



Major League Care for the Home Teams



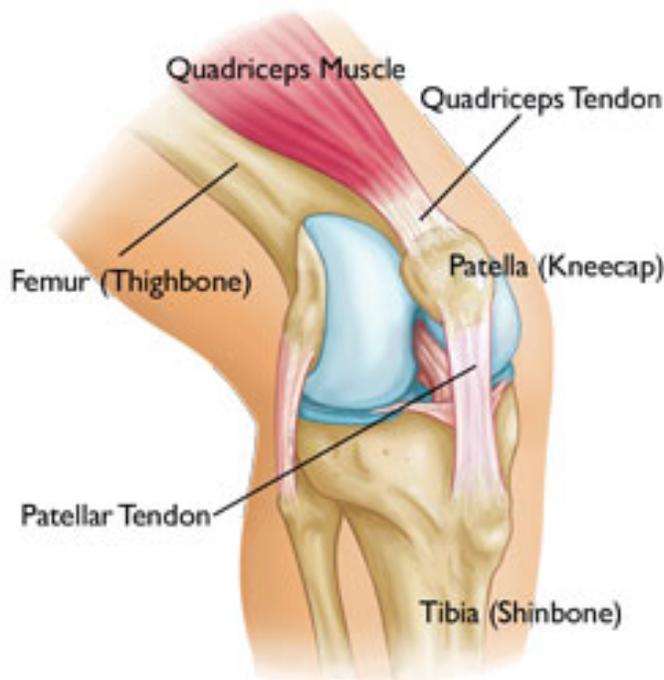
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Patellar Tendon Tear

The patellar tendon works with the muscles in the front of your thigh - the quadriceps - to straighten your leg. Although anyone can injure the patellar tendon, tears are more common among middle-aged people who play running or jumping sports.

A complete tear of the patellar tendon is a disabling injury. It usually requires surgery to regain full knee function.

Anatomy



Tendons attach muscles to bones. The patellar tendon attaches the bottom of the kneecap (patella) to the top of the shinbone (tibia). It is actually a ligament that connects to two different bones, the patella and the tibia.

The patella is attached to the quadriceps muscles by the quadriceps tendon. Working together, the quadriceps muscles, quadriceps tendon and patellar tendon straighten the knee.

Description

Patellar tendon tears can be either partial or complete.

Partial tears. Many tears do not completely disrupt the soft tissue. This is similar to a rope stretched so far that some of the fibers are torn, but the rope is still in one piece.

Complete tears. A complete tear will disrupt the soft tissue into two pieces.

The patellar tendon often tears where it attaches to the kneecap, and can break a piece of the bone as it tears. When the patellar tendon is completely torn, the tendon is separated from the kneecap.



Complete tear of the patellar tendon



Without this attachment, you cannot straighten your knee.

When a tear is caused by a medical condition — like tendonitis — the tendon usually tears in the middle.

Cause

Injury

A very strong force is required to tear the patellar tendon.

Falls. Direct impact to the front of the knee from a fall or other blow is a common cause of tears. Cuts are often associated with this type of injury.

Jumping. The patellar tendon usually tears when the knee is bent and the foot planted, like when landing from a jump or jumping up.

Tendon Weakness

A weakened patellar tendon is more likely to tear. Several things can lead to tendon weakness.

Patellar tendonitis. Inflammation of the patellar tendon, called patellar tendonitis, weakens the tendon. It may also cause small tears.

Patellar tendonitis is most common in people who participate in activities that require running or jumping. While it is more common in runners, it is sometimes referred to as "jumper's knee."

Chronic disease. Weakened tendons can also be caused by diseases that disrupt blood supply. Chronic diseases which may weaken the tendon include:

- Chronic renal failure
- Hyper betalipoproteinemia
- Rheumatoid arthritis
- Systemic lupus erythmatosus (SLE)
- Diabetes mellitus
- Infection
- Metabolic disease

Steroid use. Using medications like corticosteroids and anabolic steroids has been linked to increased muscle and tendon weakness.

Surgery

Previous surgery around the tendon, such as a total knee replacement or anterior cruciate ligament reconstruction, might put you at greater risk for a tear.



