**A patient’s perspective on meniscus surgery**

February 4, 2014 •

Partial meniscectomy, where the orthopaedic surgeon arthroscopically trims out the torn portion of the meniscus to treat a meniscus tear, is the most common surgery in orthopaedics. The increase in the older population and the desire of so many people to stay active later in life likely play a role in the frequency of these surgeries.

There has also been growing debate over the role of surgery for degenerative meniscus tears. They often coexist with osteoarthritis. I receive hundreds of questions from readers and listeners all over the world who underwent partial meniscectomy it does not improve as much as they had hoped. Many also expressed concern that recovery was more difficult than they had expected.

Due to all of these questions, I think it would be useful to share the experience of a runner who underwent a partial meniscectomy surgery. And this post, share an audio interview I did with Marvin Rajt, who kept a diary of his journey from surgery through his first walk after surgery to his most recent competition. Since every patient and every knee is different, his experience my differ from those of others. I hope his journey can help you.

**Partial meniscectomy: Frequently asked questions**

July 11, 2012 •

*Note: One of the most common operations in all of orthopaedics, and not just sports medicine, is surgery for a*[*meniscus tear*](http://www.drdavidgeier.com/injuries/meniscus-tears/)*. I have noticed in my clinics over the last few years that there are several questions asked by most patients with these injuries. I decided it might be helpful to answer them in a blog post. In the coming months, I will create similar posts with video demonstrations and audio discussions to help the public understand these injuries and surgeries.*

**What is a meniscus?**



*The meniscus is the c-shaped piece of cartilage between the femur and tibia that serves as a shock absorber in the knee.*

The meniscus is a C-shaped piece of shock-absorbing cartilage between the femur and the tibia in the knee. There is one on the medial side (side closest to the midline of the body) and one on the lateral side of each knee.

[Ask Dr. Geier – Meniscus Tears](http://www.drdavidgeier.com/ask-dr-geier-monday-%E2%80%93-meniscus-tears/)

**How do you tear the meniscus?**

Typically an athlete or active individual tears a meniscus with a twisting injury. Younger athletes often suffer more significant injuries than do older adults. Often older athletes will note feeling pain after squatting to pick something up or another seemingly innocent maneuver. Occasionally older patients do not remember a specific injury at all.

[Ask Dr. Geier – Meniscus tears in young athletes](http://www.drdavidgeier.com/ask-dr-geier-meniscus-tears-in-young-athletes/)

**How can I tell if my knee pain is caused by a meniscus tear or prior arthritis?**



*Note the fissuring and fraying of the articular cartilage lining on the end of the femur.*

This distinction is critically important in treating meniscus tears in adults. Often degenerative meniscal tears occur with pre-existing arthritis changes of the knee. It is important for the surgeon to determine if the meniscus tear mostly causes the pain. [Surgery for the meniscus tear](http://www.drdavidgeier.com/injuries/meniscus-tears-recovery/)is very successful for relieving these symptoms. On the other hand, we know from several studies done over the last decade that surgery to “clean up” arthritis changes has little long-term benefit.

It can be difficult, though, to determine the true source of knee pain in older athletes. Often meniscal pain is more focal and specifically located in a small area on the side and toward the back of the knee. Arthritis pain is often more diffuse, generalized discomfort. Also arthritis might improve somewhat with anti-inflammatory medications, braces, injections, and other nonoperative treatments. Pain from meniscus tears, however, often does not improve with anti-inflammatory medications or even cortisone or viscosupplementation injections.

Surgery to treat a meniscus tear in the setting of arthritis can still have benefit if the patient understands that there may be lingering pain related to the arthritis after full recovery from the meniscus tear. It is vitally important that patients discuss these possibilities with their surgeons.

Click [here for full episodes](http://www.drdavidgeier.com/category/podcast/) or [subscribe on iTunes](http://itunes.apple.com/us/podcast/the-dr.-david-geier-show/id460930529).

**Could the pain from a meniscus tear go away on its own?**

We know from several studies looking at MRI findings in adults with no knee pain that a small percentage of the population has meniscus tears and doesn’t even know it. That finding suggests that some meniscus tears are not painful. Unfortunately, it is difficult to predict whether a patient with a painful meniscus tear will get relief of that pain from ice, rest, anti-inflammatories, or physical therapy.

I think that nonoperative treatment is always a reasonable option. At some point, though, if a patient is not able to perform the activities that he or she would like, surgery can often relieve pain.

**What does the surgery involve?**

While some meniscus tears can be repaired (sewn back together), most require the inner, torn part of the meniscus to be removed. The surgeon uses small scissors and a shaver placed through small arthroscopic portals to perform this partial meniscectomy. Watch this video for a better understanding of what the surgeon does to treat these tears.

**Does removing part of the meniscus lead to long-term problems later in life?**

The meniscus acts as a shock absorber, so in theory, removing part of it would lead to more stress on the articular cartilage and bones. While there is no way to predict if patient will develop later arthritis or how quickly, it is a potential concern.



