New Evidence Suggests that Work Related Knee Pain with Degenerative Complications May Not Require Surgery

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Introduction

It is estimated there are approximately 700,000 arthroscopic surgeries performed on an annual basis in the U.S. to treat patients with symptoms attributed to meniscal tears of the knee,¹ with an estimated cost of $4 billion.² Historically, the rationale for surgical treatment has been that the patient with a clinical presentation suggestive of meniscal tear can have the torn segment of the meniscal cartilage removed through arthroscopic surgery, thereby relieving symptoms. However, there is emerging literature that questions the efficacy for many of these procedures.

The focus of this newsletter is to briefly discuss:

- arthroscopic partial meniscectomy for degenerative meniscal tears
- current evidence regarding the limited utility of these procedures in patients with degenerative meniscal tears
- the need for better patient education regarding benefit versus risk and non-operative alternatives

This topic has relevance in workers’ compensation since many patients reporting work-related knee pain who are middle age or older can develop symptoms due to degenerative meniscal tears.

Clinical presentation

The knee is a large hinge joint connecting the femur (thigh bone) with the tibia and fibula (lower leg bones), permitting it to move in flexion and extension with minimal rotation. There are two internal C-shaped medial and lateral cartilages (meniscus) composed of fibrous and collagenous material that help absorb shock during motion and assist with stability.

Meniscal tears can occur from acute injuries and degenerative change that results from the breakdown and thinning of the collagen structures. For example, acute injuries such as significant loading and rotation can cause shearing and traumatic tears to the menisci.

A number of factors can contribute to meniscal degeneration and degenerative tears, including:

- age
- excess weight
- knee alignment
- prior injuries
- arthritic change involving the bone (articular) cartilage that lines the joint surface

¹ https://www.ncbi.nlm.nih.gov/pubmed/24369076
² https://www.ncbi.nlm.nih.gov/pmc/articles/PMC4286115/
Eventually, tears can develop in degenerative menisci. Patients (often younger) may experience acute traumatic meniscal tears resulting from a significant injury such as a sudden fall, blow, twisting while bending, or sports injury, to name a few, with sudden medial (medial meniscus) or lateral (lateral meniscus) pain and swelling.

Degenerative tears occur in middle age (e.g. approximately 40 years of age or older) and beyond, and patients may note the gradual onset of symptoms associated with minor activities of daily living such as walking, and minor twisting or rising from a squatting position.

Other symptoms associated with meniscal tears can include swelling due to joint effusion, catching, and popping or locking if torn meniscal cartilage obstructs joint movement.

The peripheral rim of the meniscus has some blood supply and, when torn in young individuals (at times in association with anterior cruciate ligament tears), can be repaired. The remainder of the meniscus has no blood supply, does not heal, and thus surgery for these tears involves debriding the edge of the tear. Clinicians examining patients commonly look for swelling or tenderness over the medial or lateral joint line and perform provocative maneuvers including the McMurray test to evaluate for possible meniscal tear. This exam also assesses other knee structures to rule out other injuries to other ligaments, tendons, bone, and muscles. Unfortunately, the physical exam for meniscal tear has limitations, since many patients with meniscal tears have negative provocative tests such as McMurray and having a positive McMurray does not equate with having a symptomatic meniscal tear.3

Providers looking to confirm the clinical suspicion of a meniscal tear commonly utilize a knee MRI. However, interpretation of the significance of meniscal findings can be challenging. A number of studies have observed the presence of meniscal tears on MRI in subjects who have no history of knee pain, symptoms, injury, or surgery.

One study of asymptomatic subjects age 16 to 65 years found MRI evidence of meniscal tears communicating with the joint surface in 13 percent of individuals younger than 45 years and 36 percent in individuals over age 45 years. Approximately 30 percent had findings of degenerative meniscal tears (e.g. horizontal) that did not communicate with the joint surface.4 The authors point out the high frequency of findings without symptoms, association of age with MRI findings, and the danger of relying too heavily on a diagnostic test without careful correlation with clinical presentation.

