

Knee Meniscus Injuries

Common Problems and Solutions



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KEYWORDS

- Meniscus • Complication • Infection • Tear • Repair • Chondrolysis • Implant
- Nerve injury

KEY POINTS

- The rates of arthroscopic meniscus repair continue to increase with excellent reported outcomes.
- Complications, sometimes catastrophic, following meniscus repair may occur.
- The rate of postoperative complications may be reduced by adequate diagnosis, appropriate patient selection, meniscus repair selection, surgical techniques, and postoperative management.
- When complications occur, the provider must identify and take steps to rectify as well as prevent further complications from occurring.
- The purpose of this article is to detail the common diagnostic, technical, and postoperative pitfalls that may result in poor patient outcomes.

INTRODUCTION

The menisci were once thought to be functionless remnants of intra-articular leg muscles; however, now they are recognized as important structures that provide lubrication, stability, joint congruity, load transmission, and functionally act as “shock absorbers” for joint preservation.^{1,2} Injuries to the menisci alter normal knee kinematics, increase peak contact stress, and can result in early degenerative changes of the knee.^{3–8} A structure once excised with impunity, the menisci are now preserved and repaired to protect articular cartilage from accelerated degeneration as well as provide important stabilization to the cruciate injured knee.

Partial meniscectomy has been reported to be the most common orthopedic surgical procedure in America.⁹ Improved arthroscopic instrumentation and surgical techniques combined with increased knowledge of the form and function of the meniscus have led to a doubling of arthroscopic meniscal repairs from 2005 to

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2011.¹⁰ The success rate of meniscal repairs has been reported to be between 87% and 91%.^{11–14} Despite excellent success rates, failures, sometimes catastrophic, may occur.^{15–18} The purpose of this article is to detail the common diagnostic, technical, and postoperative pitfalls that may result in poor patient outcomes.

PATIENT SELECTION

Appropriate patient and meniscus selection is paramount to successful meniscus repair. The ideal candidate is a patient who has had a recent traumatic episode causing mechanical symptoms that can be localized and re-created by physical examination. During evaluation, it is important that the patient's symptoms correlate with both their physical examination and their diagnostic studies. Surgery for problems that do not correlate with their examination and diagnostic findings will not be beneficial, and one must look for other potential sources of their knee pain.

The physician must assess important risk factors, such as smoking and obesity, as well as patient-specific postoperative expectations that may lead to repair failure.¹⁹ The physician must discuss with the patient and determine if the patient will be compliant with the postoperative protocol.¹⁸ A partial meniscectomy may be appropriate if the patient is unable or unwilling to follow a conservative postoperative protocol or if the patient has had a prior failed meniscal repair.

There is not a patient chronologic age limit when meniscal repairs should not be performed. The physiologic age of the knee and activity level of the patient often dictates treatment. Isolated meniscal repair in patients older than 40 years old may have a higher failure rate^{18,20–22}; however, this has recently come under debate.^{23–25} Dr Steadman and colleagues²⁵ recently reported 136 meniscal repairs in patients younger than 40 years old to those older than 40 years old and found no difference in meniscal repair failure rates.

Meniscal tears that are more degenerative in nature or chronic may not be amenable to repair. These meniscal tears are often found in patients with a long-standing history of knee pain, usually without a traumatic event, that are identified by MRI ordered for generalized knee pain. Likewise, radiographic findings of knee arthritis (Outerbridge grades 3 and 4) with an MRI finding of a meniscal tear have a low likelihood of success following repair.^{26,27} Greater than 2 mm of joint space narrowing on weight-bearing radiographs is strongly correlated with Outerbridge grade 3 and 4 cartilage degeneration.²⁸ Joint space narrowing is not influenced by meniscectomy and thus is pathognomonic for osteoarthritis (Fig. 1).²⁹

Patients with a body mass index >30 have been shown to have a higher incidence of repair failure.^{21,30} Smoking has also been shown to have a 3.8 times higher rate of meniscal repair failure compared with patients who do not smoke.¹⁹ Joint stability after cruciate ligament injury and reconstruction is very dependent upon intact medial and lateral menisci. The force experienced by the medial meniscus in the anterior cruciate ligament (ACL)-deficient knee is increased by 52% in full extension and by 197% at 60° of flexion under a 134-N load.³¹ In patients with an unstable knee, the meniscal repair failure rate is as high as 18%.^{32,33} If meniscal repair is to be performed, concomitant ligament reconstruction should always be performed. Any meniscal lesion in the ACL injured knee must be given strong consideration for repair versus reconstruction. The medial meniscus acts as a strong restraint against anterior translation, and the lateral meniscus assists greatly in rotatory stability. Absence of either of these structures will drastically decrease the ACL reconstruction success rate. One could argue, based on recent available literature, that the importance of the menisci to knee stability is greater than that of chondroprotection.

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