Meniscal Lesions: The Physical Examination and Evidence for Conservative Treatment

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Regarding the identification of meniscal tears, many studies to date have focused on the common diagnostic method of magnetic resonance imaging (MRI). In addition, much of the research has been centered on the outcomes following arthroscopic surgery for the management of this injury. Therefore, the purpose of this paper is to provide information concerning alternative assessment methods for meniscal injuries and to discuss the results of conservative options for treatment.

The menisci of the knee are two fibrocartilaginous discs which increase the contact surface area between the femur and tibia and distribute the load evenly across articulating surfaces. Once thought to be functionless, the menisci are now known to serve integral parts in shock absorption, load bearing, and stabilization of the knee. Injuries to the menisci can occur in a variety of populations as a result of trauma or degeneration, and result in knee dysfunction and instability. The avascular nature of nearly two-thirds of the meniscal tissue significantly impedes natural healing.

The medial meniscus is injured more often than the lateral meniscus, partially due to its capsular attachments. Acute injuries to the menisci often occur from twisting motions on a partially flexed knee during weight-bearing, or in combination with other ligament sprains. Despite the common association with physical activity and meniscal injuries, only one-third of meniscal tears are sport-related. Meniscal lesions represent a common diagnosis as evidenced by MRI, which detected tears in 35% of people over the age of 50. In younger populations, 64% of meniscal tears are sport-related, indicating that degenerative changes may not be a factor in the majority of lesions in patients under the age of 30. Acute meniscal tears are often observed in conjunction with injuries to the anterior cruciate ligament (ACL). In 72% of cases, patients with recent ACL ruptures had a concomitant tear of the meniscus. Despite their high prevalence of detection with an MRI, a large percentage of meniscal tears remain asymptomatic in older populations.

Assessment of Meniscal Injuries

Injury to the meniscus can result in a variety of symptoms depending on the mechanism.

Key Points

- A thorough physical examination can be as accurate as an MRI in diagnosing meniscal tears.
- Evaluation of conservative options for treating symptomatic meniscal lesions is limited in the literature.
- Surgical treatment of meniscal lesions leads to premature joint degeneration.
The most common patient-reported symptoms of an acute meniscal lesion are pain, swelling, giving way, and locking or catching of the joint.\textsuperscript{9,10} Arthroscopic assessment is the definitive diagnostic technique for identifying the location and severity of meniscal tears.\textsuperscript{3} The most common advanced diagnostic method for assessing a meniscal lesion is the MRI, which has a reported diagnostic accuracy of 88\%, a sensitivity of 96\%, and a specificity of 76\%.\textsuperscript{5,9,11,12}

Despite the reliance on MRI for diagnosis, a detailed physical examination and patient history can be just as accurate and result in selection of the appropriate treatment. McDermott\textsuperscript{9} reported that a clinical assessment, including the patient’s history, a physical exam, and appropriate special tests, can produce a diagnostic accuracy of 90\%. A combination of reliable tests has been indicated to be more predictive than any single test that is pathognomonic of meniscal injuries. Lowery et al.\textsuperscript{13} found that a history of joint catching or locking, pain with terminal passive knee flexion, pain with terminal passive extension, pain or clicking with McMurray’s test, and joint line tenderness had a positive predictive value of 92.3\% for diagnosing a meniscal tear. If all five symptoms were found during a clinical exam, the prediction rules resulted in a specificity of 99\% and a sensitivity of 11\% for predicting a meniscal tear. The presence of four (96\%) or three (90\%) of these patient characteristics still produced good specificity, while only resulting in a moderate increase in sensitivity (17\% with four findings and 31\% with three findings).\textsuperscript{15}

The most common clinical tests used to identify a meniscal lesion are Apley’s grind test, McMurray’s test, and the Thessaly test.\textsuperscript{10} McMurray’s test is the most widely used, but only represents positive findings in 58\% of patients with meniscal lesions.\textsuperscript{14} In isolation, the Thessaly test had the highest diagnostic accuracy (94–96\%) when performed in 20\° of knee flexion.\textsuperscript{14} Joint line tenderness also had a high diagnostic accuracy rate (81–89\%), whereas the McMurray and Apley tests had inferior rates (78–84\% and 75–82\%, respectively).\textsuperscript{14} In a meta-analysis, Scholten et al.\textsuperscript{15} reported high variability in sensitivity (20–66\%) and specificity (57–98\%) ratings for McMurray’s test, while Apley’s test produced more consistent specificity values (89\%).\textsuperscript{15} Despite the heterogeneous ratings of the McMurray and Apley tests, several studies reported high diagnostic accuracy (> 88\%) when these tests were included in a battery of tests.\textsuperscript{9,15,16}

**Treatment Options for Meniscal Lesions**

The ability to identify meniscal lesions without MRI reduces health care costs and results in fewer unnecessary surgical interventions. When used without clinical findings, MRI would inappropriately direct patients to surgery in 35\% of cases.\textsuperscript{17} In addition to a reduction in surgeries, treatment of meniscal tears has changed considerably in the last 40 years, with an increased appreciation for the importance of this structure.\textsuperscript{9} In the past, treatment of meniscal tears primarily consisted of total meniscectomies, which increased degenerative changes in the knee.\textsuperscript{3,6,11} Due to the critical function of the menisci and increased incidence of osteoarthritis, treatment changed to more conservative measures to protect the meniscus. The rationale for surgical repair (e.g., meniscectomy) or conservative treatment is dependent upon the severity of the tear.\textsuperscript{3} The current goal of many surgical techniques is to maintain intact fibrocartilaginous tissue.\textsuperscript{3,10} Surgical options for the preservation of meniscal tears include partial meniscectomies or repair techniques, depending on the severity and location of the tear.\textsuperscript{3} Despite less invasive surgical options, long-term results for partial meniscectomies are associated with premature degeneration.\textsuperscript{3} Activity levels after a meniscectomy can also greatly increase the risk of developing degenerative changes. McDermott\textsuperscript{6} reported that 89\% of athletes exhibited evidence of degeneration 14.5 years after isolated meniscectomy surgery.\textsuperscript{6} In contrast, meniscal repairs have demonstrated a success rate of 69–79\% at 10 years.\textsuperscript{3,6,11}

While meniscus repair allows for greater preservation of the meniscus than a meniscectomy, it can have up to a 20\% failure rate and significantly worse outcomes in older populations.\textsuperscript{11} In addition to this, 58\% of MRI-verified meniscal tears have the potential to become asymptomatic, indicating that surgery may not be the best option for these patients.\textsuperscript{20} The standard rehabilitation protocol for meniscal repairs does not allow a return to regular physical activity before 12 weeks.\textsuperscript{9,11} The lengthy recovery period for meniscal repairs is a stark contrast to the quick return to normal activity levels after partial meniscectomies. Patients can expect to have full recovery in approximately six weeks following surgery, with potential for more rapid recoveries in some cases.\textsuperscript{9} Due to its shorter rehabilitation period and positive outcomes, partial meniscectomy is the preferred surgical choice for meniscal tears.\textsuperscript{1,20}