

Mandatory Desexing

(Good), Bad and Ugly

Steven Metcalfe BSc BVMS(Hons) MSc MANZCVS

Applecross Veterinary Hospital

Definitions

Extracted from, STOP PUPPY FARMING CONSULTATION PAPER p13

“Under the Dog Act, sterilised currently means ‘made permanently infertile by a surgical procedure’ (sterilisation is the same thing as de-sexing). In Australia, this usually means by the removal of the ovaries and uterus in female dogs (spaying), and the testes in male dogs (castration). The primary reasons for de-sexing dogs are population control and other societal and owner benefits including absence or reduction of behaviours associated with sex hormones (such as marking, roaming, fighting in males, and signs of oestrus or “heat” in females).

Other benefits of de-sexing for the health and welfare of dogs include:

- increased longevity **?????**
- reduced risk of cancer and other diseases affecting the reproductive organs **?????**
- prevention of pregnancies in female dogs **✓✓**, which can cause exhaustion **?????** and other medical issues.”

Probing the perils of dichotomous binning: How categorizing female dogs as spayed or intact can misinform our assumptions about the lifelong health consequences of ovariohysterectomy

D.J. Waters, S.S. Kengeri, A.H. Maras, E.C. Chiang

Theriogenology 76 (2011) 1496–1500

Department of Veterinary Clinical Sciences, Purdue University; West Lafayette, Indiana. Gerald P. Murphy Cancer Foundation, West Lafayette, Indiana

In this study population, there was a **three-fold increased likelihood of exceptional longevity** (living 13 yr) associated with the longest duration of ovary exposure. However, categorizing females in this population as spayed or intact yielded the spurious, contradictory assertion that spayed females (presumed to have the least ovary exposure) are more likely to reach exceptional longevity than those that are intact. Thus, by ignoring the timing of spaying in each bitch, the inference from these data was distorted. It follows from this new understanding that dichotomous binning—naming females as spayed or intact—is inadequate for representing lifetime ovary exposure, introducing misclassification bias that can generate misleading assumptions regarding the lifelong health consequences of ovariohysterectomy.

The effect of neutering on the risk of mammary tumours in dogs – a systematic review

W. Beauvais, J. M. Cardwell and D. C. Brodbelt

Journal of Small Animal Practice (2012) 53, 314–322

A commonly-stated advantage of neutering bitches is a significant reduction in the risk of mammary tumours, however the evidence for this has not previously been assessed by systematic review. The objectives of this study were to estimate the magnitude and strength of evidence for any effect of neutering, or age of neutering, on the risk of mammary tumours in bitches. A systematic review was conducted based on Cochrane guidelines. Peer-reviewed analytic journal articles in English were eligible and were assessed for risk of bias by two reviewers independently. Of 11,149 search results, 13 reports in English-language peer-reviewed journals addressed the association between neutering/ age at neutering and mammary tumours. Nine were judged to have a high risk of bias. The remaining four were classified as having a moderate risk of bias. One study found an association between neutering and a reduced risk of mammary tumours. Two studies found no evidence of an association. One reported “some protective effect” of neutering on the risk of mammary tumours, but no numbers were presented. Due to the limited evidence available and the risk of bias in the published results, the evidence that neutering reduces the risk of mammary neoplasia, and the evidence that age at neutering has an effect, are judged to be weak and are not a sound basis for firm recommendations.

Neutering of German Shepherd Dogs: associated joint disorders, cancers and urinary incontinence

Benjamin L. Hart, Lynette A. Hart, Abigail P. Thigpen and Neil H. Willits

Veterinary Medicine and Science (2016) DOI: 10.1002/vms3.34

German Shepherd Dogs are important in police and military work, and are a popular family pet. The debilitating joint disorders of hip dysplasia, cranial cruciate ligament tear (CCL) and elbow dysplasia can shorten a dog's useful working life and impact its role as a family member. For this study, veterinary hospital records were examined over a 14.5-year period on 1170 intact and neutered (including spaying) German Shepherd Dogs for joint disorders and cancers previously associated with neutering. The diseases were followed through 8 years of age, with the exception of mammary cancer (MC) in females that was followed through 11 years. The cancers followed, apart from mammary, were osteosarcoma, lymphoma, hemangiosarcoma and mast cell tumour. In intact males, 7% were diagnosed with one or more joint disorders, while in males neutered prior to a year of age, a significantly higher 21% were diagnosed with one or more joint disorders. In intact females, 5% were diagnosed with one or more joint disorders, while in females neutered prior to a year of age, this measure was significantly increased to 16%. The increased joint disorder incidence mostly associated with early neutering was CCL. MC was diagnosed in 4% of intact females compared with less than 1% in females neutered before 1 year. The occurrence of the other cancers followed through 8 years of age was not higher in the neutered than in the intact dogs. Urinary incontinence, not diagnosed in intact females, was diagnosed in 7% of females neutered before 1 year, a significant difference. These findings, profiling the increase in joint disorders associated with early neutering, should help guide the timing of neutering for this breed.

