It's clear now that unrepaired anterior cruciate ligament (ACL) injuries are often accompanied by damage to other soft tissue structures of the knee. Patients are advised to have surgery sooner than later. And surgeons are advised to carefully evaluate the joint for any additional ligament or cartilage tears before doing surgery for the ACL. But sometimes patients opt out of surgery and decide to wait before having the operation. In those cases, without the stabilizing force of the ACL, do patients end up with meniscal tears that weren't present at the time of the ACL injury? That's what the authors of this study set out to find out.

They studied 31 patients who delayed having surgery after an acute ACL injury that resulted in a complete tear of the ligament. To be included in the study, each patient had to have at least two MRIs done and a delay of a minimum of six months before surgery was done. With a chronic ACL-deficient knee, the meniscus becomes even more important as a supportive and stabilizing structure within the joint. The medial meniscus is the focus of this study. The medial side of the knee is the side that is closest to the other knee.

The meniscus is a tough, rubbery C-shaped piece of cartilage that acts like a shock absorber in the knee. It forms a gasket between the tibia (shinbone) and the femur (thighbone) to help spread out the forces that are transmitted across the joint. Walking puts up to two times your body weight on the joint. Running puts about eight times your body weight on the joint. Besides protecting the joint surface, the menisci (plural for meniscus) also help the ligaments stabilize the knee.

The medial meniscus was the main area of interest because previous studies have shown that lateral meniscal tears don't seem to get worse over time like medial meniscal tears do. There are two basic types of meniscal tears: bucket handle and longitudinal. Bucket handle tears mean the tear follows the C-curve shape of the meniscus and goes all the way through the cartilage. If you could pick the tear up, it would look like a bucket handle over the remaining meniscus. A longitudinal tear also goes the length of the meniscus but it only extends along one side of the cartilage. It doesn't go all the way through to the other side of the cartilage.

At the time of the initial ACL injury, only half the group had a meniscal tear. When the next MRI was done, only five of the 31 knees no longer had a medial meniscal tear. Not only that, but of the patients who did have a meniscal tear right from the start, almost half of them had a worse meniscal condition when the second MRI was done. Longitudinal tears became bucket handle tears and more people who started out with no tears now had bucket handle tears.

Once the authors confirmed that medial meniscal tears were made worse by an unrepaired and deficient ACL, they started analyzing other factors that might make a difference in the outcomes. First, they looked at age. Maybe the older the patient, the more likely it is that the meniscus will tear over time. The patients in this study were fairly young (between 18 and 47 years old). It turned out that there was no relationship between patient age and whether or not a meniscal tear occurred over time.

Then they looked at activity level. Maybe more active patients are more likely to tear the meniscus with an unrepaired and deficient ACL. Nope -- patients who were more active didn't have more meniscal damage (or greater severity of meniscal tears). In fact, even those people who had repeated knee injuries didn't have more meniscal tears than those individuals who didn't reinjure the knee.

What they really found was that medial meniscal tears occur more often the longer the patient delayed ACL reconstructive surgery. That begs the question: when it comes to protecting the status of the medial
meniscus, is there an ideal time to have ACL surgery? Other researchers who have looked at this issue have concluded from their studies that reconstruction should take place between three and 12 months after the injury. And the results of this study not only confirm that conclusion, but also offer the knowledge that the earlier the better. Delaying reconstruction surgery puts the medial meniscus at increased risk for tears.

There was one other finding from this study that is important to note. MRIs don't always show meniscal tears or places where the meniscus separates from the joint capsule. That means it's possible to have a meniscal tear and not know it. Surgeons find these unknown tears when they either do an arthroscopic exam or at the time of the ACL reconstruction. Tears along the backside of the meniscus are especially difficult to see on MRI. Even with arthroscopy, posterior tears can be missed unless the surgeon takes a probe and double-checks the integrity of the meniscus all the way around.

In summary, patients with ACL tears who want to delay surgery should be advised about the possibility (probability) that ACL deficiency contributes to medial meniscal tears. This is true even for patients who have an intact medial meniscus at the time of the acute ACL tear. A delay of more than six months increases the risk of further damage and degeneration of the involved knee. The exact reason(s) for this development still aren't clear. If it's not age or activity related and it's not a direct result of a repeated injury, then what? The authors suggest that further research is needed to identify risk factors that might be preventable.