

February 27, 2019

Pediatric Sterilization Primer for Veterinarians

Many veterinarians are generally unfamiliar with pediatric sterilization as the practice is not specifically taught as part of most veterinary educations; only those that work in practices having a close relationship with shelters or rescue organizations are typically exposed to this type of surgery. This primer is designed to introduce the concept of pediatric sterilization to veterinarians who may be interested in offering this service in their practice, as well as locums who may be asked to perform these surgeries in the course of their employment.

What age range is considered pediatric?

For the purposes of sterilization surgery, puppies and kittens between the ages of 6 weeks and 16 weeks (or 4 months) would be considered pediatric. In some cases, practices or organizations may set a minimum age somewhere within this range – for example within the BCSPCA, animals aren't eligible for spay/neuter before 8 weeks of age.

What is the reasoning behind performing sterilization at such an early age?

Pediatric sterilization is generally only performed on animals from rescue organizations, such as SPCA's, municipal shelters, and humane societies. Most of these groups have mandatory pre-adoption sterilization requirements due to notoriously low compliance rates for spay/neuter post adoption, despite voucher and certificate programs. Without pediatric spay/neuter, puppies and kittens would be faced with an extended length of stay, increased risks of infectious disease, and a much higher cost of care.

What are the long term health effects of pediatric sterilization?

The long term health effects of sterilization and the age at which it is performed are currently the topic of much study and debate. However, many of the currently available studies have focused on comparing differences between "traditional" age (6 months) and mature surgeries, and do not specifically examine the pediatric age group. Some of the health conditions that may be increased due to early age sterilization include hip dysplasia, cruciate ligament injury, and female urinary incontinence, however the studies show conflicting results for each of these conditions.

While individual owners may choose to delay sterilization based on the results of these studies, in a sheltering situation, the needs of the entire group must often be considered first. Ensuring every dog or cat is spayed or neutered prior to adoption is of the highest priority; small, potential risks in the future health of an individual animal are not enough to outweigh the benefits of early spay/neuter in these situations.

What are the special anesthetic considerations for pediatric patients?

Due to their small size, pediatric patients do pose some anesthetic challenges, however they are in reality quite minor and easily negated by some basic adjustments in the patient protocol. Pediatric patients should not be fasted prior to surgery for more than 2-3 hours as they are not able to regulate their blood glucose levels as easily, or tolerate low blood sugar as well as their adult counterparts. To avoid hypoglycemia, leave food and water down overnight for puppies and kittens (or offer a small meal in the morning if they are meal fed) and begin fasting at admission. After surgery, offer a small meal and water as soon as they are ambulatory, and then every 1-2 hours until discharge, at which time normal feeding can resume.

Due to their high metabolic rates, pediatric patients will burn through anesthetic drugs more quickly, so it is best not to wait too long between pre-medication and induction (max 15-20 minutes). They will also usually require a higher than average dose of induction agent to achieve unconsciousness.

Pediatric patients are highly reliant on their high heart rates to maintain cardiac output and blood pressure. Since many anesthetic drugs may cause bradycardia, an anticholinergic such as atropine or glycopyrrolate should be included in the pre-anesthetic protocol and heart rate should be carefully monitored throughout the procedure.

Hypothermia is common in pediatric patients due to their high surface area to body ratio, which causes them to cool down quickly. However, their small size also allows them to warm up quickly, so providing external heating support through the use of warming devices during and after surgery is usually very effective at preventing heat loss.

What are the special surgical considerations for pediatric patients?

Most veterinarians that have been trained in pediatric spays and neuters consider these surgeries to be of lower overall surgical risk as they are much quicker and easier than in older animals. That being said, there are some extra considerations to keep in mind for these patients to ensure a smooth surgery.

The tissues of pediatric patients are smaller and more fragile than those of older animals - it is not uncommon for the uterine pedicles, ligaments and spermatic cords to tear when tension is placed upon them. A delicate and lighter touch is necessary, and surgeons with larger hands may find it more difficult to work with the small immature organs (especially tiny kitten testes), however with a bit of practice, the necessary adjustments soon become second nature.

Young puppies and kittens frequently have a fair amount of clear or straw colored free fluid present in the abdominal cavity. In females, this will be noticed immediately upon entering the abdomen, and in males it will be seen when incising into the vaginal tunic. The origin of this fluid is unknown, and using sterile gauze to absorb some of the fluid to improve visibility doesn't appear to have any negative effects.

What are the most common intra-op and post-op complications with pediatric spay & neuter?

Intraoperatively the most common complication is the tearing of fragile tissues. Common spots for tissues to tear is the proper ligament and pedicles in females, and the spermatic cords in males. Bleeding is rarely an issue due to immature organs and small supplying vessels, however any significant bleeding must be controlled quickly as small patients have less capability to adapt to hypovolemia.

Postoperatively the most common complication is swelling at the incision site due to high energy and activity levels. Young puppies and kittens return to normal very quickly after surgery, and it can be hard for caregivers to enforce strict rest, so good client education is of the utmost importance.

How is the procedure for a pediatric dog spay different?

In pediatric dogs, the abdominal incision should be made in a more central location, rather than cranially near the umbilicus, as the ovaries lay quite caudal when compared to more mature dogs. Finding the first uterine horn with the spay hook can be difficult due its very small size, but a correctly placed incision helps immensely.

The uterine body and ovarian pedicles can be safely tied off with a single ligature as there is minimal fat and the tissues are quite small. In addition, it is not necessary to close the SQ layer unless the incision is very large; closing the abdominal wall and finishing with a subcuticular skin closure is sufficient.

How is the procedure for a pediatric dog neuter different?

Pediatric puppy neuters are performed similarly to cat neuters, using a single midline scrotal incision, and self-ties of the spermatic cords. The incision can be closed with a single interrupted subcuticular stitch, or simply a small drop of surgical glue.

How is the procedure for a pediatric cat spay different?

The spay procedure for pediatric cats is essentially the same as in older animals. The uterus is similar in size to that of an immature 5-6 month old cat, and is easy to find due to minimal abdominal fat. A 2 layer closure of the small incision is quick and sufficient in these tiny patients.

How is the procedure for a pediatric cat neuter different?

There is no difference in the procedure for pediatric male kittens except the small size of the testes.

Where can I get more information?

If you would like more information on pediatric sterilization, including specific anesthetic protocols and surgical techniques, feel free to contact Dr. Kim Yuill at kyuill@spca.bc.ca or 250-562-5556.

Dr. Kim Yuill, Prince George Spay/Neuter Clinic