Canine Reproduction
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Sterilization (ovariohysterectomy or spay in bitches and castration in males) is commonly performed for control of reproduction and behavior and to prevent disease in dogs. However, there are some negative consequences of surgical sterilization. Do the benefits outweigh the risks?

Biographical Profile

Dr. Peggy Root Kustritz is a 1987 graduate of the University of Minnesota College of Veterinary Medicine. After working in small animal private practice in the Twin Cities for several years, she returned to the University of Minnesota, completing a residency in theriogenology under Dr. Shirley Johnston. She achieved board certification in theriogenology in 1994, and completed a PhD in theriogenology in 1995. She currently is employed as an associate professor in small animal reproduction and also serves as vice-chair of the department of Veterinary Clinical Sciences at the University of Minnesota College of Veterinary Medicine. She is immediate past-president of the American College of Theriogenologists. She is the author of two veterinary texts and one text for dog breeders and is a frequent speaker for lay and veterinary audiences.

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1017 -A: Variation in Leukocyte Number and Differential Count With State of the Estrous Cycle in Bitches and Association With Endogenous Cortisol and Parasitism
1020-A: Induction of Estrus in Bitches by Oral Administration of Red Clover
1022-A: Induction of Estrus in Bitches by Oral Administration of Black Cohosh
667-A: Effect of Administration of Prostaglandin F2alpha or Presence of an Estrous Teaser Bitch on Characteristics of the Canine Ejaculate

Canine Reproduction – conference notes

Determining Optimal Age for Gonadectomy of Dogs and Cats

Gonadectomy – ovariohysterectomy & castration
In some countries it is unethical to perform gonadectomy unless it is because of disease.
Why six months? In the 50s in order for a puppy to survive

Benefits of Gonadectomy
Societal Benefits: reduces pet overpopulation, reduces relinquishment – studies show that intact animals are relinquished more because they can’t breed it to make money, and compliance of spay/neuter contracts.
Survey of pet-owning households show that 56% canine litters and 68% of feline litters are unplanned.
Lack of knowledge about normal reproductive physiology – normal cycle of bitch and queen, signs of season, etc.

Recommendations:
Dogs and cats with no owner/guardian – gonadectomy prior to adoption
Dogs and cats with an owner/guardian – education is key for owners to make a good decision
  * male cats should be castrated immediately before puberty
  * female cats cycle every two to three weeks and should also be spayed before they hit puberty, because of the severity and incidence of mammary neoplasia and cancer
* Male dogs –
  Benefits: decreased incidence of testicular neoplasia and benign prostatic hypertrophy and possibly and increased lifespan. Testicular neoplasia – low morbidity disorder, castration usually takes care of the issue. BPH – 75-85% in dogs over six years old – low morbidity, castration will be the cure for the issue. Lifespan increase? Due to increase owner investment, decrease in risky behaviors and stress.

Detriments: Obesity – most common nutritional disorder of dogs. Strong correlation with castration but cause and effect relationship not defined. In cats, studies have shown that their metabolism slows. This can be controlled by the owner.
Increased incidence of prostatic adenocarcinoma. The overall incidence is 0.2 – 0.6%. Castrated dogs have 2-4 times greater risk of development when aged. No breed predisposition is known and mortality is high.
Osteosarcoma. The overall incidence is 0.2%. Castrated dogs have 1-3 times greater risk of development when aged. Large and giant breeds are at risk and mortality is high. There is also a genetic predisposition to osteosarcoma. Can lacking hormones cause a higher incidence when there is a genetic predisposition to this?
Hemangiosarcoma – blood cancers that appear as tumors in the heart. Overall incidence is 0.2%. Castrated dogs have 2 times greater risk of development when aged. Various large breeds are at risk and mortality is high.
ACL injury. Overall incidence is 1.8%. Castrated dogs are at greater risk of development than intact dogs. Various large breeds at risk and morbidity and cost of repair are high. In people, women are more at risk – especially at certain times of the month – when they have estrogen in their body. Could it be because they are more obese – not necessarily, it is because of the hormonal changes.

Recommendation …severity and incidence of negative consequences may outweigh benefits. A case by case assessment and looking at the breed, working life of animal and owner’s wishes is quite important before a decision is made to castrate.

* Female dogs –
  Benefits: Decreased incidence of mammary neoplasia. Most common tumor of female dogs, incidence is 3.4% of which 50.9% malignant with lung involvement.
Incidence greatly reduced in aged bitches with decreasing benefit as go through increasing number of estrous cycles. Hormonal caused assumed but not proven. Pyometra – Incidence is 15.2% of bitches by 4 years of age, 23-24% of bitches by 10 years of age. Morbidity is high and ovariohystorectomy is curative. However post ovariohysterectomy mortality is between 0-17%

Detriments: Obesity – same as in males
Osteosarcoma: same as in males
Hemangio: same as in males
Transitional cell carcinoma – urinary tract cancer/tumors. Overall incidence is less than 1%. Spayed dogs have 2-4 times greater risk of development when aged. Environmental factors can play a part. Various breeds at risk and mortality is high.
ACL injury: same as males
Urinary incontinence or urethral sphincter mechanism incompetence (estrogen-responsive incontinence). Incidence of this is 5 – 20%. Risk factors include spay and weight gain. And common in dogs that weigh more than 20kg. Highly common in boxers, dobies, etc

Recommendation … must assess condition as in males. But if you are going to spay a bitch, do this before they have their first season.

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