Pediatric Spay and Neuter

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Introduction

Each year in the United States millions of homeless or unwanted dogs and cats are euthanized in animal shelters. While precise numbers are difficult to obtain the Humane Society of the United States estimates that between 3 and 4 million dogs and cats are euthanized each year. Many factors have led to the overpopulation of dogs and cats and the solution will be multifaceted. Until safe and effective chemical or immunological sterilization is available spay neuter will be the cornerstone of any program to reduce the overpopulation thereby reducing the numbers of animals relinquished and euthanized each year. One important component of the spay neuter efforts at reducing shelter relinquishment and euthanasia is pediatric spay and neuter.

Ovariohysterectomy and castration of pediatric dogs and cats (between 8 and 16 weeks of age) is supported by the AVMA and is becoming increasing popular especially in the shelter and high-quality, high-volume spay neuter environments. The AVMA position statement says, "Resolved that the AVMA supports the concept of early (8-16 weeks) ovariohysterectomies /gonadectomies in dogs and cats, in an effort to stem the overpopulation problem in these species. The concept is for the benefit of animal shelter and humane society spay/neuter programs. Individual veterinarians have the right/ responsibility to decide on what age they will perform the procedure." Other organizations supporting pediatric neutering include the:

- Canadian Veterinary Medical Association
- British Small Animal Veterinary Association
- American Animal Hospital Association

and many more.

The most effective way to ensure that animals adopted from shelters do not reproduce is to spay or neuter them prior to adoption. The ASV Guidelines for Standards of Care in Animal Shelters states that "animal shelters should require that cats and dogs who are adopted into homes be spayed or neutered." Voucher programs or prepaid spay neuter programs in which arrangements to have an adopted animal spayed or castrated are made at the time of adoption simply do not work. Nationally compliance rate of these programs is less than 40%. With pre-adoption spay and castration there, obviously, is no compliance issue. In the shelter environment spay or neuter can be performed on puppies and kittens as young as 6 weeks of age. In a practice environment for owned animals the recommendation is to establish one more appointment at the end of the puppy/kitten vaccination series. In this manner puppies and kittens are spayed or neutered prior to 5 months of age, before sexual maturity.

Just last summer the AVMA endorsed the concept paper from the "Feline Fix by Five" campaign advocating to change the standard age of sterilization of cats from 6 months or older to prior to 5 months of age. This is a campaign to convince veterinarians and the public to spay or castrate cats prior to five months of age. The basis for this recommendation is that cats reach sexual maturity by five months of age. Female cats can become pregnant at five months of age and sterilization prior to five months will prevent unwanted litters of kittens. This concept has also been endorsed by the American Animal Hospital Association, The Feline Practitioners Association, the Association of Shelter Veterinarians, The Winn Feline Foundation, The Catalyst Council, The International Cat Association, The Cat Fanciers Association and PetSmart Charities.

Advantages of pediatric spay/neuter

There are several advantages to pediatric neutering. In addition to the commonly accepted health benefits associated with ovariohysterectomy and castration, such as reduction in incidence of mammary neoplasia and reduction in behavioral problems, pediatric neutering offers additional advantages. It is an effective tool in dealing with the overpopulation of unwanted dogs and cats. The surgical procedures are easier, faster, and less expensive. With shorter surgery times and shorter anesthetic episodes the incidence of perioperative complications is low.[1] Anesthetic recovery and healing time is shorter.[1] Long-term studies of the impact of pediatric spay neuter have failed to find serious negative consequences from spay neuter prior to six months of age.[2,3,4]

Anesthetic management

Anesthetic management in the pediatric patient can be very safe provided attention is paid to a few basic principles and appropriate attention is paid to the unique concerns associated with the pediatric patient. Given that metabolic development is largely complete by six weeks of age, the same anesthetic protocols that are used in adults can be safely used. Pediatric patients have lower percentage of body fat, a decreased ability to shiver and a larger surface area to volume ration. Each of

these factors makes attention to maintenance of body temperature critical. Pediatric patients are, also, at a greater risk of hypoglycemia. These factors can be easily managed allowing surgical anesthesia with minimal risk.[1]

