

Sample Topic

Meniscus Disorders, Knee



The Medical Disability Advisor: Workplace Guidelines for Disability Duration

Fifth Edition

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Editor-in-Chief

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Meniscus Disorders, Knee

Related Terms

- Injured Knee Cartilage
- Meniscus Lesion
- Meniscal Injury

Medical Codes

- ICD-9-CM: 717.0, 717.1, 717.2, 717.3, 717.4, 717.5, 836.0, 836.1, 836.2
- ICD-10: M23.0, M23.1, M23.2, M23.3, S83.2, S83.3

Definition

Knee meniscus disorders involve the medial meniscus or lateral meniscus, two semicircular pads of cartilage in the knee between the joint surfaces of the femur and tibia (femoral and tibial condyles). Menisci serve as shock absorbers. The most common meniscus disorder is a tear. The medial meniscus is more commonly torn than the lateral, because it is more firmly anchored to the joint capsule and surrounding ligaments. Tears are classified according to location, shape, size, and stability. The major classes of tears include the vertical longitudinal, oblique (often called parrot-beaked, or flap tear), displaced (bucket handle), degenerative, transverse, horizontal, or complex (involving multiple tears). Oblique and vertical longitudinal tears are the most common.

In young individuals, meniscal tears are usually caused by trauma, especially involving a twisting or pivoting of the knee. In older individuals, there may be a gradual degeneration of the meniscus with no single causative event.

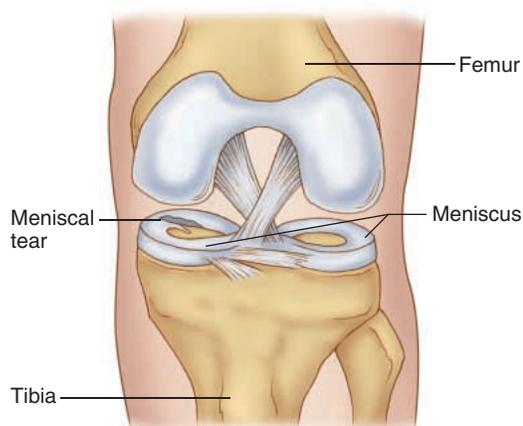
Symptomatic meniscal tears usually require surgery, because the meniscus has a relatively poor blood supply and does not heal easily without intervention. Only the peripheral 10% to 30% of the medial meniscus and 10% to 25% of the lateral meniscus is well-vascularized (Kocher). If a tear is small and peripheral, it may heal without surgery. However, the risk of not performing surgery for a meniscus tear is that it may lengthen, worsening the original tear.

Risk: Individuals who have a previous knee injury, leg length difference, an abnormally shaped (discoid) meniscus, cysts (pockets of thick liquid) of the meniscus, or tight, weak muscles or who walk on the insides of the feet (gross pronation) are at risk for knee injuries.

Meniscus tears occur 2.5 times more frequently in males than females (Baker), although disorders of the lateral meniscus occur more often in women. Meniscus tears are most common in individuals between the ages of 20 to 30 or over the age of 60 (Levy). The peak incidence of meniscus tears is 31 to 40 years of age in males and 11 to 20 years in females (Baker).

Incidence and Prevalence: Knee injury is the second most common work-related accident. More than 3 million Americans

have knee injuries each year, and the meniscus is the most commonly injured part of the knee (Levy). In the US, 61 of out every 100,000 people have suffered a meniscal tear; the incidence of meniscus surgery in the US is 850,000 per year (Baker).



Diagnosis

History: In younger individuals, there is usually a history of trauma. The individual may recall feeling a popping or snapping sensation when the trauma occurred. In older individuals, the trauma may be nonspecific, such as repeated squatting or kneeling. The individual may complain of knee pain, swelling, limited range of motion, and a clicking sound. Locking (an inability to straighten the knee) or buckling (a sudden giving way of the knee) may occur.

Physical exam: The exam may reveal tenderness over the medial or lateral joint line of the knee. There may be evidence of fluid buildup (effusion) in the joint. Squatting may cause pain. Tests may be positive that apply rotational and axial compression forces to the knee (such as Apley's compression and distraction test or McMurray's flexion test).

Tests: Plain x-rays are not diagnostic but can rule out fracture and most loose bodies. MRI is a non-invasive method of evaluating the condition of the menisci. Individuals who cannot undergo MRI testing may be evaluated by an arthrogram (x-rays taken after dye is injected into the joint) or CT arthrogram. The interior of the joint can be examined directly by exploratory arthroscopy, and if indicated, arthroscopic surgery to trim or repair a meniscal tear may be performed at the same time.

Treatment

Smaller meniscal tears with mild tolerable symptoms may be treated with rehabilitative exercise, activity modification, and analgesics, because some individuals are not willing to undergo surgery. More symptomatic meniscus injuries are treated surgically. Some meniscus tears can be repaired by suturing or by scraping (abrasion) to stimulate blood vessel growth. The possibility of repair must be determined by the surgeon at the time of surgery. Meniscus repair is generally reserved for younger individuals, and it is estimated that only 10% to 15% of meniscal tears are repairable (Canale 2531). Most tears require removal of the damaged part of the meniscus (partial meniscectomy).

