The Spay/Neuter Debate: Why, When, What If…

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Why talk about this

There has been a lot of research around the area of spay/neuter within the last 15-20 years and especially within the last 5 years. Some of this research has raised good points while other studies are fraught with potential bias and erroneous conclusions. Additionally, the lay press (and the internet!) will sometimes take parts of these studies and use them to further their own agendas. It is important that we, as Veterinarians, know what information is out there so that we can help our clients make sound decisions based on the best science available.

Why spay and neuter

Traditionally, spaying and neutering dogs and cats has been advocated for the greater benefit of society, specifically to help reduce pet overpopulation. Currently, it is estimated that about 10,000 animals, mostly dogs and cats, are euthanized in U.S. shelters every day; that's about one animal every 11 seconds. Statistics on shelter populations can be difficult to track for a variety of reasons but it appears that great strides have been made within the last 40 years to reduce the number of animals euthanized in animal shelters. It has been estimated that in 1973 that about 13.5 million dogs and cats were euthanized in shelters (or about 20 percent of pets). By the early nineties that number had been reduced to 4-5 million dogs and cats euthanized in U.S. shelters (or about 5.3 percent of the pet population). It is likely that spaying and neutering has played a role in the reduction of shelter euthanasia. In fact, in some parts of the country animal shelters don't have enough dogs available for adoption and are importing adoptable dogs from other areas.

"Early" spay/neuter or prepubertal gonadectomy has been around since the early 1990's. The main reason to perform these procedures at a younger age is to allow humane organizations and animal shelters to adopt out animals <u>after</u> they have been spayed or neutered. Gonadectomized animals rarely reproduce: Incentives to encourage owners to have their pet spayed or neutered after adoption were marginally successful at best, allowing animals that were adopted while sexually intact to contribute to the pet overpopulation problem.

Potential benefits of spay/Neuter

Overall, spayed and neutered pets are likely to have a longer life-span. This is due in part to changes in behavior from reductions in sex hormones and related activity (roaming, fighting, etc.). Spayed and neutered animals will also have a reduced risk of certain cancers and complications related to the retention of sexual organs (ie pyometra). Many of the benefits can be summarized as follows:

- Male Dogs
  - Decreased BPH, prostatitis, prostatic cysts, Brucellosis, TVT Eliminates risk of testicular tumor
  - Decreased risk of perineal hernia, perianal adenoma, male-male aggression
- Male Cats
  - Decreased risk of roaming, fighting, urinating in house? Decreased urine odor
- Female Dogs
  - Reduced risk of Brucellosis and TVT: Eliminates risk of pyometra, ovarian neoplasia
  - Decreased risk of mammary neoplasia
- Female Cats
  - Eliminates risk of pyometra, ovarian neoplasia. Eliminates estrus behaviors
  - Decreased risk of mammary neoplasia (> 90 % are malignant!)

A recent study has led some to question the protective effects of spaying dogs with regard to mammary tumors. There are, however, some questionable aspects of the design of that particular study. Additionally, others have shown that the incidence of malignant mammary tumors is much higher in European countries (Italy, Denmark, etc.) where there are more sexually intact dogs. Until there is more convincing evidence to the contrary we should continue to have every confidence that spaying dogs will reduce the incidence of mammary cancer.

Potential risks of spay/Neuter

Recent studies have looked at the risk of spaying and neutering dogs, beyond the normal concerns about anesthesia and surgery. It is fairly well accepted that spaying and neutering will have an effect on metabolism resulting in a tendency for these animals to gain weight. Obesity is a very real concern that can predispose these patients to diabetes and various orthopedic issues: With good client education obesity is a preventable disease. Some studies have found a correlation between spay/neuter status and other diseases. As

mentioned earlier some of the evidence is better…some is less than convincing. In order to be as concise as (reasonably) possible I'll divide these potential risks into one of three categories – neoplasia, orthopedic concerns, and other.