Long-Term Health Effects of Neutering Dogs: Comparison of Labrador Retrievers with Golden Retrievers

Benjamin L. Hart, Lynette A. Hart, Abigail P. Thigpen, Neil H. Willits

PLoS ONE 9(7): e102241. doi:10.1371/journal.pone.0102241 July 2014 | Volume 9 | Issue 7

Our recent study on the effects of neutering (including spaying) in Golden Retrievers in markedly increasing the incidence of two joint disorders and three cancers prompted this study and a comparison of Golden and Labrador Retrievers. Veterinary hospital records were examined over a 13-year period for the effects of neutering during specified age ranges: before 6 mo., and during 6–11 mo., year 1 or years 2 through 8. The joint disorders examined were hip dysplasia, cranial cruciate ligament tear and elbow dysplasia. The cancers examined were lymphosarcoma, hemangiosarcoma, mast cell tumor, and mammary cancer. The results for the Golden Retriever were similar to the previous study, but there were notable differences between breeds. In Labrador Retrievers, where about 5 percent of gonadally intact males and females had one or more joint disorders, neutering at ,6 mo. doubled the incidence of one or more joint disorders in both sexes. In male and female Golden Retrievers, with the same 5 percent rate of joint disorders in intact dogs, neutering at ,6 mo. increased the incidence of a joint disorder to 4–5 times that of intact dogs. The incidence of one or more cancers in female Labrador Retrievers increased slightly above the 3 percent level of intact females with neutering. **In contrast, in female Golden Retrievers, with the same 3 percent rate of one or more cancers in intact females, neutering at all periods through 8 years of age increased the rate of at least one of the cancers by 3–4 times.** In male Golden and Labrador Retrievers neutering had relatively minor effects in increasing the occurrence of cancers. Comparisons of cancers in the two breeds suggest that the occurrence of cancers in female Golden Retrievers is a reflection of particular vulnerability to gonadal hormone removal.

Urinary incontinence in bitches under primary veterinary care in England: prevalence and risk factors

D. G. O'Neill, A. Riddell, D. B. Church, L. Owen, D. C. Brodbelt and J. L. Hall

Journal of Small Animal Practice (2017) 58, 685–693

RESULTS : Of 100,397 bitches attending 119 clinics in England, an estimated 3108 were diagnosed with urinary incontinence. The prevalence of urinary incontinence was 3.14% (95% confidence intervals : 2.97 to 3.33). Medical therapy was prescribed to 45.6% cases. Predisposed breeds included the Irish setter (odds ratio: 8.09; 95% confidence intervals : 3.15 to 20.80; $P < 0.001$) and Dobermann (odds ratio: 7.98; 95% confidence intervals : 4.38 to 14.54; $P < 0.001$). Increased odds of a diagnosis of urinary incontinence were associated with: (1) weight at or above the mean adult bodyweight for the breed (odds ratio: 1.31; 95% confidence intervals : 1.12 to 1.54; $P < 0.001$), (2) age 9 to 12 years (odds ratio: 3.86; 95% confidence intervals: 2.86 to 5.20, $P < 0.001$), (3) neuter status (odds ratio: 2.23; 95% confidence intervals : 1.52 to 3.25, $P < 0.001$) and (4) being insured (odds ratio: 1.59; 95% confidence intervals: 1.34 to 1.88, $P < 0.001$).

CLINICAL IMPACT: Urinary incontinence affects just over 3% of bitches overall but affects more than 15% of bitches in high-risk breeds including the Irish setter, Dobermann, bearded collie, rough collie and Dalmatian. These results provide an evidence base for clinicians to enhance clinical recommendations on neutering and weight control, especially in high-risk breeds.