Other studies evaluating patients with unilateral knee pain after injury have noted high rates of meniscal tears in the opposite asymptomatic knee:

- 42 percent contralateral asymptomatic meniscal tears on MRI in one study in a primary care setting5
- 43 percent contralateral asymptomatic meniscal tears on MRI in patients older than age 40 years in a different study involving patients who reported work related knee pain6

Recent Evidence

For middle age and older individuals, several studies have demonstrated a limited benefit of arthroscopic partial meniscectomy versus conservative care for degenerative meniscal tears of the knee.

Researchers in one study evaluated patients age 45 years and older with mild to moderate osteoarthritis on imaging as well as a meniscal tear.7 Subjects were randomized to arthroscopy and post-operative physical therapy versus physical therapy alone. At six to twelve months, there were similar outcomes of pain and function in both groups, though 30 percent of the patients opted to cross over from physical therapy to surgery during the study.

Other researchers looking at meniscectomy for degenerative meniscal tears in subjects with no evidence of significant osteoarthritis versus physical therapy also found no significant difference at two years for surgery versus

3 https://www.ncbi.nlm.nih.gov/pubmed/15544826
5 https://www.ncbi.nlm.nih.gov/pubmed/16861575
non-operative treatment in terms of pain, function or satisfaction. Improvements with conservative care were reported even in subjects with moderate mechanical symptoms such as grinding or clicking that some surgeons have advocated as a rationale for surgical treatment.

Other studies have observed the absence of benefit of arthroscopic partial meniscectomy versus a sham surgical procedure.

Researchers evaluated subjects aged 35 to 65 years with symptoms and degenerative meniscal tears on MRI but with no evidence of osteoarthritis to undergo arthroscopic partial meniscectomy versus a sham surgical procedure involving similar instruments, sounds, and time in the operating room. At 12 months, there was no significant difference in pain or function between the surgery and sham surgery groups. Subgroup analysis noted the absence of difference in subjects who experienced sudden onset of symptoms, as well as individuals with occasional catching or locking.

A systematic review of the literature on arthroscopic surgery for degenerative meniscal tears reviewed nine randomized controlled trials. The authors concluded that despite the frequent use of arthroscopy to treat middle age and older patients with degenerative meniscal tears, there is an absence of evidence of longer term (e.g. two years) benefit from surgery in this group. They also noted that exercise therapy had greater benefit than surgery for patients with knee osteoarthritis. Based upon their findings, they recommended against continued use of arthroscopy to treat middle age and older patients with or without signs of osteoarthritis.

A clinical practice guideline was published in the British Medical Journal in 2017 to advocate for practice change based upon recent evidence. The new guideline recommends against knee arthroscopy for patients with degenerative knee disease, including patients with and without imaging evidence of osteoarthritis, mechanical symptoms, or sudden symptom onset.

One recent analysis of the outcomes of arthroscopic partial meniscectomy looks at patients who had traumatic tears and compared the outcomes to patients with degenerative tears. Of interest, there was no difference between groups when pain, symptoms, sports and recreational function, and quality of life were assessed at one year post-operatively. This calls into question the current belief that patients with traumatic tears experience greater benefit than patients with degenerative tears.

While knee arthroscopy has a lower rate of complications than some other procedures, it is associated with surgical risks. A review of the American Board of Orthopedic Surgery database noted a 2.8 percent complication rate for arthroscopic knee surgery involving meniscectomy. The rate of overall surgical complications for knee arthroscopy exceeded medical or anesthetic complications.

As part of their systematic review, British Medical Journal authors evaluated harm from arthroscopic meniscectomy where reported in studies. The quality of reporting harm was felt to be low, and several studies did not report statistics on harm from surgery. When reported, the authors estimated the following rates of complication:

- deep venous thrombosis and embolism approximately 1 percent
- infection approximately 0.2 percent
- death 0.1 percent

17 https://www.ncbi.nlm.nih.gov/pubmed/26383759
There are longer term considerations as well. An observational study examined the rate of knee replacement surgery over approximately nine years in patients with knee osteoarthritis who underwent arthroscopic meniscectomy.\(^{18}\) The authors observed a three times increased risk of knee replacement when patients were treated with arthroscopy versus non-operative care.

