

COMMON OVERUSE INJURIES OF THE KNEE

PATELLAR TENDINOPATHY

The quadriceps (thigh) muscle attaches to the patella (kneecap). The patellar tendon is a ligament attaching the patella to the tibia (lower leg). This mechanism facilitates extension (straightening) of the knee. Patellar tendinopathy is a common condition affecting the proximal attachment of the patellar tendon to the tip of the patella. It has been shown to occur in up to 20% of athletically active people.

CAUSE

It is encountered in people involved in some form of repetitive activity involving running or jumping. In this practice it is most often seen in long distance runners and cricketers, especially bowlers. It is our belief that overload of the tendon, either as a once-off event or over a period of time, leads to breakage of the fibres in the tendon at a microscopic level. Although damage can occur anywhere in the tendon, it is most often found in the posterior, or deep portion of the proximal patella tendon, near the tip of the patella.



SYMPTOMS

The typical symptom is pain over the front of the knee. In the early phase pain is present only after sport activity while in the more advanced stages the pain is present during and after activity. In the worst cases discomfort is even experienced when sitting with the knee flexed. On examination there will be marked localized tenderness in the upper part of the patellar tendon and often a thickening in the tendon itself.

SPECIAL INVESTIGATIONS

X-rays

X-rays are usually normal except in rare cases where there may be some calcification in the tendon.

Ultrasound

Ultrasound examination shows a typical lesion of lower signal, which appears darker on the image.

MRI scan

The lesion has characteristic features on MRI scan.

TREATMENT

With our present knowledge, patellar tendinopathy should be seen as an overuse injury. In the earlier stages the problem can be resolved by means of rest and rehabilitation. In the later stages intervention may sometimes be necessary to kick-start a healing process.

CONSERVATIVE TREATMENT

Rest

Rest is the basis of treatment. Your activity should be decreased to a point where no pain or discomfort is experienced.

Rehabilitation

The best results are achieved with a program of eccentric squat exercises on a decline board. While standing on a decline board, start a slow squat by flexing your knees. Squat to about 70° of knee flexion and then slowly rise to full extension. Mild discomfort when doing the exercise is acceptable; increased discomfort the next day is not. If you are experiencing an increase in discomfort you are exercising too much. In this event you should decrease the amount of squats or even cease doing the exercises for a week or two.

The following is a suggested program:

- Start with double- and progress to single-leg squats.
- Start on a 10° decline and increase gradually to 25°.
- Initially flex to about 60° and increase to 90° as pain permits.
- Start by doing 5 repetitions in three sets twice a day. Over time increase to 15 repetitions per set.



Anti-inflammatory drugs and cortisone

Treatment with nonsteroidal anti-inflammatory drugs (NSAID's) is controversial. Local injection of steroids is strongly discouraged and may even result in "non-healing".

Shockwave therapy

Extracorporeal shockwave treatment has been used in the treatment of patellar tendinopathy. In our own small series it seemed to be of some value in the mid-stage of the disease. We however saw no benefit in the later stages. Most medical aids are unwilling to pay for this treatment.

SURGERY

This is indicated in the situation where healing has stopped or does not progress, usually after a period of 6- 12 months of conservative treatment. The principle of surgery is to excise the small damaged part of the tendon and to reactivate the healing process. The procedure is performed on an outpatient basis. An arthroscopy is performed to assess if there is any internal derangement of the knee that may be contributing to the anterior knee pain. This is followed by a short incision over the patellar tendon. The degenerated part of the tendon is excised. The tip of the patella is also roughened up. This tends to release stem cells into the area that are beneficial to the healing process. The surgery is of a small nature, but the rehabilitation is prolonged and the eventual result is uncertain for up to about 12 months after surgery. It is our experience that 80 - 85% of patients can expect a good or excellent result.

OSGOOD-SCHLATTERS DISEASE / LARSEN-JOHANSSON DISEASE

Osgood-Schlatters disease is one of the group of conditions called osteochondrosis. It affects the insertion of the patellar tendon to the bone of the lower leg, called the tibia. In this region of the bone there is a growth centre, in other words an area of the bone where a large amount of growth takes place. It is postulated that excessive pull on the patellar tendon creates strain on this developing growth center. The condition typically affects athletically active children during the time of rapid growth (age 11 - 13 in girls and 12 - 15 years in boys). It is five times more common in athletically active children than in non-athletes. An increase in sport participation, especially running, kicking or jumping activities usually precedes the onset of aforementioned symptoms. Initially discomfort is experienced in the area immediately after sport and improves with rest. If participation continues, the pain becomes present during the entire athletic activity and is also present with everyday activity. Occasionally the symptoms may be precipitated by a fall. Examination of the knee usually reveals tenderness in the region.

X-RAY

X-ray examination may show some fragmentation of the growth centre.



TREATMENT

This is usually a self-limiting condition and will generally improve without any surgery. Rest from the offending activity is crucial. It is our experience that this condition often occurs in children that are involved in a number of different sports. We recommend that one sport be chosen to pursue during this period and preferably not athletics, especially not sprinting. In severe cases, a short period of immobilization in a brace may be necessary. Applying intermittent ice therapy to the affected area may also help. Anti-inflammatory medication is effective for pain relief. It should however not be used to mask symptoms in an effort to increase physical activity. In some cases where the symptoms persist after skeletal maturity, a surgical excision of a detached piece of bone might be indicated.

Larsen-Johansson disease is a similar process to Osgood-Schlatter's disease that involves the attachment of the patellar tendon to the patella. The symptoms are similar and the treatment is the same as that for Osgood-Schlatter's disease.

ILIOTIBIAL BAND SYNDROME

The iliotibial band (ITB) is a flat tendinous structure that originates on the outside of the hip and inserts on the lower leg just below the knee. At the knee it runs over the outside of the bone of the upper leg (femur). During running it moves to and fro over the outer aspect of the knee. ITB syndrome results when this continuous movement leads to inflammation between the bone and the tendon, resulting in pain. This typically occurs as an overuse injury and is most common in long distance runners.

Pain is experienced on the outer aspect of the knee especially on running downhill. The pain increases as you continue to run and forces you to stop running. As soon as you walk or stand still the pain subsides rapidly, but is immediately present when you start to run again. The area over the lateral femoral condyle is tender to touch.

X-rays are normal. MRI scan shows fluid between the ITB and the epicondyle. In advanced cases there may be a thickening of the ITB.

CONSERVATIVE TREATMENT

- Stop running for 3 - 6 weeks.
- Physiotherapy, comprising local treatment and stretch exercises, may help.
- Cortisone injection of the bursa between the ITB and the femur is of great value. It may be repeated 3 times at 2 - weekly intervals.
- In some cases an inner-sole may be of value.

SURGERY

It is rarely necessary for an operation. Surgery can be considered if the condition is unresponsive to the above-mentioned measures after a period of 3 - 6 months. The posterior 1 - 2 cm of the ITB is released through a small incision. This relieves the tension in the ITB and in so doing decreases the pressure on the underlying structures. It is usually successful and you will be able to go home the day of the procedure. Recovery usually takes 6 - 12 weeks, but can take longer.

