

Spaying and Neutering Options Can Avoid Adverse Effects

Veterinarians often advise spaying and neutering to help decrease aggressiveness, yet there's no science to back that view. Furthermore, research continues to mount regarding the adverse long-term health effects of spaying and neutering. Here's the alternative I recommend instead.

Analysis by Dr. Karen Shaw Becker

STORY AT-A-GLANCE

- Scientific evidence continues to mount on the deleterious long-term health effects of spaying and neutering dogs, especially large and giant breeds
- Recent research also indicates that one of the main selling points of traditional spays and neuters, a decrease in aggressiveness, has no scientific foundation
- Large-scale studies show that both aggressive and fear-based behaviors are actually more, not less common in desexed vs. intact male and female dogs
- Given the mounting evidence of negative health and behavioral consequences of spays and neuters, it's time for veterinarians to learn alternative sterilization techniques and make them available to dog parents

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If you're a regular visitor here at Mercola Healthy Pets, you may be aware that I was a vocal advocate for early-age spaying and neutering as a young person volunteering at a local animal shelter, all through veterinary school, and during my first few years as a practicing veterinarian.

About 5 years after I opened my practice, I began to notice that many of my canine patients, several of whom I'd been treating since puppyhood, were developing endocrine-related disorders. These were dogs eating biologically appropriate, fresh food diets, who were not over-vaccinated, and whose owners were doing just about everything right. So, I began researching the topic of desexing and endocrine imbalances.

Desexing Has Unintended Consequences

By 2006, the number of dogs I was diagnosing with hypothyroidism was at an all-time high. I started to wonder if the condition was a symptom of a deeper hormonal imbalance in many of my patients, because even after I got those thyroid levels balanced, the dogs still didn't appear to be vibrantly healthy or entirely well.

After a conversation with an expert in the field of veterinary endocrinology who confirmed my suspicions, I realized my insistence on early spays or neuters for every dog patient had left many of them with serious health problems.

For many years, I insisted my clients follow my advice to spay or neuter their pets at or before 6 months of age, with some of them desexing their dogs at 3 months of age. I now realized I was making this suggestion not based on what was physiologically best for my patients, but rather what I felt was morally best for their owners.

As all of the patients that I desexed at a young age cycled through, many of them with irreversible metabolic diseases, I started apologizing to my clients. I apologized to my patients as well. Through my blanket recommendation that all pets be desexed because humans may be irresponsible with an intact animal, I had inadvertently made many of my patients very ill. As a doctor, this revelation was devastating.

The vast majority of my clients at that time were 100% committed, responsible pet parents, and I began advising them to leave their dogs intact whenever possible. Needless to say, many people outside my practice were and are unhappy with my revised position, and I completely understand their concerns. Pet overpopulation continues to be a serious problem in the U.S., and unwanted animals are still euthanized in shelters every day.

In terms of the shelter population and irresponsible pet owners, we're not yet at a place where every dog can safely remain intact. With that said, there are procedures that render animals unable to reproduce, but which spare their ovaries and testes and the vital hormones they produce. I absolutely believe those procedures should be taught in veterinary schools and offered by veterinarians as alternatives to full spays and neuters.

Large and Giant Breeds Are at Increased Risk

In the years since I changed my views on spaying and neutering, many studies have been published that indicate spaying and neutering dogs, especially large and giant breeds, and especially at an early age, increases the risk for a wide range of long-term health problems, as outlined in the following table:

Condition	Effect of Spay on Female Large/Giant Breeds	Effect of Neuter on Male Large/Giant Breeds
Overall longevity	Mild increase	Mild increase
Obesity	Moderate increase	Moderate increase
Cranial cruciate ligament disease	Moderate increase*	Moderate increase*
Hip dysplasia	Mild increase*	Mild increase*
Mammary tumors	Marked decrease*	--
Uterine, ovarian, vaginal tumors	Prevents	--
Testicular tumors	--	Prevents
Perianal gland tumors	--	Marked decrease
Prostatic carcinoma	--	Prevents
Lymphoma	Mild increase	Mild increase*
Mast cell tumors	Mild increase	--
Hemangiosarcoma	Mild increase*	Mild increase
Osteosarcoma	Mild increase*	Mild increase*
Transitional cell carcinoma	Mild increase	Mild increase
Urinary sphincter mechanism incompetence	Moderate increase*	--
Cystitis	Mild increase*	--
Benign prostatic hyperplasia	--	Marked decrease
Perineal hernia	--	Moderate decrease
*Age at time of surgery may be important		

Interestingly, along with the apparently erroneous notion that spays and neuters improve the overall long-term health of dogs, these procedures have also been considered a solution for behavior problems. However, researchers have begun investigating this area as well — with unexpected and stunning results.

Neutering Can Actually Increase Aggression in Male Dogs

One large-scale 2018 study was conducted by researchers at the Sydney School of Veterinary Science at the University of Sydney in Australia and involved 9,938 dogs. The goal was to investigate the effects of neutering on males, in part because it's routine for veterinarians to recommend the procedure for dogs who show aggression, especially toward family members.

The researchers used data from the widely used C-BARQ (Canine Behavioral Assessment and Research Questionnaire) tool that uses dog owner observations of their pet's behavior. The **C-BARQ is available online**, so interested pet parents can complete the questionnaire and their dog's information will be entered into a data bank. As the data bank grows over time, studies of canine behavior become increasingly more accurate.

The veterinary researchers looked only at data on male dogs who had been neutered for reasons having nothing to do with behavior, and included dogs who had been desexed at ages up to 10 years, which allowed the research team to also investigate the effects of early vs. later age neutering.