*The surgeon uses scissors to cut out the torn portion of the meniscus and leave a stable rim.*

Despite this concern for long-term wear on the articular cartilage and subsequent arthritis, the inner torn fragment probably provides little protection to this cartilage either. Plus the pain is unlikely to improve without trimming that part out. Therefore patients often undergo surgery to relieve pain and get back to activities even if they could develop degenerative problems in later years or decades.

**Why does it seem to take so long to recover from the surgery?**

[Ask Dr. Geier – Recovery from knee surgery](http://www.drdavidgeier.com/ask-dr-geier-recovery-from-knee-surgery/)

Despite the perception that the surgeon trims out the inner part of the tear and thus the source of the pain, the [patient is not instantly better](http://www.drdavidgeier.com/injuries/meniscus-tears-recovery/). It’s true that the majority of the pain disappears fairly quickly. But it takes time for the swelling of the knee to go down. It also takes time to regain full motion and strength. The surgeon typically allows the patient to resume activities fairly quickly. After all, the patient is unlikely to do more damage to the meniscus by walking on it and starting exercise programs. Unfortunately it can take several weeks or even months to actually be able to resume exercise, especially repetitive impact, and return to the pre-injury level. Overall it can take 4-5 months before the patient is as good as he or she will be after a partial meniscectomy.

[Tips to ensure (hopefully) a successful outcome after surgery](http://www.drdavidgeier.com/tips-to-ensure-successful-outcome-after-surgery/)

*Have you ever suffered a meniscus tear? Have you undergone surgery to treat this injury? Please share your experiences below! And let me know if this post and the video and audio were helpful to those of you with a meniscus tear!*

**Ask Dr. Geier – Meniscus Tears**

June 13, 2011 •

*I mentioned in last week’s Ask Dr. Geier Monday column that over the summer months I would be focusing on more wellness and fitness posts. Another focus of mine for the next two or three months will be to get out in the community and speak to sports groups about injuries in sports and ideas for injury prevention and wellness. If you play a sport or have kids that play a sport and would be interested in having me speak to the players, teams, coaches, and parents, please*[*contact me*](http://www.drdavidgeier.com/contact/)*. I enjoy getting out to meet people and answer questions people have.*

*This week’s Ask Dr. Geier column addresses one of the most common problems I see –*[*meniscus tears*](http://www.drdavidgeier.com/injuries/meniscus-tears/)*. Unfortunately they are one of the most common injuries that keep people from sports and exercise.*

*As always, please keep in mind*[*my disclaimer*](http://www.drdavidgeier.com/contact/)*about giving specific medical advice online or by email.*

*David*

**Andrew in Aiken, South Carolina asks:**

**What are the treatment options for a degenerative meniscal tear?**

This might seem like a very simple question, but it unfortunately can be a more complicated answer than you might think. And since arthroscopy of the knee for meniscus tears is often listed as the most common operation performed in all of orthopaedics, I think it applies to many of you.

First of all, it is true that [meniscus tears](http://www.drdavidgeier.com/injuries/meniscus-tears/) generally do not heal by themselves. Yes, there are exceptions, but for purposes of this post, they don’t. That doesn’t mean that every patient with a meniscus tear needs surgery. Some people have them and don’t even know it. The key is to determine if the meniscus tear is what is actually causing a patient to have pain.



*Note the fissuring and fraying of the articular cartilage lining on the end of the femur.*

Older patients often have wear and tear of the articular cartilage lining on the ends of the femur and tibia (essentially arthritis of the knee) as well as a degenerative meniscus tear. That makes sense when you think about it, since the meniscus is a shock absorber. If it is torn, more stress might be transferred to the bones and cartilage, causing damage to those structures.

Trying to know if knee pain is coming from the meniscus or articular cartilage can be more difficult than you might think. The location and type of pain can be very similar. Sometimes a patient will note having a dull pain for years before starting to have a sharp, very localized pain recently. That could be a sign that they had arthritis pain before developing a new meniscus tear. And ordering an MRI only shows you that a meniscus tear exists, but it doesn’t tell the physician that the meniscus tear is painful.

The reason that the true source of pain matters is that arthroscopy of the knee and trimming out the torn part of the meniscus only relieve pain from the meniscus tear. “Cleaning up” the damage to the articular cartilage might provide some short-term relief, but studies have shown that it does little to provide long-term relief. I equate it to a pothole in a road. Smoothing out the pothole might make it smoother, but you are not filling in the hole. So, if a meniscus tear is causing most of the patient’s pain, surgery to scope the knee and trim out part of the meniscus can be very effective. But if there is a significant amount of arthritis in the knee, surgery might not provide complete relief.

