meniscal tears requires surgery. Surgery may provide complete healing in 6 weeks.

Possible Complications

- Frequent recurrence of symptoms, resulting in a chronic problem; appropriately addressing the problem decreases frequency of recurrence
- Repeated knee injury, particularly if sports are resumed too soon after injury or surgery
- Progression of the tear (the tear gets larger) if untreated
- Arthritis of the knee in later years (with removal of tear or without surgery)
- Complications of surgery, including infection, bleeding, injury to nerves (numbness, weakness, paralysis) continued pain, giving way, locking, nonhealing of meniscus (if repaired), need for further surgery, and knee stiffness (loss of motion)

General Treatment Considerations

Initial treatment consists of medications and ice to relieve pain and reduce the swelling of the affected joint. Sometimes walking with crutches until you walk without a limp is recommended (you may put full weight on the injured leg). Range-of-motion, stretching, and strengthening exercises may be carried out at home, although referral to a physical therapist or athletic trainer may be recommended. Occasionally your physician may recommend a brace or immobilizer or crutches to protect the joint. Surgery is often recommended as definitive treatment and is performed arthroscopically. Usually the tear is removed partly or completely, although in some instances it is possible to repair the cartilage (less than 20% of the time). After surgery or immobilization, stretching and strengthening of the injured, stiff, and weakened joint and surrounding muscles are necessary. These may be done with or without the assistance of a physical therapist or athletic trainer.

Medication

- Nonsteroidal anti-inflammatory medications, such as aspirin and ibuprofen (do not take within 7 days before surgery), or other minor pain relievers, such as acetamino-phen, are often recommended. Take these as directed by your physician. Contact your physician immediately if any bleeding, stomach upset, or signs of an allergic reaction occur.
- Pain relievers may be prescribed as necessary by your physician. Use only as directed and only as much as you need.

Heat and Cold

- Cold is used to relieve pain and reduce inflammation. Cold should be applied for 10 to 15 minutes every 2 to 3 hours for inflammation and pain and immediately after any activity which aggravates your symptoms. Use ice packs or an ice massage.
- Heat may be used before performing stretching and strengthening activities prescribed by your physician, physical therapist, or athletic trainer. Use a heat pack or a warm soak.

Notify Our Office If

- Symptoms get worse or do not improve in 2 weeks despite treatment
- New, unexplained symptoms develop (drugs used in treatment may produce side effects)

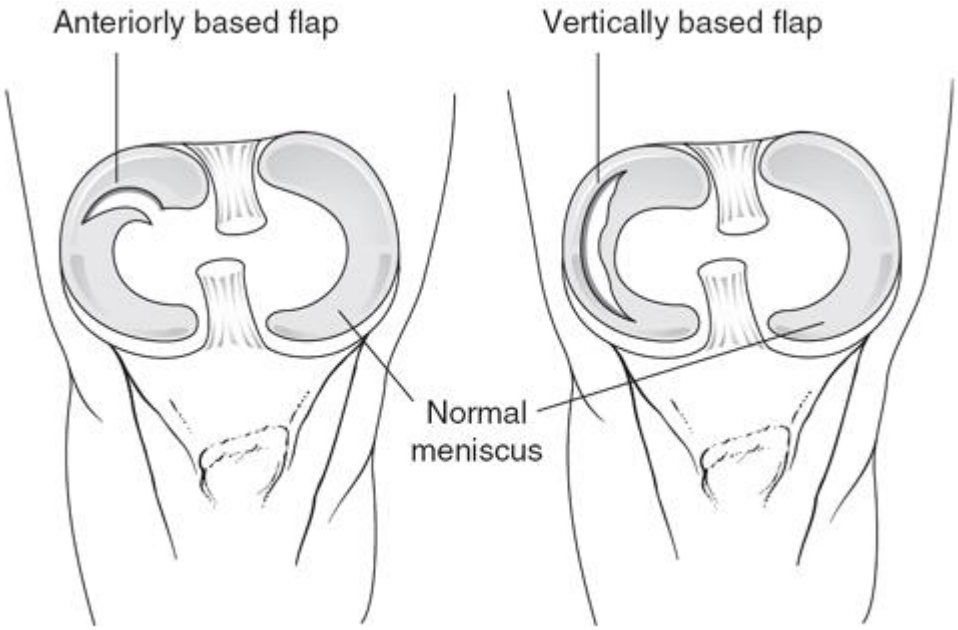

Figure 1

Indications (Who Needs Surgery, When, Why, and Goals)