In recognition of these issues, a recent editorial in the British Journal of Sports Medicine has recommended a change of practice and implementation of other strategies including better patient education and shared decision making to reduce unnecessary or low value knee arthroscopies.\(^{19}\)

**Considerations**

There are several considerations relevant to the current evidence in this area.

For patients who are middle age and older with degenerative meniscal tears, there is a lack of evidence that arthroscopic partial meniscectomy is efficacious, even when there are symptoms of occasional catching or locking. For these patients, there are non-operative treatments that can improve symptoms and function including:

- NSAIDs
- thermal applications
- physical therapy and exercise
- weight loss for individuals who are overweight
- injections for patients with osteoarthritis as well as degenerative meniscal tears

Clinicians evaluating these patients may consider changing the nature of their patient education to help with choices and reduce over testing with MRI in addition to decreasing orthopedic referrals while promoting equally effective non-surgical treatment options. These patients can benefit from spending time to explain:

- the nature of degenerative meniscal tears
- the association with age and other factors
- the imprecise correlation of exam and MRI findings with symptoms
- the observation that physical therapy and exercise has similar outcomes to surgery without the risk of surgical complications

The British practice guideline has useful figures and charts to help patients understand:

- the studies that were conducted
- the quantified findings for surgery and conservative care
- description of surgery versus non-surgical treatment,
- the impact of surgery versus non-surgical treatment on recovery
- return to activities including driving and work\(^{20}\)

There is a useful summary for patients regarding mechanical symptoms and arthroscopic partial meniscectomy in patients with degenerative meniscus tear available here.\(^{21}\)

While practice changes should be promoted for the patients discussed above with degenerative meniscal tears, it must be pointed out there are some patients for whom arthroscopic partial meniscectomy may be beneficial and indicated:

- Younger patients with acute traumatic injuries, such as sports injuries, falls, and blows to the knee associated with acute symptoms and traumatic meniscal tears

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\(^{20}\) [http://www.bmj.com/content/357/bmj.j1982](http://www.bmj.com/content/357/bmj.j1982)

• Patients with significant or persistent mechanical locking and inability to fully extend their knee
• Patients with high levels of pre-symptom function, who participate in higher demand sports or work\textsuperscript{22}

As noted above, younger individuals with acute traumatic injuries that involve peripheral tears of the meniscus may be candidates to have the meniscus repaired (often with ACL reconstruction), a surgery with much longer recuperation.

Case managers and adjusters evaluating causation should consider several factors:

• Was there significant trauma with acute onset or more gradual onset of symptoms associated with lower stress activity including activities of daily living?
• Are there risk factors for meniscal degeneration as noted above?
• Are the findings on MRI suggestive of degenerative meniscal tears (e.g. horizontal tears, presence of osteoarthritis)?
• Do jurisdictional definitions of causation need to be considered?
• Can the treating physician provide treatment recommendations including the option of non-surgical treatment for patients with degenerative meniscal tears?

Case managers and adjusters, where permitted, may wish to advise injured workers about links to information on this subject so they may talk to their physician about treatment options. The non-profit Consumer Reports has a link to the “5 Questions You Need to Ask Your Doctor” \textsuperscript{23} These include:

• Do I really need this test or procedure?
• What are the risks and side effects?
• Are there simpler, safer options?
• What happens if I don’t do anything?
• How much does it cost, and will my insurance pay for it?

Depending upon jurisdictional options, case managers and adjusters may consider Utilization and Peer Review or Independent Medical Evaluation options as well.

Conclusions

There are a number of options in the treatment of knee pain attributed to meniscal tears. For example, younger patients with acute traumatic meniscal tears and patients with significant locking or high levels of function and sports/work demand may benefit from arthroscopic surgery. In contrast, older workers with knee related pain from a work related injury may develop degenerative meniscal tears where the best option is for non-surgical treatment considering beneficial outcomes versus the risks of surgery. Injured workers in these types of situations can benefit from information from adjusters and case managers regarding treatment options, outcomes, risk and benefits when asking questions and making care decisions with their providers.

\textsuperscript{22} https://www.ncbi.nlm.nih.gov/pmc/articles/PMC4286115/
\textsuperscript{23} https://www.consumerreports.org/doctors/questions-to-ask-your-doctor/
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