**Ask Dr. Geier – Meniscus tears in young athletes**

January 5, 2012 •

*I hope everyone is having a great start to 2012! I know that I don’t write as many of these*[*Ask Dr. Geier*](http://www.drdavidgeier.com/category/ask-drgeier/)*columns as I used to, but please don’t stop sending questions. I still answer as many as I can either here or on*[*The Dr. David Geier Show*](http://www.drdavidgeier.com/category/podcast/)*.*

*This column addresses a question I am asked all the time. When can a patient or athlete do too much, meaning do more harm to the injured body part? As always, please remember my disclaimer that I cannot offer specific medical advice on the blog, on my show, or by email.*

*I hope everyone is doing well with their New Year’s resolutions!*

*David*

**Carrie Martin in Liberty, Missouri asks:**

**My 15-year-old son had a meniscectomy on both menisci of one knee. One meniscus was shaved a little, and the other meniscus had 60% removed. Is it still safe for him to do the triple jump in track? Of all of his sports, that is his favorite, and I have heard that is bad on the knees. His surgery was in August, and his recovery has been good. He has some locking, and a little pain, but rarely any swelling any more. I just don’t want to let him do TOO much. Since my son was so eager to get back into football, and now has been playing basketball, is there such thing as “too much”?**

Carrie, that’s a great question. First of all, I will say that you will get different opinions on that same question if you ask several sports medicine physicians.

The premise of the idea that an athlete could do “too much” after a partial meniscectomy is based on the idea that the meniscus is a shock absorber in the knee. Each one lies between the femur and tibia and absorbs some of the stress with impact, protecting the articular cartilage and bone. When a meniscus tears, it almost never heals. (That doesn’t always mean that every patient with a torn meniscus needs surgery, but that is a subject for a different post.) Therefore, in a symptomatic athlete, sports medicine surgeons usually treat the [meniscus tear](http://www.drdavidgeier.com/injuries/meniscus-tears/) surgically.



The options for surgery involve either a meniscus repair (sewing the meniscus back together with stitches and/or anchors) or a partial meniscectomy (trimming the torn part of the meniscus out). Which of those two options is necessary depends on the location and orientation of the tear itself, and the patient and surgeon have little ability to affect that outcome.

Obviously, if the tear is repairable, that is good in the long term, although the rehab and overall recovery take longer and there is unfortunately a sizeable percentage of those repairs that don’t heal. But if the repair heals, the surgeon has preserved the entire meniscus to serve as a shock absorber.

If it is the more likely scenario where part of the meniscus needs to be removed, that is a much shorter [recovery and return to sports](http://www.drdavidgeier.com/injuries/meniscus-tears-recovery/). And return to sports and exercise is very likely, especially in the short term. They get back at the same or higher level far more often than not.

The concern, if there is one, about trimming part of the meniscus out comes years later. What effect will removing part of that meniscus have? Like I said earlier, that is for the most part out of the hands of both the surgeon and patient, so one could argue that the worry is unnecessary. You can’t do anything about it anyway.

Potentially problems could result from removing some of the shock absorber in an athlete or exercise fan who continues to engage in repetitive impact. Over time, in theory that impact will start to take a toll on the articular cartilage and later, the bone, and lead to degenerative changes. But how much would a surgeon limit that athlete, if at all?

I typically don’t shut these patients down. If it is a high school or college athlete, I aim to get them back to sports. If it is an adult weekend warrior or someone who loves to run, I try to do that. I might suggest to someone that runs 6 or 7 days per week, for example, that she run 4 days a week and add non-impact activities like cycling, swimming, rowing, or weights into her routine the other days. But I don’t have someone stop playing a sport or give up a certain form of exercise. After all, that sport or form of exercise is usually what he or she likes to do. And the health benefits far outweigh the potential risk of earlier degenerative changes in the knee, in my opinion.

**Ask Dr. Geier – Recovery From Knee Surgery**

July 18, 2011

*I apologize for not writing a longer introduction this week. A weekend of trauma call and other sports events kept me away from my laptop more than I would like. There are some exciting new features coming in the next few weeks, so stay tuned and keep reading!*

*This week’s Ask Dr. Geier column looks at recovery from surgery and trying to get back to sports. While the answer varies with the surgery and the sport or activity of that patient, the question is very common in sports medicine. As always, please keep my disclaimer about my inability to discuss specific medical information in mind.*

*David*

**Rebecca in Grand Rapids, Minnesota asks:**

**3 weeks ago I had surgery on my knee to what the surgeon thought was a torn medial meniscus. She gets to the point where she was going to get the scope in and she couldn’t get it in because my plica was so big that it was blocking my entire knee from view with the scope. She removed the plica of course. My entire knee was swollen and it was acting like something was torn for over 3 months. My question is since the surgeon had to mess with my kneecap a lot how long will it be before I will be able to dance? The doctor said 3 months. Is that a good estimate?**

Recovery from knee surgery can often take longer than most patients think. This observations seems to true whether the surgery involves trimming out a [meniscus tear](http://www.drdavidgeier.com/injuries/meniscus-tears/), [resecting a plica](http://www.drdavidgeier.com/injuries/plica-syndrome/), or other arthroscopic procedures. While the underlying problem is treated and better within a few days, it can take weeks or even months for the swelling to completely resolve and motion and strength to return to normal before the athlete actually gets back to sports.



