The Trick Kneecap:

When and How Do We Get Serious About That?

Overview—"I don't understand what luxating patella is; please help me understand the condition and the treatment."

Dogs and cats, like people, have a kneecap; we call it the "patella". It is a small bone whose function is to act as a pivot point for the knee. Anatomically, it is connected to the quadriceps muscle ("the quads") on the front of the thigh, rides in a groove on the end of the femur (the thigh bone), and then is attached to the top of the tibia (the shin bone) by the patellar ligament (the structure your doctor taps and makes your leg kick up during an exam.) When the patella jumps its track, we call it "luxating" ("dislocating" is another correct term but sounds more dramatic than this actually is.)

From a physical exam, we grade a patella luxation so that we can record "how loose" it was on exam. This grading is helpful and necessary for medical record communication but should be consider only a rough description of the patella status not a precise "how bad it is/how bad is the prognosis". Several factors can make this grade change from day to day and from doctor to doctor. A tense vs. relaxed patient; a standing vs. lying down patient; an awake vs. anesthetized patient—all change how a patella feels. And on the medical side, the grading system is not designed to be precise; simply put…

- Grade IV: the patella lives out of the groove and cannot be put back in on exam.
- Grade III: the patella lives out of the groove but can be put back in on exam.
- Grade II: the patella lives in the groove but can be pushed out on exam.
- Grade I: the patella lives in the groove and can barely be pushed over the rim on exam.

Surgical stabilization of a luxating patella involves one or more techniques from our patella "toolbox". We can reconfigure the biomechanics such that the patella "tracks" straighter and stays in the groove. We can tether the patella toward the loose side. We can relax the patella support on the tight side. We can modify the groove to accept the patella more readily. Or we can mix and match these different techniques as anatomy dictates. We make these decisions while in surgery during our initial evaluation of the anatomic abnormalities. Finding the "just right" biomechanics of the patella is an art as much as it is science; like in *Goldilocks and the Three Bears*, we do not want to over-correct or under-correct, but rather find the correct correction for that patient.

"Why is this procedure being recommended for my pet?"

Most patients with a luxating patella are small and toy breed dogs. The most common sign of this abnormality in these little kids is a "skip step" gait. For some dogs, it happens every step or they hold the leg up for several steps; for others, it is a very occasional occurrence. The skip is related to the patella popping out then back in on its own. When this in/out movement happens too often, **the cartilage of the joint can be worn down over time**. If the looseness develops too early in life while an animal is still actively growing, **the patella sitting outside of the groove can "pull" the bone growth to one side making a curved leg.**

Medium and large breed dogs, overweight small/toy breed dogs, and the bully-type breeds develop a true lameness or limp with the patella luxation (some over weeks, some suddenly during play). This lameness is related to **abnormal wear on the joint cartilage and advancing arthritis**.

Most commonly, the patients who will benefit from surgical stabilization of a luxating patella are young (<2yrs). Older animals who have had a luxating patella their whole life without concern, but then develop a new lameness, are often doubly affected by a new ACL rupture. When this happens, the limp is more directly related to the ACL and the patella gets slightly looser due to the swollen joint capsule. Surgery in these patients is geared toward stabilizing the ACL and a minor tightening of the patella is usually all that is needed.

Any age or size dog or cat can develop a "traumatic" luxating patella during energetic play or as a result of a bad landing or subsequent to major trauma (like being hit by a car). The support structures around the patella are torn (akin to a major sprain) and **rarely heal themselves** tight enough to support the patella again without surgical help.

"What options do I have to treat my pet's abnormality?"

In the animal world, we do not have any good braces or external support devices that keep a kneecap in its groove; that option often seen in human medicine is not available to us.

Allowing time to pass...to wait and see if a young pet "grows out of" its discomfort/disability or an injured pet heals a traumatic patella is certainly an option and worthwhile. Unless steady improvement is seen over 1-2months, it is **unlikely things will resolve themselves without our surgical help**.

Many patients have a loose kneecap in both knees; some have similar severity (needing surgery) and some have one worse (surgical) and one minor (non-surgical). Timing of surgery for a dog having both knees in need of surgery is another decision-making exercise. Things to consider with regard to doing both knees during the same anesthesia episode: implant related complications and surgical failure rates are higher; patients need a lot more supervision and assistance with their daily routine for 2-4wks.

"What postoperative complications do I need to know and understand when considering this surgery?"

Complications related to having (any) surgery include:

- A difficult and/or painful anesthetic recovery which may require additional medications or rehospitalization for support.
- Incisional infections, usually from patient self-trauma and licking, and/or housing in a wet (kennel) environment; these are typically minor and may require oral antibiotics. These infections may worsen to include incision separation (dehiscence) that may require minor surgical assistance to re-close the incision.
- All surgery procedures require general anesthesia which carries with it the risk of serious harm or death. This risk is extremely rare, but obviously catastrophic. The risk should not be taken lightly; it is very uncommon and must not prevent us from using surgery and anesthesia to help our patients when necessary and appropriate.