Because removal of the entire meniscus (complete or total meniscectomy) leads to bone remodeling and cartilage degeneration, it is avoided whenever possible.

Meniscectomy is done most commonly by arthroscopy but may also be done by open operation (arthrotomy). Arthroscopy has the advantage of producing less pain and a quicker recovery. However, arthroscopic meniscectomy is occasionally difficult, depending on the type and location of the tear and the presence of adhesions. In those cases when the entire meniscus must be removed, open surgery may be preferable to avoid damaging the articular surfaces.

Younger individuals—those between the ages of 20 and 40—who require a complete meniscectomy or have degenerative changes following meniscectomy are candidates for meniscal reconstruction (transplantation) through use of graft tissue. Meniscal reconstruction may also be performed in middle-aged or elderly individuals to delay the need for total knee replacement (arthroplasty).

Prognosis

The outcome of meniscectomy depends on the location, severity of the tear, and the repair technique used. Most individuals can return to previous activities, including athletics, although the shock-absorbing capacity of the knee after a meniscectomy is reduced by 20% (Kocher). Meniscus injury may predispose the individual to develop osteoarthritis in the involved knee. Progressive joint deterioration occurs following partial or complete meniscectomy. Long-term outcome of meniscal reconstruction is unknown.

Differential Diagnoses

- Ligament injuries (anterior or posterior cruciate)
- Osteoarthritis
- Patellofemoral joint dysfunction
- Pes anserine bursitis
- Rheumatoid arthritis
- Tendon inflammation (tendinitis)
- Tibial tubercle avulsion fracture

Specialists

- Orthopedic Surgeon
- Physical Therapist
- Physiatrist
- Sports Medicine Internist

Rehabilitation[†]

The primary focus of rehabilitation for a meniscus disorder of the knee is to control pain and restore function. The rehabilitation program will depend on the extent of injury, length of time since injury, integrity of the knee joint, possibility of surgery, and the functional goals of the individual.

Initially, if pain is an issue, modalities such as heat and cold may be used (Braddom). Unless the knee is swollen, it is common to initiate physical therapy with a heat treatment and conclude with cold. Additionally, cold may be used as needed to control the edema often associated with meniscus disorders.

Gait training with an assistive device may be necessary for independent ambulation; the treating physician will determine the individual's ability to bear weight on the affected knee.

The next goal is to restore motion and strength to the involved knee, with exercise progression according to the recommendations of the physician. Knee range of motion exercises can help to restore full mobility to the joint. Therapy should progress to strengthening exercises as tolerated. Throughout the period of strengthening, therapy should include flexibility exercises. Although strong muscles around the joint are critical, flexibility of the same muscle groups must be considered (Viljakka). It is important to emphasize both open and closed chain exercises during this stage of rehabilitation (Witvrouw). It may also be necessary to strengthen the adjacent joints if limited weight bearing was necessary after the injury.

The therapist should continue to use modalities as needed to control pain and swelling, and, when appropriate, the therapist should instruct individuals in a home exercise program to be performed independently, complementing the supervised exercise regimen.

When full, pain-free motion is regained and the individual has sufficient strength for all activities of daily living, the individual may be progressed to balance and proprioceptive exercises. The extent of these exercises will be determined by the physician, individual, and physical therapist (Boyd).

Prior to discharge from physical therapy, individuals should understand both the need for continued exercise to maintain the stability of the knee joint and ways to protect the joint during work and leisure activities. Although a meniscus can heal within approximately 12 weeks, the joint should be protected from heavy loading until the meniscus has regained its full strength.

FREQUENCY OF REHABILITATION VISITS	
Nonsurgical	
Specialist	Guidelines
Physical Therapist	Up to 16 visits within 6 weeks
Surgical (Meniscectomy)	
Specialist	Guidelines
Physical Therapist	Up to 12 visits within 6 weeks
Surgical (Meniscus Repair)	
Specialist	Guidelines
Physical Therapist	Up to 24 visits within 12 weeks

The table above represents a range of the usual acceptable number of visits for uncomplicated cases. It provides a framework based on the duration of tissue healing time and standard clinical practice.

Comorbid Conditions

- Diabetes
- Ligamentous instability
- Obesity
- Osteoarthritis
- Rheumatoid arthritis

Complications

The trauma that led to a meniscal tear may also have caused torn knee ligaments. Older individuals may have other degenerative

[†] Researched and authored by the OIOC of New York University Medical Center. To understand the underlying methodology, please refer to "The Rehabilitation Guidelines" at the beginning of this volume.

changes of the knee. Complications of diagnostic procedures and surgical treatment may include neuropathic pain (RSO), as a result of nerve injury due to prolonged tourniquet time and/or direct nerve injury by an arthroscopic instrument.

