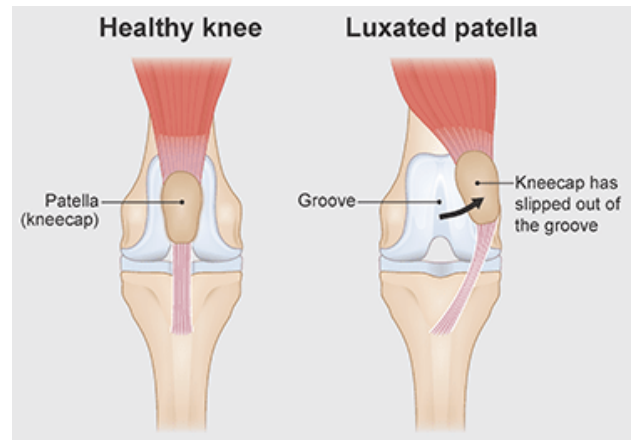




## **Patella Luxation**

### **What is Patellar Luxation?**

The kneecap sits underneath a ligament called the patellar ligament. This ligament attaches the large thigh muscles to a point on the centre front of the shin bone (tibia). When the thigh muscles contract, the force is transmitted through the patellar ligament, pulling on the shin bone. This results in extension or straightening of the knee. The patella slides up and down in its groove (trochlear groove) and helps keep the patellar ligament in place during this movement.

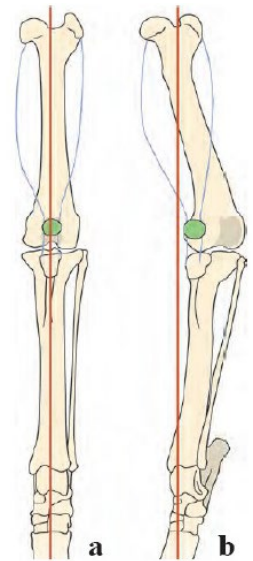


Patella luxation in dogs is a condition where the patella (knee cap) slips in and out of the groove. When the kneecap dislocates, it stops the knee from bending, causes a limp and rubs past the bone as it slips, which over time, can cause pain and arthritis.

### **What causes patella luxation**

It is a genetic condition that can affect any dog breed but more commonly toy and miniature breed dogs. The condition will sometimes only affect one leg but can be seen in both knees in around 50% of dogs. The condition can also affect some cats.

In the majority of cases, the patella will luxate medially (towards the inside of the leg). This is often caused by a combination of several factors which add together to cause a misalignment of the patella.



1. Shallow trochlear groove - This is the groove in which the patella sits in on the femur. Dogs suffering from patella luxation often have a very shallow groove so that the patella will slip in and out easily.
2. Medially (too inside) placed tibial crest/twisting of the tibia - The patella sits within the patella tendon which attaches the quadriceps muscles on the front of the tibia via a prominent piece of the bone called the tibial crest. When the tibial crest is often situated on the medial (inside) part of the bone, the patella is pulled too medially which can pull the patella out of the groove.
3. Bowed femur. In some dogs, a bowing (curvature) of the femur can contribute to patella luxation.

### **What are the Signs of Patellar Luxation?**

The signs of patellar luxation can be quite variable. A 'skipping' action with the hind leg being carried for a few steps is common. This occurs when the kneecap dislocates out of the groove and resolves when it goes back in again. If both kneecaps dislocate at the same time, dogs and cats can have difficulty walking, often with a crouched back leg action.

### **How is Patellar Luxation Diagnosed?**

Examination may reveal muscle wastage (atrophy) in the affected leg(s). Manipulation of the knee may enable the detection of instability of the kneecap as it dislocates in and out of the groove. In some pets the knee-cap is permanently out of the groove. The severity of the dislocation is graded

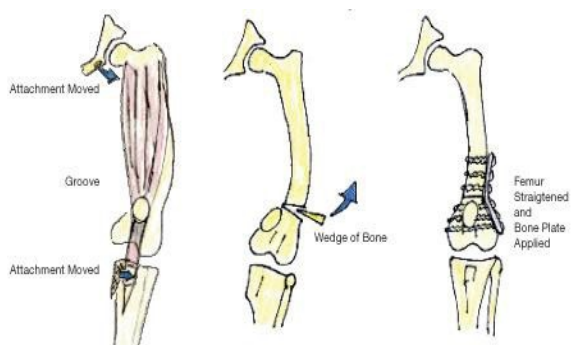
from one to four, four being the most severe. Whilst X-rays provide additional information, on the presence and severity of any associated knee osteoarthritis, it can be difficult to get X-rays that allow accurate assessment of the shape of the thighbone and shinbone. Sometimes a CT scan of the back legs is needed to gain information regarding bone shape, which helps greatly in both surgical decision making and planning.

