MASH
MELBOURNE ANIMAL SPECIALIST HOSPITAL

Decision Making in Canine Patella Luxation

Patella luxation is a common developmental orthopaedic problem in small dogs but is also seen frequently in large dogs and cats. Luxation can be in either medial or lateral, with medial being the far more common presentation. Patella luxation occurs when the quadriceps muscle group, which includes the patella, is not well aligned with the underlying femoral trochlear groove.

Patella Luxation Grades:

There is a lot of confusion about grading of medial patella luxation, and this is because of the very wide range of severity within grade 2!

GRADE 1	Patella can be luxated medially when stifle is in full extension
GRADE 2	Patella can luxate medially spontaneously
GRADE 3	Patella is permanently luxated but can be reduced manually
GRADE 4	Severe disease with a nonreducible, permanently displaced patella

GRADE 1 The patella can be displaced out of the groove during a physical exam, but it returns to the correct position as soon as the displacing pressure is released. (This is normal in cats!). The animal does not experience a skipping lameness as the patella does not displace during normal activity.

GRADE 2 The patella spontaneously luxates and relocates during normal activity. It is this grade of patella luxation that results in a skipping lameness. About 95% of patella luxation cases are grade 2. There is a huge range of severity within this grade from patella's that luxate very easily gliding in and out of position frequently to those that occur less frequently and require the patella to displace over a well-formed medial ridge.

GRADE 3 This is the opposite of a grade 1. The patella is luxated all the time. The patella can be replaced into the groove with force, but the patella immediately re-luxates as soon as it is released. These dogs will not have a skipping lameness as the patella is not moving in and out of position with normal activity. They may or may not have a weight bearing lameness and often walk with the stifle in an abnormally flexed position.

GRADE 4 This is the most severe grade. The patella is luxated all the time and cannot be replaced with manipulation. Again, these dogs will not have a skipping lameness as the patella is not moving in and out of position with normal activity. They may or may not have a weight bearing lameness and often walk with the stifle in an abnormally flexed position.

Surgical Decision Making:

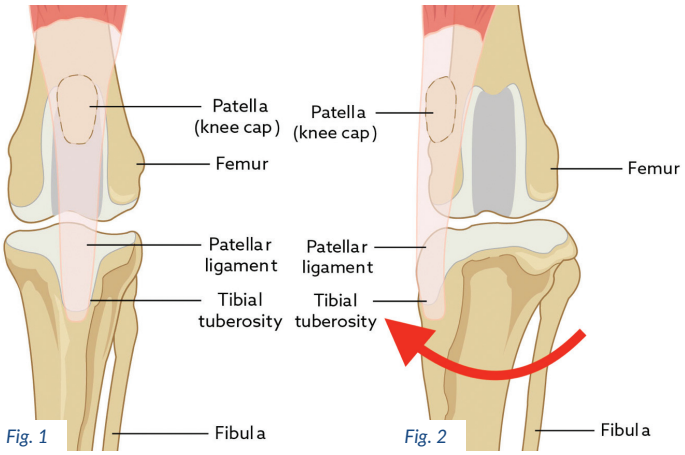
There are several skeletal deformities reported to be associated with medial patella luxation, which include:

- Torsion of the tibia resulting in a medially displaced tibial tuberosity
- Internal rotation of the tibia relative to the femur at the level of the stifle joint
- Proximal tibial valgus or varus
- External torsion of the femur
- Distal femoral varus
- Shallow femoral trochlear groove

Correction of all the skeletal abnormalities in every case would be very invasive (and expensive) and so we typically correct only select abnormalities that we think are contributing the most to the patella luxation. In this way we aim to achieve resolution of the patella luxation in the least invasive way. In higher grades and in larger dogs we generally need to correct more of the skeletal abnormalities to achieve an optimal outcome. The take home message here is that the strategy is tailored to the individual case – it is definitely not one size fits all!

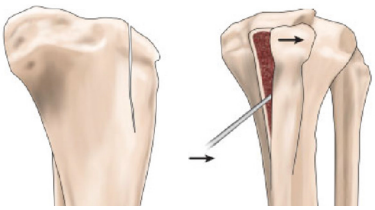
Fig. 1 Normal Stifle Conformation

Fig. 2 Torsion of the tibia resulting in a medially displaced tibial tuberosity



Surgical Strategies:

Surgical correction is recommended for all dogs experiencing grade 2, 3 or 4 patella luxations.



Tibial Crest Transposition:

The first and main tool in the correction of medial patella luxation is a tibial crest transposition. This procedure is an osteotomy that lateralises the tibial tuberosity and corrects a medially displaced tibial tuberosity. The key to success with patella luxation is recognising when additional osteotomies are required.


Fig. 3

Trochleoplasty:

If the patella is luxated for much of the time during development, the groove will be shallow and result in a patella that luxates more easily. Alternatively, if the patella luxates frequently it will wear down the medial trochlear ridge and again result in a patella that is progressively easier to luxate.

A trochleoplasty re-establishes depth in the trochlear groove to resist patella luxation. It has been shown that inclusion of a trochleoplasty in the correction of patella luxation reduces the rate of re-luxation significantly. *Fig. 3 Block Trochleoplasty*

Anti-rotation Suture:

Excessive internal rotation of the tibia relative to the femur at the level of the stifle joint commonly occurs with concurrent cranial cruciate ligament disease. This suture is the same as an extracapsular cruciate repair and so we can often successfully treat both conditions with this technique.

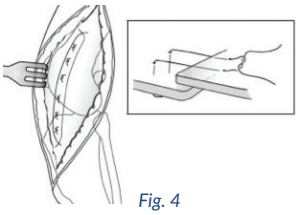


Fig. 4

Soft Tissue Balancing:

When the patella luxates medially, the fascia surrounding the stifle adapts to the abnormal position. In correction of medial patella luxation, a medial release incision and lateral imbrication is typically required to re-balance the soft tissue tension and allow the patella to stabilise in the correct position. *Fig. 4 Imbrication of the Fascia Lata*

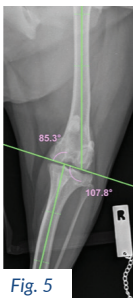


Fig. 5

Fig. 6

Distal Femoral Osteotomy:

With larger dogs or higher grades of medial patella luxation, tibial crest transposition alone may not be enough to re-align the quadriceps mechanism with the trochlear groove. In these cases, the next skeletal alignment correction we consider is a distal femoral osteotomy to correct both distal femoral varus and torsion.

Fig. 5 Distal Femoral Varus

Fig. 6 Corrected via Distal Femoral Osteotomy