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INTRODUCTION

Although neutering of dogs and cats is one of the most common procedures performed by veterinarians, the debate around spaying is still ongoing. Not only the perfect age to perform the procedure but also if the procedure should be performed at all is a hot topic of the last 5 years.

OVE is most commonly performed for elective neutering; however, it is also indicated for treatment of ovarian tumors, to promote involution of placental sites (non-responsive to medical treatment), to prevent recurrence of vaginal hyperplasia, to prevent hormonal changes that can interfere with medical therapy in patients with endocrine diseases (eg, diabetes), and to eliminate the transfer of inherited diseases. OVE is also performed in young dogs (≤2.5 years) to decrease the incidence of mammary gland tumors. The relative risk for developing mammary gland tumors decreases when neutering is performed before 1st estrus (0.5%), between 1st and 2nd estrus (8%), and between 2nd estrus and 2.5 years of age (26%). Despite one contrary opinion, there is seemingly no benefit in performing OVH at the time of mammary tumor removal because neither tumor-related nor overall survival improves after OVH. Future tumors may be easier detected after involution of the mammary tissue caused by the neutering, however.

OVH is the treatment of choice for most uterine diseases, including congenital anomalies, pyometra, localized or diffuse cystic endometrial hyperplasia, uterine torsion, uterine prolapse, uterine rupture, and uterine neoplasia. In a study of 1712 canine OVHs, 1409 (82%) were performed for elective sterilization, and only 313 (18%) for reproductive tract disease (as adjunctive therapy for mammary neoplasia, for treatment of pyometra, endometrial hyperplasia, vaginitis, and several miscellaneous genital tract diseases).

PERFECT AGE

There is a regional difference in the ideal age of spaying dogs and cats. Gonadectomy of dogs and cats routinely are performed between 6-9 months in the US, while Dutch veterinarians tend to spay the dogs between the first and second heat. The time frame for spaying is not based on scientific proof but is determined by the traditions of the surgical practice of the region. The main reason why dogs and cats are spayed between 6-9 months is that it is 1. It needs to be performed before the first heat and 2. It needs to be during an age where anaesthetic safety can be guaranteed.

ETHICAL CONSIDERATIONS

Although most countries will allow elective neutering of dogs and cats, regional differences exist. In Nordic countries (Sweden) elective neutering practices have been strongly discouraged, while in Holland for instance public opinion of castrating a male dog seems to be more problematic that spaying a bitch. Many factors associated with the client’s background and beliefs and the type of animal play a role. For instance a cat spay or castration is commonly more acceptable than and dog spay or castration.

OPERATIVE CONSIDERATIONS

The chances of complications associated with the surgery are small. Numbers vary but in average 65 of dogs and 3% of cats are reported to have complications after neutering. Most of these complications are minor and vary from local inflammation to depression. Older dogs and dogs operated by veterinary students seemed to have a higher minor complication rate. Surgery time and increased body weight (both correlated) will increase the change of complications. If age was considered, very few differences were observed. Only the incidence of infectious diseases in dogs < 12 weeks were significantly different but this may have been caused by other factors such as the recruitment source of the dogs.

ADVANTAGES

The obvious advantage of population control of free roaming dogs and cats is well described in literature. Pet overpopulation is a serious problem with major consequences. Millions of animals are euthanatized yearly all over the world. Certain countries do not allow evenization of dogs and cats and feral dog populations terrorize the local society. Next to this fact, unawareness of pet owners adds to the overpopulation by unplanned litters. Spay and neuter contracts of adopted pets seem only to have a compliance of 60%, leading to a strong pull towards mandatory neutering of animals before they leave the pound. Early neutering is most likely one of the only options left to prevent further escalation of the pet control issue.

Certain (sexually dimorphic) behaviour will significantly decrease after gonadectomy. This phenomenon is directly related to the decrease in gonadal hormones and does not
depend on the duration or prior sexual experiences. Training ability of working dogs will not be affected by routine castration. Male cats are prime examples of unwanted behaviour changes after elective neutering. Non-sexually dimorphic behaviour is often not affected by gonadectomy.

