

Recurrent Patellar Dislocation

Background

Patellar dislocation occurs when the patella (kneecap) slips out of its groove (the trochlea) on the front of the lower end of the femur (thigh bone) (Fig.1). A subluxation is a partial dislocation in which the patella slips but immediately goes back into place. In a true patellar dislocation the patella goes back into place as a distinct movement, usually when the knee is straightened. This may occur seconds to hours after the dislocation. The term knee dislocation is often used for a patellar dislocation but this is incorrect. A knee dislocation is a major injury and involves the tearing of the main ligaments around the knee.



Figure 1. Dislocated patella right knee

When a patella dislocates the chance of another dislocation (recurrence) is quite high, somewhere between 15% and 45%. The specific risk for an individual is difficult to calculate, but it is greater if there are associated predisposing factors. Predisposing factors include such things as the shape of the groove in the trochlea, how high the patella sits in relation to the rest of the knee joint, and the alignment of the leg. Teenagers are at a greater risk of recurrence than those older than 20. After two dislocations, the risk of further episodes of dislocation is very high, somewhere in the order of 60% to 80%.

Non-Surgical Treatment

If your patella has dislocated only once or maybe twice, and you do not have any or relatively minor predisposing factors, non-surgical treatment may be recommended. The focus of non-surgical treatment is to build up the quadriceps muscle on the front of the thigh and in particular the vastus medialis (VMO) muscle which is the part of the quadriceps muscle just above the inside of the knee (Fig.2). Attempts may also be made to stretch the structures on the outside of the knee. These include the iliotibial band (ITB) and the lateral retinaculum. In addition, orthotics may be used to improve the alignment of the leg.

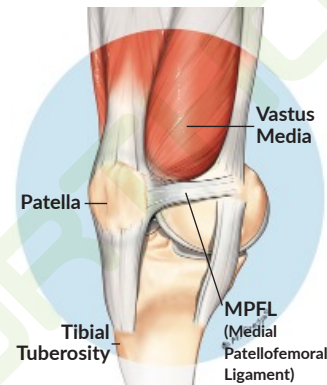


Figure 2. Key anatomical structures

Different Surgical Options

If it has been decided that surgery is the appropriate way to manage your condition there are many different options that have been described and that can be used. The particular operation that is selected for you will depend on the alignment of your knee and patella as well as your age. Special X-rays and a CT or MRI scan may be used to measure the alignment more accurately. An MRI scan may also provide information about the state of the articular surfaces of the knee joint.

Whatever realignment procedure is suggested, it will probably have an

arthroscopy as part of it. The role of the arthroscopy is to clean up any damage on the bone surfaces and to remove any loose fragments that may be within the joint.

When the patella dislocates the first time there is a ligament on the medial, or inside, aspect of the patella that is almost always torn. The ligament is called the medial patellofemoral ligament (MPFL). The ligament can be reconstructed by using a piece of tendon and attaching it to the patella and femur (Fig.3). Typically one of the hamstring tendons is used, but a piece of quadriceps tendon can also be used. The surgery involves making two or three short incisions over the medial (inner) part of the knee and upper shin. The tendon can be attached to the patella and femur in various ways, using a combination of tunnels drilled into the bone, screws and anchors. The current thinking is that MPFL reconstruction is basis of most patellar stabilisation surgery. For many patients no additional surgery may be required.

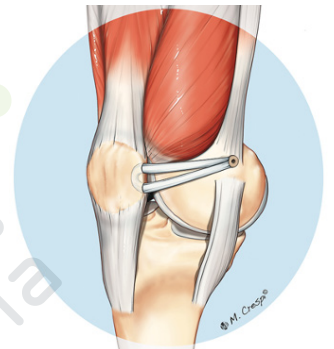


Figure 3. Medial patellofemoral ligament reconstruction

If the patella is sitting too high it can be moved downwards and into its groove on the femur by moving part of the tibia called the tibial tuberosity. This is the bony lump on the front of the upper end of the shin. The patella is attached to the tibial tuberosity by the patellar tendon. By moving the tuberosity downwards the patella is also moved downwards. Bone cuts have to be made to move the tuberosity and screws are used to hold it in its new position until it heals (Fig.4). These screws often need to be removed at a later date because they may be prominent and can be uncomfortable when kneeling.

Sometimes the tibial tuberosity needs to be moved medially, or towards inner side of the knee in order to improve the tracking of the patella in the trochlea. This medial shift may also be combined with a downward, or distal, shift. Again, the tuberosity is held in place with screws until it heals.

