

Reexamining the early spay-neuter paradigm in dogs

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Two veterinarians respectfully discuss their disagreements about the medical and societal need for early spays and neuters in America's pets.



Over the past decade several other untoward health events related to juvenile spay/neuter surgery have come to light, including cancer and behavioral problems. Do other benefits of early spaying and neutering outweigh these risks? Dr. Mike Petty writes:

Many of the clinical choices veterinarians make are so deeply ingrained that we often practice medicine without stopping to wonder why we do things the way we do, who decided it should be done that way and whether we are potentially causing our patients harm. Consider dewclaw removal in dogs. Many veterinarians perform this procedure on puppies based on the desire of either the breeder to improve aesthetics or the owner to guard against some possible future trauma that might injure the dewclaw. Yet those in the agility/sporting world not only understand the importance of this digit during athletic events, but they also know that osteoarthritis in the carpal joint develops in many dogs that have this digit removed as a puppy. The dewclaw is attached to and helps stabilize many of the carpal tendons and ligaments. Without this stabilization, carpal osteoarthritis might ensue, especially in canine athletes.

The decision to refuse dewclaw removal should be a relatively easy one, then, as the only issue to consider is educating breeders and owners about the dangers of the procedure; no larger societal issues are at play. If only that were the case when it comes to the timing of spay/neuter surgery.

Juvenile gonadectomy and canine health concerns

Since the start of my career 40 years ago, prepubertal spay/neuter has been the norm in the United States, usually performed in dogs about 6 months of age. I was told at the time that spayed female dogs had a 90% lower incidence of mammary tumors compared with intact females. As this practice became the norm for spay surgeries, neutering at the same age followed with no real reasoning behind it. It wasn't until I became certified in canine rehabilitation 10 years ago that I became part of a discussion about the negative impact of prepubertal

spay/neuter on canine conformation.

Puberty initiates a release of hormones that help close the epiphyseal plates on long bones. Absent this signal, the long bones grow beyond their intended length and interfere with the normal size and mechanical relationship between bone and joint.¹ This abnormal relationship can lead to a variety of orthopedic issues, including an increased incidence of cranial cruciate rupture,²⁻⁴ hip dysplasia⁵ and patellar luxation.⁶ I can almost always predict whether a purebred dog was spayed or neutered prior to puberty based on conformational differences.

Over the past decade several other untoward health events related to juvenile spay/neuter surgery have come to light, including cancer and behavioral problems.^{4,7} Female golden retrievers spayed at an early age have a higher incidence of mast cell tumor, for example, and neutered male golden retrievers have a higher incidence of lymphosarcoma.⁴ Another study showed an increase in several types of cancer in Vizslas, including mast cell tumors, lymphoma and hemangiosarcoma.⁷ Interestingly, this same study also showed an increased incidence of behavioral disorders, including fear of storms. Results from another study showed up to a 38% increase in vaccine reactions in spayed and neutered dogs compared with intact dogs, but the age at which spay/neuter surgery occurred was not considered.⁸

Now that we know that there is a potential relationship between juvenile gonadectomy and health issues, I suspect that even more problems will be found as researchers examine different populations to compare dogs that undergo early and late spay/neuter with intact dogs.

These issues need to be considered against the backdrop of the unfortunate number of healthy and treatable animals that must be euthanized every year in this country, often due to indiscriminate breeding and a lack of resources to treat and place these animals. For comment on this I reached out to Mark Goldstein, DVM, former head of the San Diego Humane Society and SPCA, whose book *Lions and Tigers and Hamsters* will be available later this year.

Dr. Mark Goldstein responds

Veterinarians must always be open minded and ready to challenge the status quo when new information comes to light challenging how we practice. Just 10 years ago declawing cats was considered routine in most practices. Today a plethora of available information documents the short- and long-term damage of this practice to our feline friends, rendering it for many an inhumane procedure.

It is imperative that how we practice medicine evolves as people become more responsible pet owners. Having said that, I don't believe there is conclusive evidence to suggest that prepubertal spays and neuters result in more harm than good. In fact, I would argue that the benefit of early sterilization to control overpopulation and the subsequent risk of having to euthanize dogs outweighs the increased chance of potential orthopedic, developmental or neoplastic problems.

These studies also have to compare the incidence of health and behavioral problems associated with prepubertal spay/neuter against the incidence in intact dogs; such concerns may include pyometra, dealing with a dog in heat in a household, and the desire of intact males to roam. The answer, of course, is not as simple as sterilizing them when they are older because in many regions of the country post-adoption sterilization of shelter animals simply does not occur. That is why various jurisdictions in the United States have laws that require sterilization before dogs are adopted from shelters.