The most common reason to electively spay dogs (and cats) next to preventing gravidity is the decrease in incidence in mammary tumours (MT). MT are the most common tumour of the female dog (3.4%) and the third most common tumour in the female cat (2.5%). In cats most MT are malignant whilst dogs have a 50:50 incidence of malignancy. Metastases rates are high in the malignant forms of MT with figures approaching 70% depending on specific factors (such as size of the primary tumour). Many breeds have been reported to have an increased risk and MT occur in the older animal more frequently. Cats and dogs that are not spayed have an overall 7x higher risk of developing MT and dogs spayed before the first heat have 0.5%, after the first heat 8% and after the 2nd heat 26% risk of developing MT. There is discussion if gonadectomy at an older age decreases the risk of further development of MT. Most likely this risk will not be higher for malignant disease but will definitely influence the occurrence of benign disease. MT develop because of both oestrogen and progesterone influences.

Uterine tumor formation

Uterine tumours are rare in the dog, with a reported rate of 0.4% of all canine tumours. The University of Pennsylvania Veterinary Hospital examined 33,570 female dogs between 1952 and 1966, and 96 gynaecologic neoplasms (uterus, n=11; vagina or vulva, n=85) were detected in 90 dogs (0.27%). Middle-aged to older animals were most commonly affected and most canine uterine tumours were mesenchymal in origin. Of the uterine tumours, 85-90% were benign leiomyomas and 10% leiomyosarcomas. The true risk for development of malignant tumoural disease of the uterus is 0.003%. The prognosis associated with leiomyomas and other benign tumours is excellent because surgery is nearly always curative. For leiomyosarcomas and other malignant tumours, the prognosis remains good if there is no evidence of metastatic disease at surgery and complete excision is possible.

DISADVANTAGES

Behaviour

An increase in aggression has been reported after elective ovariectomy (OHE)

Urinary sphincter mechanism incontinence

The most common cause of incontinence in spayed dogs is urethral sphincter mechanism incompetence (USMI), an uncommon disease in intact bitches with reported incidences of 0.2% (10/5315) to 0.3% (7/2434). Because of the underlying hormonal cause, a significant increase of this pathology in spayed bitches has been hypothesized. Nickel reported a significantly impaired urethral sphincter mechanism in gonadectomized dogs. In a retrospective investigation, Holt using data from a general and a referral practice in the United Kingdom, reported that 3% (53/1681) and 17.7% (296/1681) respectively of dogs were considered incontinent after OVF. In Switzerland, up to 20% (83/412) of spayed bitches developed signs suggestive of urinary incontinence postoperatively. Confounding factors in the development of incontinence include time of OVF, body weight, breed of dogs and tail docking. An increased risk in tail-docked bitches has been documented raising the incidence to 1.3 (34/2614) compared with 0.7% (29/4382) for undocked dogs.

Body weight gain

Gonadectomy adversely affects the ability to regulate food intake and thus predisposes these animals to obesity. Inactivity and increased food intake contributes to weight gains up to 38%.

Edney observed that 21.4% of all dogs were overweight and spayed females were twice as likely to be obese compared with intact bitches. In another study, where dogs were exercised regularly and their food intake was controlled, there was no significant increase in weight in either spayed or intact females.

Tumour formation

Gonadectomised animals have a higher incidence of transitional cell carcinomas of the bladder and urethra. The exact cause is unclear and certain breeds seem to be more susceptible. Also osteosarcoma ad hemangiosarcoma have been reported in gonadectomised animals more commonly than intact ones.

Orthopedic abnormalities

Closure of the physis are in part dependent on the gonadal hormones and early neutering will lead to delayed closure of the growth plates. These changes were not clinically significant, however. One study reports an increased incidence of hip dysplasia in dogs neutered at an early age. Other orthopaedic diseases may be exacerbated by the weight gain after gonadectomy.

Phenotype abnormalities

Certain phenotypic abnormalities may occur in bitches and queens that are spayed before the first heat. Immature development of the outer genitalia may occur and lead to dermatitis.
References


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