## What Treatments are Available for Patellar Luxation?

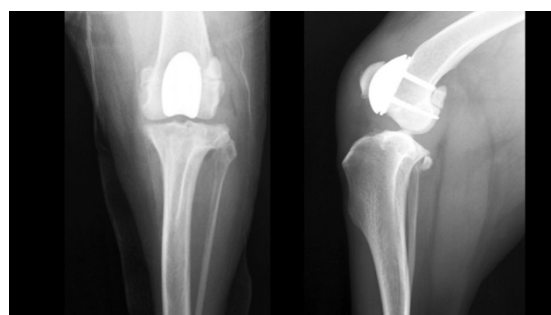
Some pets with patellar luxation can be managed satisfactorily without the need for surgery. The smaller the pet and the lower the grade of luxation, the more likely it is that this approach will be successful. Exercise may need to be restricted. Hydrotherapy is often beneficial. Pets that are overweight benefit from being placed on a diet.

Many pets with kneecap dislocation benefit from surgery. The key types of surgery which may be required, include:

- Quadriceps realignment surgery:** The aim of this surgery is to move a small piece of bone (the tibial tuberosity) at the top of the shinbone that is attached to the kneecap, and reposition it so that the kneecap is correctly aligned with the groove in the thighbone. The piece of bone is most often reattached with one or two small pins and wire. This procedure is called a tibial tuberosity transposition.
- Patella groove deepening surgery:** If required this can be done by removing a block or wedge of bone and cartilage from the groove, deepening the base, and replacing the block or wedge. This makes the groove deeper, while at the same time preserving its smooth cartilage surface.
- Soft tissue tightening (Lateral imbrication)** – this involves tightening the lax connective tissue on the outer aspect of the patella to prevent the knee-cap moving medially.
- Femoral osteotomy surgery:** This involves changing the shape of the deformed thighbone by cutting it just above the knee and stabilising it in a new position with a bone plate and screws. This may be all that is needed to prevent the kneecap dislocating, however, additional procedures such as a tibial tuberosity transposition may also be required.



- Patella groove replacement:** In some patients, particularly those who have significant osteoarthritis affecting the groove, or who have had previous unsuccessful kneecap dislocation surgery, can benefit from placement of a patella groove prosthesis, which resurfaces this part of the knee joint



## **Prognosis and possible complications**

The prognosis is generally very good with around 90-95% of dogs making a complete recovery with resolution of the problem long-term. In general, grade 2 patella Luxation carries an excellent prognosis, whereas the more severe grade 3 or 4 luxations carry a more cautious prognosis. The risk of complications can be minimised by appropriate confinement in first few weeks after surgery. The main complications (5-10%) are infection, fracture or avulsion of the tibial crest bone fragment, implant failure and recurrence of the patella luxation. These complications may require a second surgery to correct. In the long term, a small proportion of dogs (5-10%) can have loosening and migration of the implants. This means the pins back out of the tibial crest and tent up the skin just below the knee. If this happens the pins are easily removed, often just under sedation

## **Post-operative care**

All patients are hospitalised following surgery for pain-relief and monitoring, but most go home the day after surgery. The majority of dogs will be weight-bearing within 1-3 days of surgery and are expected to improve slightly each day. Strict confinement and exercise restriction is required for the first 4 weeks after surgery during the early phases of healing. This means short lead walks only, typically 5-10 minutes around three or four times daily. Animals have a check-up after 10-12 days, at which time skin sutures are removed. They then return for a further check-up and an x-ray after around 4-6 weeks. The x-ray is to check on healing of the bones and position of the implants. In the majority of cases, exercise and physiotherapy can be increased after this check-up, with the aim to return the dog to normal off-lead exercise at around 10-12 weeks after surgery (depending on age and recovery). Hydrotherapy can often be recommended as part of the recovery after a 3 weeks once the wound is healed.