The results of the study confirmed what earlier research has shown — there were no positive behavioral effects from neutering, and in fact, the behavior of the dogs tended to be significantly less desirable.

Out of a total of 100 behaviors assessed by dog owners, 40 showed significant differences between neutered and intact males, and only 4 of those showed a positive response to neutering. Neutered dogs were less likely to urine mark indoors or howl when left alone. Off-leash, they were more likely to come when called and fetch items thrown for them. The remaining 36 behaviors were all more negative in neutered male dogs than intact males.

As for the popular notion that dogs become less aggressive after desexing, the study results showed the opposite. Desexed males were more likely to show aggression toward:

- Delivery people
- Strangers walking, jogging, bicycling or rollerblading past their homes
- The approach of an unfamiliar female dog
- The approach of an unfamiliar person
- The presence of small animals (e.g., cats, squirrels) in their yard

The surveys also revealed that the younger the dog was desexed, the worse the effects were.

Neutered Males Also Show More Fear-Based Behaviors

In addition, neutered dogs showed many more fear-related behaviors than intact dogs. Triggers included loud noises, unfamiliar situations, the approach of an unfamiliar child, being barked or growled at or approached by unfamiliar dogs of the same size or larger, encountering unfamiliar objects on or near the sidewalk as well as windblown objects, and during veterinary exams and nail clipping. And again, the younger the age at neutering, the greater the effects.

Other undesirable behaviors that were more frequent in desexed dogs included coprophagia (poop eating — their own or from other animals), rolling in poop or other stinky stuff, stealing food, excessive barking, and excessively licking themselves.

The researchers concluded that while neutering decreases the number of unwanted dogs in animal shelters, ironically, it also increases the population of dogs relinquished to shelters due to behavior problems:

"The beneficial effects of gonadectomy [neutering] are underpinned by the need to reduce the number of unwanted companion animals. Thousands of dogs are euthanized in shelters and pounds annually in many developed countries. However, shelters are inundated by dogs that are most commonly surrendered because they display undesirable behaviors.

So the current findings present the paradox that castration may reduce the numbers of unwanted dogs but may also increase the likelihood of problem behaviors that reduce the appeal of the castrated dogs and make them more vulnerable to being surrendered."

Desexing at 7 to 12 Months May Be Especially Problematic

Another even larger scale study (over 13,000 dogs), also published in 2018, looked at links between desexing and aggression toward familiar people, strangers, and other dogs in both male and female dogs. The research team in this case set out to determine whether aggressive behavior was significantly different in dogs gonadectomized at various ages vs. intact dogs, again using the C-BARQ.

The researchers compared data for intact dogs with data from dogs spayed or neutered at 6 months or younger, 7 to 12 months, 11 to 18 months, and over 18 months. The results showed that neither desexing nor the age at which it was done was associated with aggression toward familiar people or dogs. However, there was a "low but significant" increased risk of moderate or severe aggression toward strangers for all desexed dogs compared with intact dogs.

Interestingly, this increase was driven entirely by the group of dogs spayed or neutered at 7 to 12 months — they were 26% more likely than dogs desexed at both younger and older ages to display aggression when encountering strangers. The study authors concluded that:

"This large, comprehensive study of the relationships between gonadectomy and aggressive behavior in dogs demonstrates that when the many factors affecting aggressive behavior are considered, there is no evidence that gonadectomy at any age alters aggressive behavior toward familiar people or dogs, and there is only a minimal increase in aggression toward strangers.

Given the increasing evidence of significant negative health effects of gonadectomy, there is an urgent need to systematically examine other means of preventing unwanted procreation, such as vasectomy and hysterectomy."

I'm in complete agreement with this, and as noted earlier, I've been advocating for alternatives to spaying and neutering for several years now.

My Sterilization Recommendations

My approach is to work with each pet parent to make decisions that will provide the most health and behavioral benefits for the dog. Whenever possible, I prefer to leave dogs intact. However, this approach requires a highly responsible pet guardian who is fully committed to and capable of preventing the dog from mating (unless the owner is a responsible breeder and that's the goal).

It's important to note that I'm not advocating the adoption of intact shelter animals to people who may or may not be responsible pet owners. Shelter veterinarians don't have the time or resources to build a relationship with every adoptive family, so the animals in their care must be traditionally spayed and neutered (until shelter vets learn different techniques) prior to adoption to prevent more litters of unwanted pets.

My second choice is to sterilize without desexing so the testes or ovaries can continue to produce hormones essential for the dog's health and well-being. This can be accomplished through vasectomy and hysterectomy (which removes the risk of pyometra).

Rarely, older, intact male dogs develop moderate to severe benign prostatic hyperplasia (an enlarged prostate) that may be improved with conventional neutering. Intact females can also be at risk of pyometra as they age. Generally speaking, mature intact dogs have had the benefit of a lifetime of sex hormone production, so the endocrine imbalances we see with spayed or neutered puppies don't occur when dogs are desexed in their later years.

Unfortunately, veterinary schools in the U.S. only teach full spays and neuters, so unless your own vet has obtained additional training in sterilization techniques that spare the ovaries or testicles (which is unlikely), you may have only one surgical option available to sterilize your pet.

In that case, my suggestion would be to wait until your dog has reached full musculoskeletal maturity, and if you have a female, I'd also wait until she's completed her second estrus cycle before scheduling the surgery.

Sources and References

[Psychology Today May 9, 2018](#)

^{1, 2} [McGreevy PD et al. \(2018\) PLoS ONE 13\(5\): e0196284](#)

^{3, 4} [Farhoody P et al. Front Vet Sci. 2018; 5: 18](#)