[Plicae within the knee](http://www.drdavidgeier.com/injuries/plica-syndrome/) are usually treated nonoperatively. Occasionally I will resect a plica when I am doing a surgery for another problem, such as a meniscus tear. Even then, I usually leave plicae that I find incidentally unless it appears swollen and inflamed. In these cases, I am afraid that the plica could continue to serve as a problem even after the patient has [recovered from the meniscus surgery](http://www.drdavidgeier.com/injuries/meniscus-tears-recovery/) or whatever procedure I went in to perform.

Resection of the plica usually does not add much to the procedure. Occasionally it causes a little more swelling than one might expect from a meniscus surgery. This increased swelling could cause some increased quad weakness early on. Having said that, I think aggressive efforts to decrease swelling and regain range of motion, especially if the athlete works postoperatively with a physical therapist, should have the athlete back to sports in 6-12 weeks. Often the athlete is cleared to play sooner than that, but maximum medical improvement can take months to reach.

**Tips to ensure (hopefully) a successful outcome after surgery**

January 12, 2012

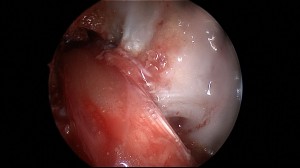
*This post might be a little different than what I normally write, but I hope that enjoy it, spread it to others considering surgery, and even share some tips of your own. The idea came to me recently when I saw a patient as a second opinion. He told me that the doctor who did his surgery told him, “Let’s just scope your knee. No big deal.” Well, it was six weeks after the surgery, and he obviously wasn’t happy.*

While a perfect outcome of any surgery, even an arthroscopic surgery that we typically perform in sports medicine, is never guaranteed, it has been my experience that most of the frustrations patients have after surgery come from a discrepancy between expectations and reality. And therefore, the underlying theme with all of the following tips is the idea that patients need to ask the appropriate questions and become as informed as possible. While the list below is in no way meant to be a checklist of questions to ask or meant to be comprehensive, it does cover some of the major points some patients fail to consider. I hope it helps.

**Research your doctor.** Ask friends who performed their surgeries. Would they recommend him or her again? Go online for information. While not every doctor, especially those who have been in practice longer, has a blog or participates in social media, there are almost always informational pages and reviews of any doctor practicing in your area. No information is perfect, and certainly all reviews can be biased, but the more opinions and information you obtain, the more likely you will be satisfied with your choice.

**Research the diagnosis and both surgical and non-surgical options.** With a very few exceptions, at least in sports medicine, surgery is usually not the only option. Little of what we do with respect to knee and shoulder injuries or other problems in athletes or active individuals is likely to cause permanent damage or death. Giving the problem more time to heal, modifying activities, medications, braces, or more are almost always options. Surgery might be more desirable for a number of reasons, but it is always a good idea to know what other treatments are possible.

**Discuss the procedure itself.** What exactly does the surgery entail? A huge number of people who undergo [meniscus surgery](http://www.drdavidgeier.com/injuries/meniscus-tears/) claim to have had a meniscus repair (meaning, sewing the meniscus back together). Instead, they likely had a partial meniscectomy (trimming part of the meniscus out). It might not seem like a big distinction, but it does have a large impact on postoperative weightbearing restrictions and potential long-term degenerative changes of the knee.



**Discuss postoperative restrictions.** Can I put weight on my leg after surgery? Can I drive? And ask any others that apply to your specific situation. I am always surprised when I tell patients that they will be required to wear a sling at all times for 3-4 weeks after surgery, but they still expect to be able to drive a car. If you aren’t sure, and if the answer will affect your ability to perform daily activities or work or school activities, ask before the surgery.

**Ask about and plan the return to school or work.** While most of the time patients can return to their jobs in either full duties or with short-term job restrictions, occasionally that isn’t possible. Manual laborers, for instance, have a difficult time working if they have to use crutches. On the other hand, many patients can return and focus on desk duties such as computer work. Likewise, students often can arrange to leave class a few minutes early to avoid crowded hallways. Talk to your boss or teachers ahead of time and work together to minimize time missed.

**Discuss anesthesia options.** While most surgeries are done under some form of general anesthesia, that option isn’t always required (and occasionally it is not medically advisable). Ask if regional anesthesia to make the arm or leg numb is reasonable. Or are there other options, like spinal or local anesthesia?



**Inquire about the return to sports or particular exercise programs.** Many athletic people are determined to return to sports or a certain form of exercise. It is important to know roughly how long to expect it will take to return to that activity. In addition, knowing if there are ways to get exercise before that time can be helpful. For example, runners are often frustrated if they are kept from running for 2 weeks, let alone 2 months. Discussing options for exercise after surgery, such as a stationary bike or elliptical machine, can ease the anxiety for weekend warriors and athletes alike.

**Ask if there are ways that you could injure the surgical procedure.** Recovery from surgery involves a balance between increasing activity as fast as you can without damaging the procedure done. As surgeons, we would love to allow bartenders to go back to work as soon as possible after shoulder surgery, but we know that lifting cases of alcohol in the first six weeks could disrupt the repair. Knowing what normal activities you do that could be harmful to your surgery is critical to a good outcome.



