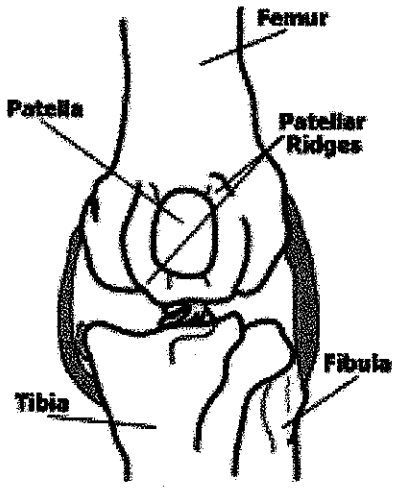
Luxating Patella: A Knee Problem in Dogs

A dog from one of the smaller breeds runs across the yard chasing a tossed ball. In mid-stride, he yelps in pain and pulls his left hind leg off of the ground. After a second, he continues limping on in a three-legged fashion. After ten minutes, the rear leg drops back down to the ground and he uses it normally. This episode occurs maybe once a week. It never really seems to bother him that much – a yelp of pain, a short period of lameness, and in a few minutes he is back to his old self. Typically, he is a small or toy breed such as a Lhasa Apso, Pekingese, Pomeranian, Poodle, or Boston Bull.

A luxating patella may affect some animals much more severely. They may hold the leg up for several days and show considerable discomfort. Dogs who have a luxating patella on both hind legs may change their entire posture, by dropping their hindquarters and holding the rear legs farther out from the body as they walk. Those most severely affected may not even use their rear legs, walking by balancing themselves on their front legs like a circus act, or holding their hindquarters completely off the ground.

Normal knee anatomy

The patella is the bone we know as the knee cap. A groove in the end of the femur allows the patella to glide up and down when the knee joint is bent back and forth. In doing so, the patella guides the action of the quadriceps muscle in the lower leg. The patella also protects the knee joint.



Looking at the lower front portion of the femur (the thigh bone) in a normal dog, you will notice two bony ridges that form a fairly deep groove in which the patella is supposed to slide up and down. These structures limit the patella's movement to one restricted place, and in doing so, control the activity of the quadriceps muscle.

The entire system is constantly lubricated by joint fluid. It works so that there is total freedom of motion between the structures.

What occurs when the patella is luxated?

In some dogs, because of malformation or trauma, the ridges forming the patellar groove are not prominent, and a too-shallow groove is created. In a dog with shallow grooves, the patella will luxate (jump out of the groove) sideways, especially toward the inside. This causes the leg to 'lock up' with the foot held off the ground.

When the patella luxates from the groove of the femur, it usually cannot return to its

normal position until the quadriceps muscle relaxes and increases in length. This explains why the affected dog may be forced to hold his leg up for a few minutes or so after the initial incident. While the muscles are contracted and the patella is luxated from its correct position, the joint is held in the flexed or bent position. The yelp is from the pain caused by the knee cap sliding across the bony ridges of the femur. Once out of position, the animal feels no discomfort and continues his activity.

Which dogs are at risk of having a luxated patella?

Smaller breeds of dogs, especially Miniature and Toy Poodles, have the highest incidence of patella luxation. Genetics can play a role.

In certain breeds that have extremely short legs such as the Basset Hound or Dachshund, patellar luxation is thought to be secondary to the abnormal shape of the femur and tibia. The curvatures of the bones in these breeds work in conjunction with the forces of the quadriceps muscles to displace the patella to the inside. Please do not misunderstand – not all members of these breeds are affected with patellar luxation, only a small portion.

What are the symptoms?

Most dogs are middle-aged, with a history of intermittent (on-again-off-again) lameness in the affected rear leg(s). An affected dog commonly stops and cries out in pain as he is running. The affected leg will be extended rearward, and for a while, the dog is unable to flex it back into the normal position.

What are the risks?

Uncorrected, the patellar ridges will wear, the groove will become even shallower and the dog will become progressively more lame. Arthritis will prematurely affect the joint, causing a permanently swollen knee with poor mobility. Therefore, a good evaluation needs to be done by your veterinarian early in the condition to prevent long-term arthritic crippling.

Treatment for luxating patellas

As would be expected, medical therapy has little corrective ability in this disorder and surgery is therefore required and is the treatment of choice. A surgical treatment is not necessary in every individual with this condition.

Surgery can alter both the affected structures and the movement of the patella. The groove at the base of the femur may be surgically deepened to better contain the knee cap. The knee cap itself may be 'tied down' laterally (on the outside) to prevent

it from deviating medially (toward the inside). The bony protuberance at the site of the attachment of the quadriceps tendon on the tibia, may be cut off and then re-attached in a more lateral position. All of these procedures work well and the type performed depends on the individual case and the clinician. The animal should respond quickly after surgery and is usually completely recovered within thirty days, using his legs in normal fashion.

Breeding considerations

Because of the strong genetic relationships, we really feel that animals with this disorder should not be used for breeding. They can still be excellent pets - and those that do require surgery will usually lead perfectly normal lives without any restrictions on activity.