- Surgery for meniscal tears is reserved for people who have symptomatic tears of the meniscus, including locking, recurrent swelling, and giving way of the knee, and for those in whom conservative treatment for the tear has failed. Occasionally it is also recommended for patients with pain along the knee joint where the meniscus is. It is also recommended for those with displaced tears that prevent full knee range of motion ("locked knee"), which is a sign of a "bucket handle" tear. A *bucket handle tear* is when the meniscus tears and flips to the center of the knee, like moving a bucket handle from one side of the bucket to the other.
- Surgery is performed electively, but locked knees should be operated on at the earliest convenient time. The success of meniscus repair has not been shown to be any better immediately after injury as compared with a couple of months later.
- Only the outer 10% to 30% of the meniscus cartilage has blood supplying it. Blood is needed to help a meniscus heal. Because of this, fewer than 20% of all meniscus tears are repairable by suturing (sewing) it together. The rest of the tears are treated by meniscectomy (removal of all or part of the meniscus).
- A torn meniscus usually does not heal itself, unless the tear is in the outer portion of the meniscus where the blood supply is. Thus most tears do not heal on their own. Further, meniscus cartilage that is removed does not regenerate. Once removed, it is gone.
- The success of meniscus repair (healing of the tear) is about 80% in knees with an intact anterior cruciate ligament (ACL). However, meniscus repair when the ACL is torn and not reconstructed is successful only 40% of the time. Thus if the meniscus tear is repairable, most surgeons also recommend reconstructing the ACL. The age of the patient has no effect on healing of a repair.
- Because one function of the meniscus is to distribute joint forces, loss of meniscus cartilage is associated with the early development of arthritis of the knee joint. Thus the goal of meniscal surgery is to eliminate the symptoms in your knee while trying to save as much of the meniscus cartilage as possible. This would be by repairing the meniscus, if possible, or removing as little of the meniscus as possible.
- Removing all or part of a torn meniscus allows for contouring of the cartilage and removal of torn edges that prevents
  (1) progression of the tear (making a smaller tear larger) and
  (2) Displacement of the tear, causing recurrence of symptoms of locking, giving way, and swelling.

- Leaving a torn meniscus in the knee if it does not cause symptoms is usually not a problem. However, torn meniscus cartilage does not function and thus the development of arthritis or symptoms such as locking, swelling, and giving way still may occur. Further, tears may progress to become larger if left untreated.

Contraindications (Reasons Not To Operate)

- Infection of the knee
- Inability or unwillingness to complete the postoperative program (for meniscus repair) or to perform the rehabilitation necessary
- Pain or symptoms not related to the meniscus
- Arthritis of the knee with symptomatic meniscus tear

Risks and Complications of Surgery

- Infection
- Bleeding
- Injury to nerves (numbness, weakness, paralysis)
- Recurrence of symptoms (giving way, locking, or swelling), including tearing the remaining meniscus if menisectomy is performed, and retear or nonhealing of the meniscal repair
- Knee stiffness (loss of knee motion)
- Continued pain
- Weakness of the quadriceps muscles

Technique (What Is Done)

Arthroscopy has become the standard way of operating on meniscal tears. This is done on an outpatient basis (you go home the same day) and may be done under general anesthesia, spinal anesthesia, or local anesthesia. Small shavers and cutting instruments are used to remove and contour torn cartilage that is not repairable. For tears that are repairable, the edges of the tear are freshened; then sutures (to sew), anchors, or tacks are used to hold the torn edges together while the meniscus heals.

Postoperative Course

- Keep the wound clean and dry in the initial postoperative period.
- Keep the foot and ankle elevated above heart level as much as possible for the first 1 to 2 weeks after surgery.
- You will be given pain medications by your physician.
- Icing the knee will help reduce swelling.
- You may put as much weight on the operated leg as possible, although often you will be given crutches after surgery until you can walk without a limp.
- For meniscus repair, you may be given a brace and possibly be allowed to bear full weight on the operated leg while you are wearing the brace on your operated leg for varying periods (depends on your physician).
- Postoperative rehabilitation and exercises are very important to regain motion and then strength.

Return To Sports

- Return to sports depends on the type of sport and the position played.
- It may take 6 weeks before sports can be resumed after meniscectomy (although may be as early as 1 to 2 weeks) or 6 to 9 months after a meniscus repair.
- Full knee motion and strength are necessary before sports can be resumed.

Notify Our Office If

- You experience pain, numbness, or coldness in the foot
- Any of the following sings of infection occur after surgery: fever, increased pain, swelling, redness, drainage, or bleeding in the surgical area
- New, unexplained symptoms develop (drugs used in treatment may produce side effects)

Do not eat or drink anything before surgery. Solid food makes general anesthesia more hazardous.

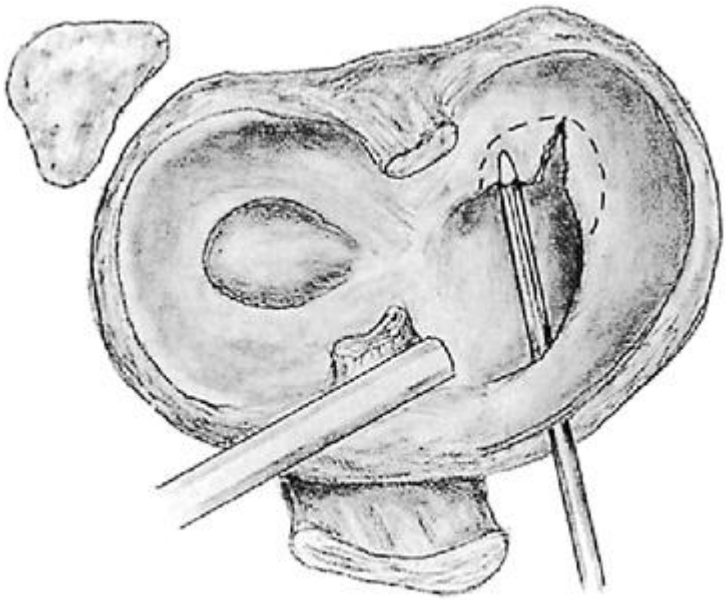

Figure 2

From Nicholas JA, Hershman EB: The Lower Extremity and Spine in Sports Medicine. St. Louis, Mosby Year Book, 1995, p. 765.