Just a few decades ago, 13 to 15 million healthy and treatable dogs and cats were euthanized each year in shelters nationwide.⁹ Today, that number is much closer to 1.5 to 2 million-still a tragic number but one that shows great strides. Proactive sterilization of shelter animals before they are adopted is considered the single greatest reason for this achievement.¹⁰ Shelter programs that incentivize people to sterilize their pet after adoption, including contracts with local veterinarians and deposits for later spay/neuter surgery, have been proven largely ineffective nationwide.

If one accepts that the best chance for a dog to be sterilized is before it leaves the shelter, then a study from the University of Georgia demonstrates why completing the procedure before adoption—regardless of age—is critical. After analyzing the records of over 80,000 male and female canine patients, the investigators demonstrated that sterilized dogs have a longer life expectancy than nonsterilized dogs⁹:

- Mean age of death of intact dogs: 7.9 years
- Mean age of death of sterilized dogs: 9.4 years
- Increased life expectancy in sterilized male dogs: 13.8%
- Increased life expectancy in sterilized female dogs: 26.3%

Literature reports that suggest health or behavioral issues from prepubertal spay/neuter surgery should be interpreted cautiously, as several issues may cast doubt on the conclusions:

- Many variables, such as diet, weight, lifestyle and the economic ability of the owner to seek out medical intervention, cannot be controlled in retrospective studies.
- Research from referral hospitals or universities may include population bias because the study populations are already filtered.
- Association does not prove cause and effect.
- Many studies use relatively small patient numbers compared with the general population.

Results from one breed study cannot be extrapolated to all breeds or to mixed breeds.⁹

Studies from different countries and cultures present another set of variables and should not be used to draw conclusions about all dogs in the United States. For example, there are significant regional variations in the number and breed of dogs entering our shelters.

The art of practicing medicine ultimately dictates that the veterinarian consider all relevant variables, including the client's goals and means, when making recommendations about sterilization timing for individual animals.¹⁰

Final thoughts from Dr. Petty

I concur with most of Dr. Goldstein's points. I suspect that we haven't found issues with other breeds simply because we haven't looked, but time will tell if and when someone looks at a larger variety of breeds. And he is right, at this early stage we cannot know whether these statistical differences have a causal effect from early spay/neuter. Although the numbers of dogs in the University of Georgia study are impressive, other studies have shown the opposite is true. For example, one study¹¹ showed that intact female Rottweilers had a threefold increase in longevity over spayed Rottweilers.

One of the things we absolutely agree on is that perhaps the real answer to overpopulation lies in our attitude about how people in this country approach the problem of strays and overpopulation compared with elsewhere. Let's compare the spaying and neutering of dogs and cats in the United States with two Nordic countries, Norway and Finland.

In Norway, it is against the law to spay or neuter a dog except for medical reasons or reasons of socialization (documented cases usually involve male dogs that are considered aggressive due to an overactive sex drive). Under the Norwegian Animal Welfare Act, no cosmetic surgical procedure of any kind (ears, tails and dewclaws included) is to be used to adapt animals to the needs of humans, unless strictly necessary. Despite the fact that virtually no animals are spayed or neutered in Norway, the country's homeless dog population is nonexistent. In fact, the single humane society/animal shelter in all of Norway has *a capacity for fewer than 25 animals!*

Although Finland does not have a law against spaying and neutering dogs, the majority of dogs there are intact. I learned this during a conversation with a veterinarian in Finland. When I asked her what humane societies were like in her country, she responded by asking, "What is a humane society?" When I explained that they were for stray dogs, she said there are no stray dogs in Finland. "Sure, dogs get lost," she said, "and if someone sees a strange dog hanging around their house, they call the police who capture the dog, check it for a

microchip and either return it to their owner or find a new home for it.” I was flabbergasted. Most animals in both Finland and Norway are microchipped, and owners have a sense of responsibility for their animal's behavior, care and well-being that just isn't seen in the United States. Statistics are similar for Sweden and Denmark as well.

In the United States, by contrast, up to 2 million dogs and cats are euthanized in animal shelters every year. I do not understand the underlying attitudinal difference between U.S. and Nordic pet owners that make the euthanasia and homeless numbers so large in the United States and virtually nonexistent in Scandinavia, but it clearly isn't wholly reliant on sterilization of the pet population. Societal attitudes toward animal care are simply better there.

In the end, it really falls on the veterinary community to educate pet owners about responsible pet care and overpopulation. We need to discuss responsible pet care with clients, including the avoidance of unwanted pregnancies. When clients want to spay or neuter their dog, it is within our power to ask them to delay the procedure until after puberty. This has been the policy in my clinic for the past 10 years, and not a single client's dog has had an accidental pregnancy to date. Of course, we can't influence those dog owners who never come to see us, but we can help our own patients avoid unnecessary pain and suffering that potentially comes with early spay/neuter and do our part to reduce the homeless pet population.

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