**Discuss the risks of nonoperative treatment.** Many injuries do not become progressively worse with time, while some do. For example, I have heard many patients who have undergone surgery for a meniscus tear who weren’t symptomatic at the time say that they were told that their knee would develop worse pain and arthritis if they did not undergo surgery (I don’t necessarily agree).

**Discuss the risks of delaying surgery.** Let’s face it. We can’t always plan our injuries around our busy schedules. But not every surgery has to be performed immediately. It’s important to ask the surgeon. Fractures and tendon ruptures often need to be fixed within about two weeks, while many other injuries can be treated later. Often I will suggest that a patient consider waiting until after a personal vacation, busy period at work, or final exams at school to undergo knee or shoulder surgery. Frequently patients can have equally successful outcomes with less disruption to their personal lives.

**Project the time for full or complete recovery.**No surgery is “no big deal,” even ones like I do arthroscopically, through 2 or 3 tiny incisions. Patients are often surprised to hear that it can take patients 4-5 months to reach maximum improvement after a [knee arthroscopy to trim out part of the meniscus](http://www.drdavidgeier.com/injuries/meniscus-tears-recovery/). Or it might be a full year before an athlete feels normal after [ACL reconstruction](http://www.drdavidgeier.com/injuries/acl-reconstruction/) or[shoulder stabilization](http://www.drdavidgeier.com/injuries/shoulder-dislocations/). While you might be back doing all of your desired activities much earlier, it is helpful to know roughly when to expect to be as good as you are going to be.



**Ask Dr. Geier – Is surgery necessary for a meniscus tear?**

November 23, 2012

*The following question is one that I received after one of my talks at a medical conference in Aruba. Since it is one that I receive very frequently from patients, I thought it would make a great*[*Ask Dr. Geier*](http://www.drdavidgeier.com/category/ask-drgeier/)*column.*

*I want to remind you that I answer about four to six readers’ questions on my show each week. So if you have a question, or if you just like hearing me discuss sports injuries, treatments, surgeries, and prevention, please check out*[*The Dr. David Geier Show*](http://www.drdavidgeier.com/category/podcast/)*.*

*As always, please remember*[*my disclaimer*](http://www.drdavidgeier.com/contact/)*that I cannot and will not offer specific medical advice in this column or elsewhere on the blog, on my show, by email, or in social media. This is meant for general information and education. Please consult with your doctor for specific medical advice.*

**I’ve been diagnosed with a meniscus tear in my knee? Do I have to undergo surgery?**



*MRI image of a degenerative medial meniscus tear*

That’s a terrific question and another one I get frequently from patients. There are a few ways to look at this question. For starters, [whether or not a patient undergoes surgery](http://www.drdavidgeier.com/ask-dr-geier-monday-%E2%80%93-meniscus-tears/) is his or her decision.[Meniscus tears](http://www.drdavidgeier.com/injuries/meniscus-tears/) are by no means an emergency, so surgeries to treat them are elective.

The idea that a patient needs surgery if he has torn a meniscus in his knee is based on the idea that the meniscus very likely will not heal. There is little blood supply to promote healing of the meniscal tissue, so most meniscal tears remain torn.

The bigger factor when deciding on surgery to [trim out a meniscus tear (partial meniscectomy)](http://www.drdavidgeier.com/partial-meniscectomy-meniscus-tear-knee-surgery-questions/) or repair it comes down to symptoms. A person can have a meniscus tear without it causing pain. Studies have shown that a small percentage of the population over 40 has a meniscus tear and doesn’t even know it.

Also many meniscus tears are found through MRIs ordered as part of an inadequate workup. Physicians who don’t take an appropriate history or perform a thorough physical exam and instead go straight to ordering an MRI [often find meniscus tears on the MRI](http://www.drdavidgeier.com/primary-care-providers-too-many-mris/). These could be incidental findings and not the cause of the symptoms.

On the other hand, patients with symptoms caused by a meniscus tear often require surgery. If he has localized pain, locking or catching of the knee, or pain with twisting motions or squatting, the meniscus tear is likely causing those symptoms.

Few nonsurgical treatments help patients if meniscal tears are symptomatic. Physical therapy, activity modification, anti-inflammatory medications, and injections are acceptable treatment options, but they often don’t help much. At some point, if a patient can’t perform the activities that he wants to do because of a symptomatic meniscus tear, [arthroscopic surgery](http://www.drdavidgeier.com/injuries/meniscus-tears-recovery/) is a reasonable option.

**X-rays vs. MRI’s, Part 3 of 3: Are primary-care providers ordering too many MRIs?**

October 13, 2010 • [Wellness](http://www.drdavidgeier.com/category/wellness/)

Radiology tests, especially x-rays and MRIs, have become a crucial component for diagnosing sports injuries. In fact, I always tell people that the two fellowship-trained musculoskeletal radiologists at MUSC are among the most important components of our sports medicine program, giving us what I consider to be state-of-the-art ability to diagnose the most difficult of sports injuries. In recent years, the use of specialized tests, especially magnetic resonance imaging, has evolved from imaging used mainly by specialists such as orthopaedic surgeons, to use among primary care providers as well.