- Neoplasia – The vast majority, if not all, of the studies looking at a link between spay/neuter status and the development of cancer have been on purebred dogs. The fact that purebred dogs are predisposed to certain cancers is of no surprise to anyone in the veterinary field: Generalizing findings from studies in certain purebred dogs to all dogs is a fallacy. Additionally, finding a correlation between spay/neuter status and cancer does not prove a cause and effect relationship. One study looking at the long-term effects on spaying and neutering Golden Retrievers compared to Labrador Retrievers found little or no relationship between spay/neuter status and the increased incidence of cancer in the Labrador Retriever group - thus proving that the effects of confounding variables (like genetics) are more powerful than the effects of spay/neuter status in the development of cancer.
- Orthopedic diseases – A major concern is that the removal of the influence of gonadal hormones will result in the delayed closure of growth plates resulting in changes in the skeletal structure that can lead to certain conditions or diseases. In contrast to the idea that spay/neuter causes cancer this is a more biologically plausible theory. Predominately, studies are looking at hip dysplasia and cranial cruciate ligament rupture in dogs.
    - Hip dysplasia – As with neoplasia, the majority of studies looking at the impact of spaying and neutering dogs on the development of hip dysplasia involved pure bred dogs that were seen at referral institutions: So it is questionable that this information can be applied to all dogs. One very large study that looked at multiple breeds of dogs did find a correlation between spay/neuter status and the development of hip dysplasia. The authors noted that owners with spayed and neutered animals may be more likely to seek veterinary care for orthopedic injuries which could skew the data. Unfortunately, this study did not control for weight or body condition score which is likely more of a factor in the development of this condition. Certainly, more study is needed in this area
    - Cranial Cruciate Ligament rupture – Several studies have looked at spay/neuter status as a risk factor for CCL rupture. The greater length of long bones and changes in the tibial plateau angle of spayed and neutered dogs, again, provides a biologically plausible theory for this risk. Larger dogs, older dogs, and obese dogs are at greater risk for this condition and studies that do not control for body condition score should be given less than full consideration. One study looking at the medical records from a first-opinion veterinary practice found that neutering (and spaying) was not associated with an increased risk of cranial cruciate ligament rupture. Again, more study is needed in this area.
- Other
    - Urinary incontinence – Acquired urinary incontinence post spay has been well documented although the reports show a prevalence that ranges from 5% to 20% of spayed female dogs. A recent report found that the prevalence was at the low end of this range. The majority of these patients will respond to medical management.

What's the bottom line?

- Male Cats – this is a classic "no brainer". The pros far outweigh the cons and we should neuter every male cat as soon as possible. There is no known medical reason not to neuter cats and to neuter them early.
- Female Cats – still, "just do it"! Again, the pros far outweigh the cons. And a recent study shows that spaying before the cats' first heat (so do it early) will <u>greatly</u> reduce the risk of malignant mammary neoplasia.
- Male Dogs – for most small and medium sized dogs the pros of neutering far outweigh the cons. For responsible owners of large and giant breed dogs or breeds that are predisposed to orthopedic problems discussing the option of waiting until the dog is over 1 year of age may be prudent, if not overly cautious.
- Female Dogs – until there is further evidence to the contrary, the concern about mammary tumors is very real and most dogs should be spayed before their first heat. Certainly this is valid for small and medium sized dogs: After discussion of the pros and cons of waiting owners of large and giant breed dogs may elect to delay alter.

Conclusion

Currently, the pros far outweigh the cons when it comes to spaying and neutering the average pet. More study is needed in this area due to the large number of conflicting reports and inadequate data. It is important to keep in mind that millions of animals are still euthanized in shelters every year in this country: It would be irresponsible to undermine the efforts of humane organizations and shelters at reducing pet overpopulation when the information that we have regarding the potential negative consequences of spaying and neutering animals is far from conclusive.

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