Behavioural risks in male dogs with minimal lifetime exposure to gonadal hormones may complicate population-control benefits of desexing

Paul D. McGreevy, Bethany Wilson, Melissa J. Starling, James A. Serpell

PLOS ONE | <https://doi.org/10.1371/journal.pone.0196284> May 2, 2018

Castration of dogs is a widespread practise with clear justification in population control and knock-on benefits for animal welfare. Deleterious behavioural consequences of castration are believed to be negligible. Gonadectomy is widely recommended as part of a multi-factorial approach to prevent problems including aggression in dogs. However, the consequences of early castration on health are still being debated. The current study focused on the reported behaviour of 6,235 male dogs castrated before 520 weeks of life for reasons other than behavioural management, and calculated their percentage lifetime exposure to gonadal hormones (PLGH) as a proportion of their age at the time of being reported to the online Canine Behavioral Assessment and Research Questionnaire (C-BARQ). Forty behaviors differed between entire and castrated dogs, of which 25 were associated with PLGH and 14 with age-at-castration (AAC). Only 2 behaviours, indoor urine marking and howling when left alone, were significantly more likely in dogs with longer PLGH. In contrast, longer PLGH was associated with significantly reduced reporting of 26 (mostly unwelcome) behaviours. Of these, 8 related to fearfulness and 7 to aggression. The current data suggest that dogs' tendency to show numerous behaviours can be influenced by the timing of castration. They indicate how dog behaviour matures when gonadal hormones are allowed to have their effect. The differences reported here between undesirable behaviours of castrated and intact dogs were in the range of 5.04% and 12.31%, suggesting that, for some dogs, partial or complete denial of puberty may reduce indoor urine-marking but have many other undesirable consequences. Veterinarians may use these data to discuss unwelcome consequences with owners of male dogs before castration.

Endogenous Gonadal Hormone Exposure and Bone Sarcoma Risk

Cooley DM, Beranek BC, Schittler DL, Glickman NW, Glickman LT, Waters DJ

Cancer Epidemiology, Biomarkers & Prevention Vol. 11, 1434–1440, November 2002

To determine whether there was an association between endogenous sex hormones and risk of bone sarcoma, relative risk (RR) of incidence rates and hazard ratios for bone sarcoma were calculated for dogs subdivided on the basis of lifetime gonadal hormone exposure. Bone sarcoma was diagnosed in 12.6% of dogs in this cohort during 71,004 dog-months follow-up. Risk for bone sarcoma was significantly influenced by age at gonadectomy. Male and female dogs that underwent gonadectomy before 1 year of age had an approximate one in four lifetime risk for bone sarcoma and were significantly more likely to develop bone sarcoma than dogs that were sexually intact [RR 95% CI 3.8 (1.5– 9.2) for males; RR 95% CI 3.1 (1.1– 8.3) for females]. χ^2 test for trend showed a highly significant inverse dose response relationship between duration of lifetime gonadal exposure and incidence rate of bone sarcoma (P 0.008 for males, P 0.006 for females). This association was independent of adult height or body weight. We conclude that the subset of Rottweiler dogs that undergo early gonadectomy represent a unique, highly accessible target population to further study the gene: environment interactions that determine bone sarcoma risk and to test whether interventions can inhibit the spontaneous development of bone sarcoma.

Ovarian autograft as an alternative to ovariectomy in bitches

P.H. LE ROUX and L.A. VAN DER WALT

JOURNAL OF THE SOUTH AFRICAN VETERINARY ASSOCIATION 48(2) 1977

The literature on auto-transplantation of the ovary is briefly reviewed with emphasis on the portal vein drainage area as the transplant site. An experiment is reported whereby bitches bearing such grafts were compared to entire and ovariectomised subjects with regard to endocrine status and behaviour. It is concluded that auto transplantation of the ovary to the portal vein drainage area may be a promising method of abolishing oestrus and yet avoiding the **eunuchoid syndrome** as seen in a ovariectomised subjects

Procedures & Alternatives

Surgical

Female

Ovariohysterectomy

Ovariectomy

Hysterectomy ± unilateral ovariectomy

Tubal Ligation

Male

Castration/Orchiectomy

Vasectomy

Non – Surgical

Female

Progestagens – Short & long acting

GnRH agonists

Male

GnRH agonists

Intra-testicular injections.

Future Options & Questions?

“This is why the Government has included an exemption to mandatory de-sexing when there is veterinary advice that an individual dog should either not be de-sexed or not be desexed at a young age. Your **veterinarian is the best person** to discuss the pros and cons of de-sexing your dog, the age the procedure is done, and determine the best strategy for your pet based on breed, lifestyle, longevity expectations, concurrent diseases, cancer risks, and other considerations for intact and de-sexed dogs.”