In the September-October issue of the journal Sports Health, David J. Petron et al. present a case control study looking at whether or not primary care providers overutilize magnetic resonance imaging. They retrospectively looked at 100 patients older than 40 years old with chronic knee pain referred by primary care providers who had ordered MRIs of the knee after seeing those patients. Primary care physicians of multiple specialties, nurse practitioners, and physician assistants evaluated these patients. The authors looked at how many of the 100 patients had plain x-rays of the knee performed by primary care providers. Within the group that had x-rays, the authors studied how many of those were weight-bearing x-rays, and specifically flexion weight-bearing x-rays. They also looked to see how many of those patients had their treatment plans altered as a result of the MRIs. Finally they determined whether or not the orthopaedic surgeons would have ordered the MRIs if they had seen the patients first.

In this study, the authors determined that of the 100 patients with knee MRIs ordered by the primary care providers, only 44 had undergone plain x-rays of the knee. Of those 44 patients with x-rays, only 24 of the x-rays were weight-bearing films, and of those only seven were flexion weight-bearing x-rays. 76 of the 100 patients’ treatment plans were altered after the MRI, with the vast majority of those changes involving referral to an orthopaedic surgeon. When included with the 24 patients whose treatment plans were not altered by the MRI, 90 of the 100 patients’ treatment plans were either unchanged by the MRI or the patients were referred to an orthopaedic surgeon.

Based on the history and physical examination findings, the orthopaedic surgeons determined that they would have only ordered 12 of the 100 knee MRIs ordered by the primary care providers. They felt that they would not have ordered an MRI of the knee for any of the patients 60 years or older in the study. Therefore, the authors concluded that primary care providers had underdiagnosed osteoarthritis and degenerative changes by x-rays and utilized MRIs too frequently.

This might be a complicated study for a non-medical person reading this post. I will try to summarize this in basic language, as this topic comes up very frequently in the office. Many times a day in clinic I will have a patient referred by their primary care provider with either non-weight-bearing x-rays of the knee or only an MRI. Patients get confused when my medical assistant tries to get x-rays in our office prior to me seeing them, as the patients will then say that they’ve either had x-rays or had what they feel is a better test, namely the MRI. And for those who don’t understand the difference between x-rays and MRIs, x-rays just show bones, while MRI’s show all structures, including the tendons, ligaments, cartilage, and the menisci, but they are also much more expensive.

Here’s the problem. Osteoarthritis is a common problem in adults over the age of 40. In basic terms, the articular cartilage (or the cartilage lining the ends of the bones) starts to wear out. As this degeneration happens, the space between the bones starts to narrow. Non-weight-bearing x-rays often do not show the true extent of arthritis because gravity and the patient’s weight do not compress the femur and the tibia together. Often weight-bearing x-rays, especially weight-bearing x-rays with the knee flexed, will show much more joint space narrowing than non-weight-bearing x-rays. Along the same lines, MRIs are performed with the patient lying down. The MRI can demonstrate degeneration of the articular cartilage, but again without weight bearing, the true joint space narrowing is probably underrepresented.



*Note the bone-on-bone joint space narrowing seen on flexion weight-bearing x-rays*

The other problem is the distinction between pain from osteoarthritis and pain from a meniscus tear. The meniscus, unlike the articular cartilage lining the ends of the bones, is a C-shaped piece of cartilage that serves as a shock absorber between the femur and the tibia. Unfortunately in older adults, both a degenerative meniscus tear and osteoarthritis can coexist. If you think about it, this concept makes sense from a mechanical standpoint. If the space between the femur and tibia is decreasing due to articular cartilage breakdown with osteoarthritis, it makes sense that the structure between the bones, namely the meniscus, gets damaged.

This distinction between a [meniscus tear](http://www.drdavidgeier.com/injuries/meniscus-tears/) and arthritis is important from both a diagnostic and treatment standpoint. Typically, pain from a meniscus tear is treated with arthroscopic surgery. The surgeon looks in the knee with an arthroscope and uses scissors and a shaver to trim out the part of the meniscus that is torn. Results from the surgery in terms of pain relief are usually very good. Treatment for osteoarthritis usually does not involve surgery, focusing on anti-inflammatory medications, cortisone or viscosupplementation injections, braces, weight loss, physical therapy, canes or other assistive devices, etc.



*While the shaver is trimming out part of the torn meniscus, note the irregular nature of the cartilage on the femur above the shaver.*

The problem comes with a patient with both a degenerative meniscus tear and osteoarthritis. We know from two landmark studies done over the last decade, for one of which I did an[interview with the Associated Press](http://www.msnbc.msn.com/id/26644064/)when it was published, that arthroscopic surgery to “clean up” articular cartilage damage (osteoarthritis) is not very successful. In fact it shows no significant improvement in pain relief compared to placebo surgery two years after the surgery. From an orthopaedic surgeon’s standpoint, the key when evaluating patients over 40 is to determine if the pain is coming more from the meniscus tear or from osteoarthritis, as pain that seems to be coming from the meniscus tear responds well to surgery.

