Luxating Patella

What is a luxating patella?

A patella is a kneecap, and "luxating" means out of place or dislocated. So, a luxating patella is a kneecap that moves out of its normal location. The knee joint connects the femur (thighbone) and the tibia (shinbone). The patella is normally located in a groove (the trochlear groove) at the end of the femur, but with a luxating patella, it moves out of this position.

What causes patellar luxation?

The kneecap sits underneath a ligament called the patellar ligament. This ligament attaches the large thigh muscles to a point on the center front of the shinbone. When the thigh muscles contract, the force is transmitted through the patellar ligament, pulling on the shinbone and causing the knee (and leg) to extend or straighten. The patella slides up and down in its groove and helps keep the patellar ligament in place during this movement.

In some dogs, especially those that are bowlegged, the patella may luxate because the point where the patellar ligament attaches is not in the center of the shinbone. In these cases, the ligament is almost always located too far toward the middle of the body or the inside of the leg. As the thigh muscles contract, the force applied to the patella pulls it to the inside of the knee (medial luxation). After several months or years of this abnormal movement, the inner side of the groove in the femur may wear down. Once this happens, the patella is then free to dislocate or slide toward the inside of the knee.

Many toy and small-breed dogs, including Maltese, chihuahua, French poodle, and bichon frise, have a genetic predisposition for a **medial luxating patella**. In some dogs, a condition can occur where the kneecap slips to the "outside" of the leg, called **lateral patellar luxation**. Dogs with this condition are often medium- or large-sized dogs, with a genetic predisposition noted most in Great Danes, Irish wolfhounds and St. Bernards. These dogs tend to have more mobility issues than those with medial patellar luxation.

How severe is this condition?

There are four grades of patellar luxation, and a higher grade means the condition is more severe.

- Grade I patellar luxation means the patella can be luxated out of the groove by putting pressure on it, but as soon as the pressure is released, the patella goes back in place.
- Grade II patellar luxation means the patella intermittently pops out on its own and remains out until the leg is hyperextended and rotated so the patella returns to the groove.
- With a Grade III patellar luxation, the patella is out of the groove most of the time, but it can be manually pushed back into the groove.
- With a Grade IV patellar luxation, the patella is permanently out of the groove and cannot be manually repositioned.

In affected dogs, one or both kneecaps may luxate, sometimes to a different degree. Approximately 50% of affected dogs have both knees involved.

What are the clinical signs of patellar luxation?

Pet owners may notice a skip in their dog's step or see their dog run on three legs; then, suddenly, the dog will be back on all four legs as if nothing happened.

With medial patellar luxation, the dog will usually hold up the lower part of the leg as long as the kneecap is out of place. When the kneecap returns to its normal position, the dog can resume normal walking. Many dogs with medial luxation learn how to kick the leg to the side, which causes the knee to hyperextend and "snaps" the patella back into place. Over time, the soft tissues around the joint become damaged or stretched, and it becomes easier for the kneecap to pop out of place.

Dogs with lateral patellar luxation may have more difficulty walking. Small dogs may develop this condition suddenly and start limping or, if it develops in both knees at the same time, they may lose the ability to stand properly. In large dogs, lateral patellar luxation is often a developmental condition. As the affected puppy grows, they develop a "knock-kneed" stance, with the knees turning inwards and the paws pivoting as they walk.

How is patellar luxation diagnosed?

Your veterinarian will diagnose a luxating patella by feeling the abnormal movement or position of the kneecap during palpation of the leg. In some cases, the luxating patella will be detected during a routine physical examination. In other cases, a history of intermittent lameness may suggest this problem and your veterinarian will examine the leg to confirm patellar luxation. Radiographs (X-rays) are usually performed to determine the extent of the problem and to detect whether there are any other changes or abnormalities in the joint, particularly if the luxation is caused by trauma.

Can a luxating patella cause long-term problems?

A luxating patella can cause long-term problems for your dog, but the severity depends on the grade of luxation and whether both legs are affected to the same degree. The higher the grade, the more likely your dog will develop long-term problems. Some dogs, especially with Grade I patellar luxation, can tolerate this condition for many years, even their entire lives; however, as the dog ages, arthritis develops and results in decreased mobility and joint pain. Once arthritis develops, it cannot be reversed. In addition, patellar luxation predisposes the knee to other injuries, especially torn cruciate ligaments.

Can a luxating patella be corrected?

A luxating patella can be surgically corrected, especially if the patella luxates frequently. With mild Grade I luxation, surgery may not be necessary. For most dogs with patellar luxation, surgery may be recommended sooner rather than later to minimize the likelihood that arthritis or a cruciate ligament tear will develop. The higher the grade of luxation, the sooner the surgery should be performed.

Surgical repair may involve several techniques depending on your dog's knee structure, including:

1. **Tibial tuberosity transposition**: Moving the patellar ligament's point of attachment on the tibia (shinbone) to its proper location.
2. **Trochleoplasty**: Deepening the groove in the femur where the patella glides so it is harder for it to move out of place.
3. **Altering the inappropriate tension** on the patella by releasing or cutting tight connective tissue that is pulling the patella out of place and tightening the stretched tissues that are trying to pull it into the correct position (imbrication). This type of surgery is often used in addition to one of the above interventions to help prevent the patella from luxating again.
4. **Other Osteotomies:** Surgical alterations to the bones of the knee as needed to reduce excess tension on the patella.

After surgery, recovery is usually rapid, especially with appropriate pain management.

What is the prognosis?

If your veterinarian performs surgery before arthritis or another knee injury occurs, the prognosis is excellent. Your dog should regain full use of the leg. However, if arthritis has already developed in the knee joint, your dog may experience intermittent pain in the leg and it may progress. Prescription anti-inflammatories, antibody therapy (Librela®), joint supplements, and therapeutic mobility diets may slow the progression of arthritis and help control any discomfort. Weight reduction is also recommended for overweight dogs. Post-operative physiotherapy may be recommended. Your veterinarian can help you determine the best post-operative plan for your dog.