Symptoms

When a patellar tendon tears there is often a tearing or popping sensation. Pain and swelling typically follow. Additional symptoms include:

- An indentation at the bottom of your kneecap where the patellar tendon tore
- Bruising
- Tenderness
- Cramping
- Your kneecap may move up into the thigh because it is no longer anchored to your shinbone
- You are unable to straighten your knee
- Difficulty walking due to the knee buckling or giving way

Doctor Examination

Medical History

Your doctor will discuss your medical history. Questions you might be asked include:

- Have you had a previous injury to the front of your knee?
- Do you have patellar tendonitis?
- Do you have any medical conditions that might predispose you to a quadriceps injury?
- Have you had surgery to your knee, such as a total knee replacement or an anterior cruciate ligament reconstruction?

Knee Extension

To determine the exact cause of your symptoms, your doctor will test how well you can extend, or straighten, your knee. While this part of the examination can be painful, it is important to identify a patellar tendon tear.

Imaging Tests

To confirm the diagnosis, your doctor may order some imaging tests, such as an X-ray or magnetic resonance imaging (MRI) scan.

X-rays. The kneecap moves out of place when the patellar tendon tears. This is often very obvious on a "sideways" X-ray view of the knee. Complete tears can often be identified with these X-rays alone.

MRI. This scan creates better images of soft tissues like the patellar tendon. The MRI can show the amount of tendon torn and the location of the tear. Sometimes, an MRI is required to rule out a different injury that has similar symptoms.



X-ray showing normal location of knee cap.

Reproduced and adapted from Musculoskeletal Medicine, Chapter 27, Figure 5.



The kneecap has moved out of place due to a patellar tendon tear.

Reproduced and adapted from Essentials of Musculoskeletal Imaging, Chapter 8, Figure 6.

Treatment

The type of treatment you require will depend on several things:

- The type and size of tear you have
- Your activity level
- Your age

Nonsurgical Treatment

Very small, partial tears respond well to nonsurgical treatment.

Immobilization. Your doctor may recommend you wear a knee immobilizer or brace. This will keep your knee straight to help it heal. You will most likely need crutches to help you avoid putting all of your weight on your leg. You can expect to be in a knee immobilizer or brace for 3 to 6 weeks.

Physical therapy. Specific exercises can restore strength and range of motion.

While you are wearing the brace, your doctor may recommend exercises to strengthen your quadriceps muscles. Straight-leg raises are often prescribed. As time goes on, your doctor or therapist will unlock your brace. This will allow you to move more freely with a greater range of motion. You will be prescribed more strengthening exercises as you heal.

Surgical Treatment

Most people require surgery to regain the most function in their leg. Surgical repair reattaches the torn tendon to the kneecap.

People who require surgery do better if the repair is performed early after the injury. Early repair may prevent the tendon from scarring and tightening in a shortened position.

Procedure. To reattach the tendon, sutures are placed in the tendon and then threaded through drill holes in the kneecap. The sutures are tied at the top of the kneecap. Your surgeon will carefully tie the sutures to get the correct tension in the tendon. This will also make sure the position of the kneecap closely matches that of your uninjured kneecap.

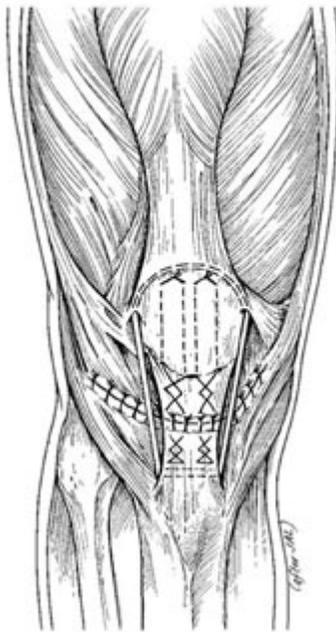
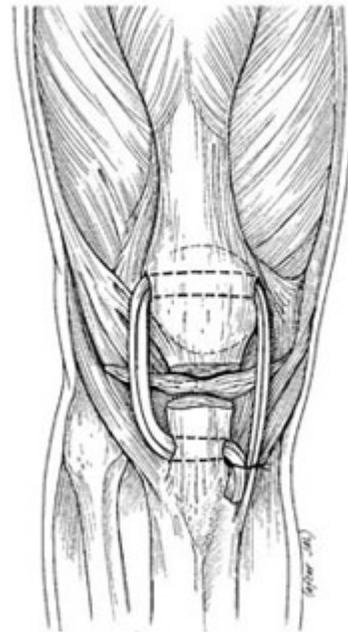


Illustration showing patellar tendon repair via drill holes in the kneecap.