According to the Association of Shelter Veterinarians guidelines for spay neuter programs "warmth is best preserved by reducing contact with cold surfaces, limiting body cavity exposure, and providing carefully protected contact with circulating warm water or heated containers, such as carefully monitored water bottles or rice bags. Forced hot air or convective warming can also be an effective means of maintaining body temperature perioperatively."[5] These measures in conjunction with short surgical time and reversal of anesthetic agents at the completion of surgery minimize hypothermia.

Hypoglycemia can be avoided or minimized by restricting preoperative fasting to 2 to 4 hours, avoiding preoperative excitement, and feeding the animal immediately upon anesthetic recovery.

Many anesthetic protocols have been recommended for pediatric surgery. The most recommend protocols use multimodal analgesia and avoid the use of barbiturates. IM injection of a dexmedetomidine, butorphanol, ketamine HCl combination followed by maintenance with oxygen via either facemask or endotracheal tube and supplemented with Isoflurane®, if needed, is very safe and effective. Following IM injection, a surgical plane of anesthesia is achieved within 5 minutes and will last for up to 30 minutes. The dexmedetomidine can be reversed with atipamezole immediately after surgery and will frequently result in the patient being mobile within 5 to 10 minutes of the conclusion of the surgery. An NSAID like meloxicam should be administered after induction of anesthesia and prior to the start of surgery for post-operative analgesia.

Surgical Procedures

Videos of surgical procedures will be projected and discussed.

Recommendations

Recognizing the shorter anesthetic and surgical times and lower complications rates for younger patients, many practitioners have begun performing spays and neuters at an earlier age in privately owned pets as well. Historically, practitioners have routinely seen kittens and puppies for a series of vaccinations and wellness visits between 6 and 16 weeks of age, and then advised owners to return a few months later for neutering. This gap in care may contribute to many pets being spayed or neutered following puberty and the birth of many unintentional litters. By spaying and neutering owned pets at 4-5 months of age following standard vaccinations, practitioners can allow time for them to develop immunity through vaccination while ensuring they are neutered prior to sexual maturity. And, because there is no gap in veterinary care between the vaccine series and the surgical appointment, owner compliance may be improved since the owner establishes a routine of veterinary appointments for their pet during the wellness visits. By performing spay-neuter surgery at this age, veterinarians are also able to ensure numerous health benefits for their patients, including dramatic reduction in the risk of mammary tumors and elimination of highly objectionable behavior including scent marking, spraying, fighting and roaming. Additional benefits include avoidance of the stresses and costs associated with spaying while in heat, pregnant or with pyometra. And, spaying and neutering young puppies and kittens is technically easier for the surgeon and more cost effective than neutering them once they are mature.

Note

All videos shown during this presentation can be viewed or downloaded from:
http://mymedia.msstate.edu/outputset.php?id=25524

References

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2. Howe, L.M., Slater, M.R., Booth, H.W., et al. Long-term outcome of gonadectomy performed at an early age or traditional age in cats. JAVMA 2000; 217, 1661-1665.
3. Root, M.V., Johnston, S.D. and Olson, P.N. Effect of prepubertal and postpubertal gonadectomy on penile extrusion and urethral diameter in the domestic cat. Radiology & Ultrasound 1996; 37, 363-366.
4. Stubbs, W.P., Bloomberg, M.S., Scruggs, S.L. et al. Effects of prepubertal gonadectomy on physical and behavioral development in cats. JAVMA 1996; 209, 1864-1871.
5. Griffin B, Bushby P, McCobb E, et al. The Association of Shelter Veterinarians' 2016 Veterinary Medical Care Guidelines for Spay-Neuter Programs. JAVMA 2016, 249(2). 166-188.