Complications related to having the patella surgery include:

- Implant failure that will need veterinary and/or surgical care; rare, but more common in specific patients based on age, size and degree of abnormality (reduce the chance of this happening by working hard to **minimize pet's activities that overstress the repair too early**)
- Implant irritation/infection that will need veterinary and/or additional surgical care, including implant removal; approximately **10% of patients**

"Are there situations when the surgical outcome is not what we hoped it would be?"

An outcome that is somewhat common but not necessarily a complication is a physical exam finding of a persistently loose patella months postoperatively. In one review study, 50% of patients had persistently loose postoperative patellas; very few of these patients had any limping or disability associated with this outcome. If the patella does not spontaneously move out of the groove during a patient's daily activities, it will not cause limping or arthritis. We consider this a successful outcome and do not recommend any further surgery.

Prognosis for surgical repair is generally very good. Most patients return to full activity with no restrictions.

Select circumstances, certain types of patients, postoperative supervision/management all shape a specific patient's prognosis and can be best tailored to your pet through a conversation with your veterinary care providers. Your active participation in that conversation will help set proper expectations for your pet's outcome.

"How is my pet's life and lifestyle likely to change after this procedure?

A successful surgical outcome results in an elimination or dramatic reduction in the skip-step abnormality and arthritis progression. The ability to strongly jump up is restored. Often legs are straighter, and a patient has much better agility and freedom of movement. **No restrictions on activity are required after fully healed.**

Arthritis is always a concern when a joint has developed abnormally or been injured. Surgical stabilization of a luxating patella significantly slows the progression of arthritis and very commonly improves the comfort of an already arthritic knee. We change the cartilage surfaces over which the patella rides; heavily worn areas of cartilage are relieved and healthier areas go to work with less inflammation (and pain). Overwhelmingly, knees that have had a troublesome patella stabilized at a young age are **comfortable and highly functional through a pet's lifespan.**

"Are there things I can do to prepare myself, my home and/or my pet for this procedure?"

Please read the *Preoperative Preparation* information (here https://directvetsurg.com/pet-owners/dvs-resources/) .

Temporarily **adjusting your pet's home environment for the postoperative period may be useful** in following recommended restrictions to activity. Baby gates across stairways; ramps for cars or entryways; body harnesses to assist a pet to rise or prevent from slipping/falling; removing a favorite piece of furniture to avoid jumping. You are best able to judge your home environment; discuss risky areas or activities with your veterinary staff to assist with your preparations.

Orthopedic surgery will interfere with your pet's ability to walk well over the first few days. She/he will need assistance getting in/out of the car, into the house, out to got to the bathroom, up the stairs, etc. Depending on the size of your pet, you may need additional help with these activities from family or friends.

There are off-the-shelf "sling" products that can help you help your pet when they don't have full strength in all of their legs. See www.directvetsurg.com "Pet Links" for some product recommendations for this scenario. The *Help 'em Up harness* is a very ergonomic and useful tool for the postoperative period.

Slippery floors can be a challenge for postop orthopedic patients; secure runners and area rugs for problem spots can help, as can non-slip booties for your pet's feet. See www.directvetsurg.com "Pet Links" for product recommendations.

Discuss with your veterinary staff medication options that may help you follow recommended restrictions if you know your pet's enthusiasm and happy behavior will challenge any activity restrictions imposed. **Ongoing communication from you regarding the success or failure of activity restrictions** during the postoperative period will allow veterinary staff to better assist you through this challenging time period!

Outpatient surgery and anesthesia can be uncomfortable, painful, disorienting, and frustrating experiences for animals; watching your pet work through the early postoperative period and recover from anesthesia and pain

medications can be worrisome, scary and frustrating for pet owners. The vast majority of the time this period of difficulty is brief, and *your pet is actually more comfortable and secure at home with you*. Sometimes it doesn't feel like that at two in the morning when your pet is anxious and not consolable, and you are unsure of what to do! **You always have the option** of transporting your pet to a 24-hour veterinary facility postoperatively. If you do not want to have your pet home in the first few days postoperatively, please advise your primary care veterinary staff. They will provide contact information for a local 24-hour veterinary facility and help get an estimate for the ongoing care.

It is important that you have proper expectations about this procedure; your experience and you pet's outcome will benefit greatly. Please discuss this information with your veterinarian when working through the decision-making process regarding **Patella Luxation**.

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(See additional materials at www.directvetsurg.com for pet owners and veterinary professionals.)