That gets us back to the issue of x-rays and MRI. If flexion weight-bearing x-rays show significant joint space narrowing, it really doesn’t matter if the patient has a degenerative meniscal tear. I will note that it’s unlikely that surgery will significantly improve the patient’s pain. I am honest with patients before surgery, telling them that the portion of their pain that is coming from the meniscus tear will be better after surgery. Unfortunately they may have some pain after surgery related to the arthritis, which “cleaning up” the damaged articular cartilage likely will only give short-term relief.

The authors of this study do offer reasons as to why primary care providers order MRIs even before obtaining x-rays, and I understand them. First of all, many primary care physicians do not have x-ray capability in their office. They feel that if the patient has to go to another facility for x-rays, they might as well get an MRI instead. Also, the PCPs might not know to order the correct x-rays. By no means am I being critical of primary care providers, as they have to know about every organ system in the body and a ridiculous number of medical illnesses and treatments. When I give talks regarding evaluation of sports injuries to primary care providers, I include a list of specific x-rays to order if they are going to order x-rays. I don’t expect that the doctors will remember the list, but I encourage them to give the list to their x-ray techs to use when they order the x-rays. Hopefully this effort will decrease the number of MRIs ordered and will prevent a patient from getting non-weight-bearing x-rays in their offices and then getting another set of x-rays in my office. And I encourage the primary care physicians, if they are going to refer the patient to an orthopaedic surgeon anyway, to hold off on ordering an MRI and let me (or any orthopaedic surgeon) to determine if an MRI is needed at all.

So what is the take-home message from this study? As health care has evolved, patients are required to see their primary care physicians first much more often than being able to initially see specialists. This trend places more of a burden on the primary care physicians to diagnose and treat a wide spectrum of diseases. Also, there is the issue of health care costs. X-rays of the knee cost between $50 and $150. An MRI can cost between $1000 and $2000. In adults over 40, where osteoarthritis is so prevalent, utilizing appropriate x-rays can limit it the need for a large number of the MRIs, as this study has shown. A patient can discuss the appropriate test with the their primary care physician. If the physician is uncomfortable in ordering a test, direct referral to an orthopaedic surgeon who can make the determination of the appropriate test might be useful to make the appropriate diagnosis and save health care dollars.

**X-rays vs. MRI’s, Part 2 of 3: Do I need an MRI?**

October 12, 2010 • [Wellness](http://www.drdavidgeier.com/category/wellness/)

*In part one of this three-part series, I discussed the use of x-rays in an orthopaedic sports medicine practice. In this post, I discuss the basics of magnetic resonance imaging, or more simply, an MRI. What is an MRI? When do I need an MRI? What are the pros and cons of getting an MRI for my knee or shoulder injury? It’s all here.*

[Tweet this question about MRIs.](http://clicktotweet.com/9f889)

An MRI is a specialized radiology test that has become much more commonly used in recent years. Avid sports fans who see college and professional athletes get injured in sports often read the next day that the injured player will undergo an MRI to determine the extent of the injury. If you didn’t know better, you’d think that an MRI is essential to making the diagnosis when evaluating a sports injury or pain.

**What is an MRI?**  
An MRI is a test most commonly used for joint injuries in orthopaedic surgery. Like I said in part one of this series, x-rays only show bones. An MRI demonstrates soft tissues of the joint, such as tendons, ligaments, muscles, menisci, and articular cartilage. It can also show changes within bone, such as bone bruises and swelling within bone, like what you would see with a stress fracture. The test usually takes between 30 and 45 minutes. Depending on the body part being imaged, it might require the patient to lie on a table inside a tube. Patients who are claustrophobic often request an open MRI, which do exist. Many physicians and radiologists question the quality of the images obtained with an open MRI. Often radiologists can administer some sedating medications to help claustrophobic patients. Unlike x-rays, which usually cost between $50 and $150, an MRI can often cost between $1500 and $2000.

**When is an MRI necessary?**  
I think an MRI is best used when an orthopaedic surgeon suspects a specific injury. For instance, when an athlete or athletic individual presents to my office complaining of a shoulder injury, I start by obtaining information about the injury, such as where it hurts, how it happened, etc. I then perform a thorough physical examination of the shoulder to see if I can determine the injured structure or source of pain. Often history and physical examination are all that are needed to make a diagnosis. I do routinely order x-rays for the reasons I discussed in part 1 of this series. If I am worried about a soft tissue injury, especially one that potentially would require surgical treatment, and if the x-rays are negative, then I discuss the possibility of obtaining MRI with the patient. Often, however, I will try a course of conservative treatment first, such as sending the patient to physical therapy, to see if the patient gets better. If the patient improves with conservative measures, such as anti-inflammatory medications, ice, rest, or physical therapy, it is often unlikely that an MRI will show structural damage. If the patient is not improving despite an adequate trial of these measures, at some point it’s reasonable to obtain an MRI.

