

LUXATION OF PATELLA IN DOGS

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Luxation of patella is a cause of hind limb lameness in dogs and it may be either congenital or acquired. When congenital, puppies start showing the clinical signs as they start using the limbs fully, i.e., by about 3-4 months of age. Luxation of patella may be either medial or lateral and it can be either unilateral or bilateral. The exact pathophysiology of patellar luxation is not definitely established. It may be caused by abnormal hip conformation leading to displacement of the quadriceps femoris muscle mass. Primary changes in the coxofemoral joints like coxavara and coxavalga were proposed to cause stifle malformations resulting in clinical signs of patellar luxation. The basic underlying change is the absence of a straight line force acting through the extensor mechanism. Patellar luxation may also occur as a result of traumatic injury to the medial or lateral fascia surrounding the stifle joint. Insufficient depth of femoral trochlear groove is another cause.

The clinical signs of patellar luxation varies according to the degree of deformity, the duration of the condition and depending on whether the condition is unilateral or bilateral. Initial signs of patellar luxation include intermittent lameness and pain and the dog carry the limb in varying degrees of stifle flexion and "skip" or "hop" for several steps. Due to the absence of normal force applied by the patella, the trochlear groove become more shallow and the trochlear ridges become small and irregular in shape. Depending on the severity of the luxation, the condition has been classified into four grades, Grade I to Grade IV. Grade I and II are milder forms of patellae luxation, wherein, the lameness is exhibited infrequently. In Grade I, animals are usually asymptomatic and patella will be in the distal femoral trachlea only. But, occasionally it slips either laterally or medially causing lameness for a short period. In Grade II, the patella will be mostly in the trochlea and it slips outside when digital pressure is applied. Here the

dog is more frequently lame and are slightly "bowlegged" (genuvarum). Dogs suffering from medial luxation of patella show shallow femoral trochlear sulcus with short medial trochlear ridge. In these animals, there will be mild to moderate medial rotation of proximal tibia with mild to moderate deviation of anterior tibial tuberosity and varying degrees of deviation of quadriceps muscle mass. Dogs suffering from lateral luxation of patella show mild to moderate lateralisation of anterior tibial tuberosity and quadriceps muscle mass along with varying degrees of lateral rotation of proximal tibia.

Persistent lameness is seen with Grade III patellar luxation with angular and torsional deformities of the stifle joint. Here, the patella will be always in a luxated state and reduction of patella back into the trochlea is possible with digital pressure. In Grade IV, dog is unable to bear weight on the affected limb and keep the affected limb in varying degrees of flexion. In Grade IV, the patella will be in a permanently luxated position and it will be fixed outside the trochlea. It is not possible to bring back the patella back into the trochlea with digital pressure. The dog will show marked angular and torsional deformities of both femur and tibia. Dogs suffering from medial luxation of patella show the common changes in conformation such as adduction of the limb with medially rotated stifle joint, hock joint turned outwards and the toes pointing inwards (genu varum). They may show partial flexion of the stifle joint and keep the toes off the ground while standing at rest. The common conformational defect of the dogs suffering from lateral luxation of patella is genu valgum ("Knock knee"). In animals suffering from Grade IV luxation, there will be severe hyper-flexion of the stifle and hock joints and keep the affected limb off the ground permanently. If the condition is bilateral, dog will assume a crouched position while standing and walk like a rabbit.

The diagnosis of patellar luxation, whether congenital or traumatic in origin, is simple and straightforward and requires only detailed history and physical examination. Additional diagnostic techniques like radiography, arthroscopy, synovial fluid examination, etc. will help to assess the extent of anatomical changes taken place to the limb and degenerative changes taken place to the intraarticular structures.

Conservative treatment is prescribed for dogs with Grade I luxation. But dogs with severe luxation are treated surgically. The principle behind the surgical treatment is to reestablish the straight line alignment between the quadriceps femoris muscle mass, patella, patellar ligament, femoral trochlea and anterior tibial

tuberosity along with deepening of femoral trochlear sulcus. Trochlear sulcoplasty and the transposition of tibial tuberosity are the two main procedures to bring about this effect. In addition to these bone reconstructive procedures, retinacular imbrication technique and cranialisation of quadriceps muscle mass are often used to enhance stability. Unless there is any degenerative joint disease subsequent to chronic luxation of patella, the corrective surgeries give excellent to good results as far as alleviation of symptoms and limb usage are concerned. It is very important that those animals which underwent corrective surgery may be excluded from breeding stock, when the condition is congenital.



Fig. I: A case of bilateral Grade IV luxation of patella. Note the severe flexion and ankylosis of the stifle and hock joints. Animal always sit on hanches and crawl instead of walking, like a rabbit.

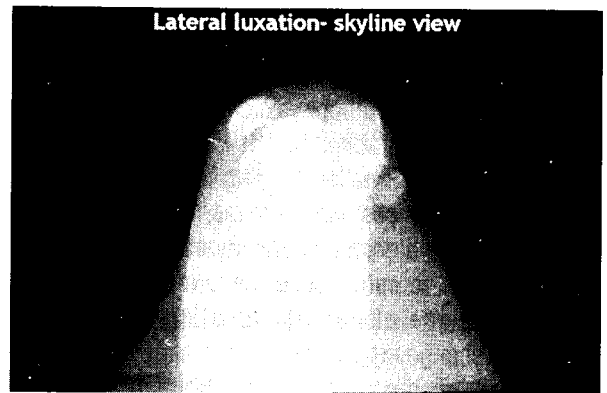


Fig. II. Stifle joint-skyline view. Note the laterally luxated patella and shallow distal femoral trochlear sulcus.

INFOMANIA

1. Name the two famous characters of Mahabharata who were experts in the care of horses and cattle?
2. How do we technically call surgical declawing in cats?
3. If yohimbine reverses xylazine, what drug does atipamizole reverse?
4. How do we describe the undesirable flow of genes from a non-native species to the wild population in an area and can become a threat to the local biodiversity?
5. What do TRAFFIC INTERNATIONAL, based at Cambridge, UK, monitor?
6. Which bird in India is the ancestor of all poultry?
7. Name the breed of cattle developed by the Maharajas of Mysore and later used by Tipu Sulthan during war to carry heavy ammunitions?
8. What should be the concentration of chlorhexidine as teat pre-dip in mastitis control?
9. Which injection technique can be used in neonatal puppy care for fluid administration when there is general circulatory failure?
10. Name the surgical technique to correct old female dogs with urinary incontinence due to urethral sphincter incompetence. The process involves caudal midline laprotomy, stretching the vagina cranially and fixing to the prepubic tendon on both sides of urethra?

(Answers on page-50)