Reproduced from Matava M: Patellar Tendon Ruptures. J Am AcadOrthopSurg 1996;4:287-296



Chronic tears can be repaired with a reconstruction using an autograftgracilis tendon.

Reproduced from Matava M: Patellar Tendon Ruptures. J Am AcadOrthopSurg 1996;4:287-296.

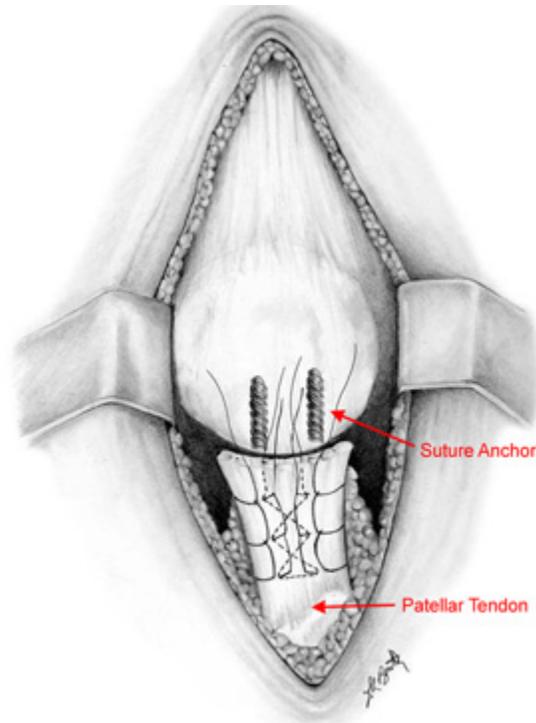


Illustration showing patellar tendon repair with suture anchors.

Reproduced with permission from Gaines R, Grabill S, DeMaio M.: Patellar Tendon Repair with Suture Anchors Using a Combined Suture Technique of a Krackow-Bunnell Weave. Journal of Orthopaedic Trauma 2009; 23(1): 68-71.

Considerations. Your surgeon will discuss your need for this extra protection before your operation. Sometimes, surgeons make this decision for additional protection during surgery. It is then that they see the tendon shows more damage than expected, or the tear is more extensive.

If your tendon has shortened too much, it will be hard to re-attach it to your kneecap. Your surgeon may need to add tissue to lengthen the tendon. This sometimes involves using donated tissue (allograft).

Tendons often shorten if more than a month has passed since your injury. Severe damage from the injury or underlying disease can also make the tendon too short. Your surgeon will discuss this additional procedure with you prior to surgery.

Complications. The most common complications of patellar tendon repair include weakness and loss of motion. Re-tears sometimes occur, and the repaired tendon can detach from the kneecap. In addition, the position of your kneecap may be different after surgery.

As with any surgery, the other possible complications include infection, wound breakdown, a blood clot, or anesthesia complications.



Rehabilitation. After surgery you will require some type of pain management, including ice and medications. About 2 weeks after surgery, your skin sutures or staples will be removed in the surgeon's office.

Most likely, your repair will be protected with a knee immobilizer or a long leg cast. You may be allowed to put your weight on your leg with the use of a brace and crutches (or a walker). To start, your surgeon may recommend "toe touch" weight bearing. This is when you lightly touch your toe to the floor, putting down just the weight of your leg. By 2 to 4 weeks, your leg can usually bear about 50% of your body weight. After 4 to 6 weeks, your leg should be able to handle your full body weight.

Over time, your doctor or therapist will unlock your brace. This will allow you to move more freely with a greater range of motion. Strengthening exercises will be added to your rehabilitation plan.

In some cases, an "immediate motion" protocol (treatment plan) is prescribed. This is a more aggressive approach and not appropriate for all patients. Most surgeons protect motion early on after surgery.

The exact timeline for physical therapy and the type of exercises prescribed will be individualized to you. Your rehabilitation plan will be based on the type of tear you have, your surgical repair, your medical condition, and your needs.

Complete recovery takes about 6 months. Many patients have reported that they required 12 months before they reached all their goals.