**Why don’t orthopaedic surgeons order an MRI on everyone?**  
There are a couple of answers to this question. First is the cost, which as I said above can approach $1500-$2000. As I will discuss in part 3 of this series, many MRIs are probably unnecessary, so the potential cost of a large number of unnecessary MRIs could be significant.

More importantly, I think that an MRI is a fantastic test if the physician knows what he or she is looking for. If, based on the history of the injury and the physical examination, the physician suspects a meniscal tear, then an MRI is very good for determining if one exists and is potentially the source of symptoms. The problem is that an MRI can also show findings that may or may not be important. By showing all of the soft tissue structures of the knee, then an MRI might show abnormalities of other structures that are not the source of the patient’s pain. Too often I believe, primary care providers and orthopaedic surgeons overuse MRI’s or order them too quickly. (Part 3 of this series discusses a recent study that found that primary care providers obtained a tremendous number of knee MRIs that the researchers felt were unnecessary.) I don’t pretend that I don’t commit this mistake occasionally. I get a large number of athletes in the middle of a season who get injured but want to get back to the sport right away. Often the athlete or the parents, or even the coach, will want an MRI right away so they can know if the athlete can get back to play and not do any further damage. I have even had coaches of professional tennis players at the Family Circle Cup who demanded an MRI while the player is still injured on the court.

The bottom line here is that there isn’t always an absolute indication for an MRI. My recommendation in general for those of you who suffer aches and pains with sports or even an acute injury in the sport is to discuss the issue with a sports medicine physician prior to demanding an MRI. Often you can get back into the game without needing the test in the first place.

**X-rays vs. MRI’s, Part 1 of 3: Do I really need x-rays?**

October 11, 2010

*Note: This is the first post in a three-part series discussing the use of x-rays and MRI’s in an orthopaedic sports medicine practice. There seems to be a good deal of confusion among the general public and physicians as well about when to order x-rays and/or an MRI. I expect that this series and the underlying premise (x-rays are very helpful and should be routinely ordered, while MRI’s are utilized far too frequently) will not be a universally accepted opinion. I would like for the reader to understand the basic concept of each test in order to understand why their physician orders tests to evaluate sports injuries.*

One of the questions I’ve frequently get in the office when I’m evaluating a patient for a new sports injuries is whether or not I need to order x-rays. To answer that I need to explain why many people don’t feel like they are necessary. As you may or may not know, x-rays just show bones. They don’t show soft tissue structures like the tendons, ligaments, meniscus in the knee, muscles, cartilage, etc. Many people correctly assume that their injuries are soft tissue in nature, such as a rotator cuff tear, ligament tear, or meniscus tear. While they may be right, we often request that patients have x-rays taken either during or prior to their orthopaedic office visit. Sometimes patients question the need for x-rays as they don’t feel that there is a broken bone and therefore would have x-rays that would not show anything abnormal. Unfortunately, x-rays are necessary to the orthopaedic surgeon for making the correct diagnosis.

X-rays are important for at least three reasons. First, there may be findings on the x-rays that may make more advanced study such as an MRI unnecessary. One of the best examples I can give of that is obtaining knee x-rays when evaluating for a possible tear of the ACL. While it’s true that the anterior cruciate ligament is only seen on an MRI and not on an x-ray, secondary bony findings can be seen. For instance, if there’s a small piece of bone pulled off the lateral tibial plateau (the top of the shin bone towards the outside of the knee), that finding implies that the ACL is torn and very likely makes an MRI unnecessary.

Another reason that we order x-rays is that they occasionally show findings that we weren’t expecting but that are important. Without sounding too alarmist, I can count numerous examples both from my practice and other colleague’s examples where tumors and other serious findings were found on x-rays when these were not the expected findings. For instance, a high-school female athlete could present for evaluation of a snapping sensation in the front of her hip. This would likely be a tendon snapping across the front of the hip and likely of no significance. Despite the fact that I would not expect the x-rays to show any pathology because a tendon does not show up on an x-ray, I would order them to make sure there were no other findings. As I said earlier, I can unfortunately imagine a scenario where she could have a lesion in the femur at the hip joint, necessitating referral to an orthopaedic oncologist. The x-rays hopefully would help to catch it early, potentially preventing a much more serious problem.



*Note the bone-on-bone joint space narrowing of the left knee.*

Finally, x-rays can show us the status of the joint involved. For instance, in people with meniscal tears, especially adult athletes, it can be helpful to know if there are ny coinciding degenerative changes in the knee. The x-rays might show joint space narrowing and bone spurs that would imply that there are advanced degenerative changes that might affect not only the diagnosis but treatment outcome.

If there’s ever a question of whether or not x-rays are necessary, you should always ask either the office staff or the doctor himself to determine what studies are necessary and important.