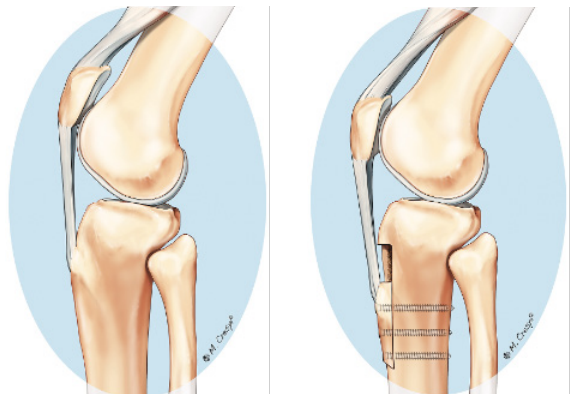


Figure 4. Distalisation of the tibial tuberosity

Another option, which is used much less commonly, is to deepen the trochlear groove in which the patella moves. This operation is called a trochleoplasty. It involves removing some bone and deepening the surface of the groove and holding it in place with absorbable pins or stitches. Usually trochleoplasty is only done in revision situations or severe instability such as habitual dislocation in which the patella dislocates every time the knee is bent and straightened.

Recovery

Whatever operation is used to treat your knee, it will usually involve at least one night in hospital. The length of stay will depend on the complexity of your surgery as well as the response of your knee to surgery. However, most people can be discharged on the first day after surgery.

When you go home you will be putting weight through your leg using crutches for support. The amount of weight that you can put through your leg will depend on the type of surgery (usually full for an isolated MPFL reconstruction, but partial for tibial tuberosity transfers). With some operations, usually those involving shifting the tibial tuberosity downwards, you may be required to wear some kind of brace or splint for the first few weeks after surgery. However, during this period you will be able to take the knee out of the brace to get it moving.

Most people are walking without support by four weeks. The focus of the early rehabilitation is to reduce the swelling, restore the function of your quadriceps muscle, and to get the knee bending and straightening normally.

If the tibial tuberosity has been moved then it is important to make sure the bone is healed before more aggressive rehabilitation is commenced. Healing can be monitored with X-rays.

Once the swelling has reduced and any bone healing has taken place, progression is essentially on an as tolerated basis. It usually takes about 3 months before one can recommence running. From here it is really a matter of function and comfort before one can resume sporting activities. Depending on the procedure that has been performed, it will take anywhere from 4 to 9 months to be able to resume sport on a competitive basis.

Complications

All surgery is associated with some risk of complications. There are general complications and there are specific complications.

Infection

Antibiotics are given at the time of surgery to reduce the risk of infection. Despite this, infection of the wound can occur. This is usually easily treated with antibiotics. However, sometimes the infection gets into the joint, which is a serious complication and requires re-admission to hospital, additional surgery and intravenous antibiotics.

Deep vein thrombosis (DVT)

A DVT is a blood clot that may form in the veins in the legs. This can cause persistent swelling of the foot and ankle and can also be dislodged and be carried to the lungs (pulmonary embolus), resulting in chest pain and breathing difficulties. Once again, the risk is low.

Depending on your perceived risk you may have a Clexane injection

and/or aspirin during your hospital stay and when you are discharged home.

Numbness

The cuts used for the surgery may result in some patches of numbness around the knee. Usually the area involved gets smaller with time, but small patches may persist.

Delayed Bone Healing

If a tibial tuberosity transfer has been performed there is a risk that the bone will be slow to heal or may not heal at all. In either case additional surgery may be required to achieve bone healing. The end result is usually satisfactory.

Patellar Fracture

Following a medial patellofemoral ligament reconstruction and depending on how the tendon graft has been attached to the patella, there is a very small risk of a patellar fracture. If a fracture occurs it usually requires further surgery to fix it, but the final outcome is usually satisfactory.

Ongoing Knee Pain

If the medial patellofemoral ligament has been reconstructed there may be some pain on the inner of the knee with deep flexion (bending). It is usually a matter of working through this. It is not usually a long-term problem.

If the hamstring tendon has been harvested to reconstruct the ligament there may be some pain at the back of the knee or thigh some 3-12 weeks after surgery. This may be associated with some bruising but does settle and is not usually a cause of any long-term problems.

It is important to restore quadriceps function as early as possible. A delayed recovery of quadriceps function may be associated with some shortening of the patellar tendon. This may pull the patella lower than ideal and may be associated with some pain in front of the knee.

Whenever there has been recurrent patellar dislocation or a patellar stabilisation has been performed there can be discomfort with kneeling. This is often accentuated after surgery but may be helped by removing screws (once the bone has healed) if a tibial tuberosity transfer has been performed.

It is common for there to have been some damage to the cartilage surface of the patella or femur prior to surgery. This is essentially early osteoarthritis and there may be some ongoing discomfort at the front of the knee.

Further Patellar Dislocation

Whatever surgery has been performed, there is always a risk of further episodes of patellar dislocation. The risk of a further dislocation is usually less than 5% but the nature of the condition means that we cannot reliably reduce it to 0%.

These notes have been prepared by orthopaedic surgeons at OrthoSport Victoria. They are a general overview and do not constitute medical advice. The contents are provided for information and education purposes only and not for the purpose of rendering medical advice. Please seek the advice of your surgeon or other health care provider with any questions regarding medical conditions and treatment.