

TREATMENT OF PATELLOFEMORAL PAIN

The patellofemoral joint refers to the kneecap (patella) and the groove it runs in at the front of the knee (trochlea).

The quadriceps muscles on the front of the thigh connect to the top of the patella. It is then connected to the tibia (shin bone) by the patellar tendon. The point of attachment is a bone prominence called the tibial tuberosity.

When the quadriceps muscles contract they pull on the patella and it causes the knee to straighten. The hamstring muscles at the back of the thigh bend the knee. The patella acts as a pulley, moving up and down in the groove at the front of the knee as the knee bends and straightens. Normally the patella does not move from side to side.

PROBLEMS WITH THE PATELLOFEMORAL JOINT

Problems occur when the patella does not run smoothly and centrally in its trochlear groove.

(a) Patellar dislocation

The patella can be completely displaced out of its groove. The first time this happens it usually requires a significant injury, but it can become recurrent with minimal force. Because of the shape of the human knee, it always dislocates to the *outside* of the knee, never the inside. Dislocations can chip the bone (patella or trochlea) and recurrent dislocation can cause arthritis.

(b) Patellar maltracking

This is less dramatic but similar in nature. It is also very common. Instead of running in the centre of the groove the patella runs over towards the outer side of the groove (patellar tilt and subluxation). This results in pain (patellofemoral pain) and premature wear (chondromalacia patellae) or if severe, patellofemoral arthritis.

It usually occurs because of the shape of the knee you are born with, but can be aggravated by such things as flat feet, weak hip muscles or tightness of the iliotibial band on the outer thigh.

(c) Patellar arthritis/wear

Osteoarthritis of the patella can be a result of long term maltracking or due to injury, genetics or obesity. Usually it is a combination of factors. Maltracking increases load on one side of the kneecap, resulting in premature wear.

PATELLOFEMORAL PAIN

Several factors may indicate the knee pain is coming from the kneecap (patella).

1. Pain mainly at the front of the knee, which may be referred to the back or sides.
2. Associated 'grating' sensation.

3. Pain provoked by going up or down stairs, on hills or inclines or uneven surfaces.
4. Pain with bending and squatting.
5. Pain or `restless leg's with prolonged sitting such as at a movie, on a plane or in the car
6. Pain with running, so-called `Runner's knee'.
7. Locking of the knee.

INVESTIGATIONS

- * X-rays will show up arthritic changes if they are moderate to severe
- * MRI scans are more sensitive in showing early wear on the joint surfaces or `chondromalacia'.
- * The position of the kneecap in the groove is best seen on a patellofemoral CT scan, which can measure the severity of the tilt and displacement.

TREATMENT FOR PATELLOFEMORAL PAIN

Patellofemoral pain is difficult to treat and is notorious for grumbling for long periods. All treatments aim to reduce the severity of symptoms, but seldom result in a complete cure.

1. Non-surgical treatment

This should always be tried first.

a) Physiotherapy

Think of the rehabilitation in terms of **specific** kneecap exercises combined with **general** exercise.

Specific exercises aim to strengthen the inner quadriceps muscle (the vastus medialis obliquus or VMO) to pull the kneecap back into a central position. It requires a few physiotherapy sessions to learn the exercises, then they are done unsupervised on a daily basis for at least three months. It is a significant undertaking in terms of time and self-discipline to do this, but no other treatment should be considered until this is completed. Surgery is not a short cut – indeed surgery will only succeed if combined with good rehabilitation.

The physiotherapist may also help with some stretches for the iliotibial band (ITB) and gluteal muscle strengthening.

Intensive physiotherapy is not necessary, just a few sessions to learn the exercises and intermittent follow up to upgrade the exercises.

General exercise is also important but not a substitute for the specific VMO exercises. Some general low-impact strengthening such as cycling, walking or swimming should be undertaken. Running is not advisable as it is high impact. General exercise will assist with weight loss.

b) Taping and bracing

The physiotherapist can also tape the kneecap across into a better position. The taping gives us a good idea of what improvement can be achieved. If taping is useful, a removable brace can be worn for exercise/sport/work. A good temporary response to taping may predict a good response to surgery.

c) Weight loss

This is the single most important factor in successful treatment. Weight loss alone will often fix the problem if the patient is substantially overweight. Critically, no other treatment will work if the patient remains overweight.

d) Orthotics

Will correct flat feet, which aggravates maltracking.

e) Pain killers

Simple Panadol (six to eight tablets a day) is the safest analgesic. It should be combined with an anti-inflammatory such as Nurofen or Voltaren.

f) Injections

Cortisone is a strong anti-inflammatory injected into the knee and is good for severe flare-ups.

Synvisc is a lubricant injection.

2. Surgical Treatment

a) Arthroscopic surgery with lateral release

Keyhole surgery can achieve two things. Firstly we can smooth off roughened areas of arthritic wear. This is called chondroplasty. It does not reverse the arthritic wear, and does not stop the grating sensation (which will usually be permanent).

More importantly, we can release the fibrous band of tissue attached to the outer side of the patella (lateral retinaculum) to produce an immediate reduction in the 'tilt'. This produces a permanent effect very similar to taping or bracing. The tissue we are cutting is not structural and surgery does not weaken the knee.

At arthroscopy we also remove any bone fragments (called loose bodies) or torn cartilages.

b) Tibial tubercle transfer

Often referred to as a patellofemoral reconstruction or Fulkerson procedure. Any 'reconstruction' is major surgery for severe pain that has failed to respond to all other treatment. It is also a good operation for knee cap dislocation. When we do this procedure it is always combined with arthroscopy and lateral release at the same time.

The operation involves cutting the bone where the patellar tendon attaches to the tibia, and shifting this bone across to the inner side and re-attaching it with screws. This is the most effective way of repositioning the kneecap.

c) Medial patellofemoral ligament reconstruction

A ligament on the inner half of the knee that is torn when the patellar dislocates is reconstructed. This is a procedure for patellar dislocation and may be combined with tibial tubercle transfer.

d) Patellofemoral arthroplasty

Kneecap replacement surgery is only done for severe arthritis in elderly patients. It is not a common procedure.

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