Factors Influencing Duration

Length of disability is influenced by the severity of symptoms, region of meniscal tear, presence of underlying joint disease (osteoarthritis, rheumatoid arthritis), and type of surgery. Sustaining multiple injuries to the knee lengthens disability. Individuals who sit while they work may return sooner than those who stand. Nonsurgical treatment of meniscal tears usually interferes with heavy work.

Return to Work

The individual may need to use crutches or a cane temporarily when walking. Standing and walking may need to be limited temporarily. Squatting, kneeling, and crawling may need to be limited permanently.

Length of Disability

Duration depends on job requirements.

Medical treatment, meniscus disorder.

DURATION IN DAYS			
Job Classification	Minimum	Optimum	Maximum
Sedentary	7	7	14
Light	7	14	21
Medium	14	28	42
Heavy	28	35	91
Very Heavy	28	42	91

Surgical treatment, arthroscopic meniscectomy.

DURATION IN DAYS			
Job Classification	Minimum	Optimum	Maximum
Sedentary	7	14	28
Light	7	14	35
Medium	14	21	56
Heavy	21	42	84
Very Heavy	28	42	126

Surgical treatment, open meniscectomy.

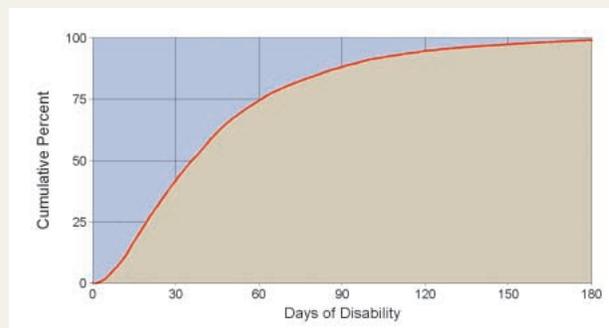
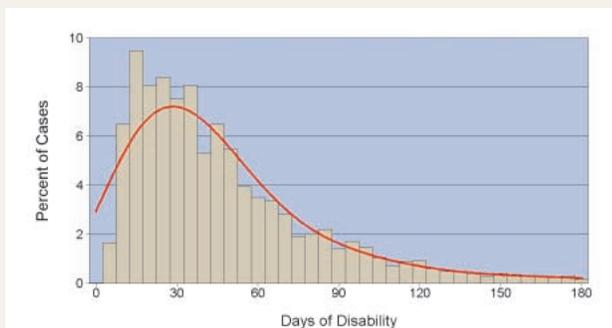
DURATION IN DAYS			
Job Classification	Minimum	Optimum	Maximum
Sedentary	7	14	42
Light	7	14	49
Medium	21	35	56
Heavy	35	42	84
Very Heavy	35	56	126

Surgical treatment, meniscus repair.

DURATION IN DAYS			
Job Classification	Minimum	Optimum	Maximum
Sedentary	7	14	42
Light	14	21	84
Medium	28	35	91
Heavy	42	84	140
Very Heavy	56	91	182

Reference Data

DURATION TRENDS - ICD-9-CM: 717.0, 717.1, 717.2, 717.3, 717.5, 836.0, 836.1, 836.2											
Cases	Mean	Min	Max	No Lost Time	Over 6 Months	Percentile:	5th	25th	Median	75th	95th
11719	47	0	216	0%	1.0%	Days:	7	20	36	62	124



Note: Differences may exist between the duration tables and the reference graphs. Duration tables provide expected recovery periods based on the type of work performed by the individual. The reference graphs reflect the actual experience of many individuals across the spectrum of physical conditions, in a variety of industries, and with varying levels of case management. Selected graphs combine multiple codes based on similar means and medians.

Failure to Recover

Regarding diagnosis:

- Does individual have a history of trauma, especially twisting of the knee?
- Did individual feel a popping or snapping sensation when the trauma occurred?
- Does repeated squatting or kneeling cause pain?
- Is knee swollen and does it have a limited range of motion?
- Were x-rays done to rule out a fracture?
- Was an MRI done to confirm the diagnosis? If not, was an arthrogram done?
- Was meniscus examined directly by exploratory arthroscopy?
- Was arthroscopic surgery done at the same time?

Regarding treatment:

- Did surgeon miss small tears during arthroscopic surgery?
- Is individual motivated to comply with the rehabilitation regimen?
- Has individual demonstrated an increase in range of motion at each physical therapy session?
- If arthroscopic surgery was performed, would arthrotomy be more effective?
- Is individual a candidate for meniscal reconstruction?

Regarding prognosis:

- What is extent and location of meniscal tear?
- Was tear located in a region of the meniscus with no blood supply (avascular)? If so, was a fibrin clot used to facilitate healing?
- Has physical therapy been effective?
- Is individual prolonging rehabilitation out of fear of sustaining another knee injury?
- Are knee ligaments torn?
- Is there evidence of joint deterioration?

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