bark&whiskers™

Dog Tips

Don’t Sterilize Your Dog Without Knowing This

Recent findings reveal potential harm linked to traditional sterilization techniques. Discover important information about alternative options that may benefit your dog's health and lifespan.

STORY AT-A-GLANCE

- An increasing number of dog lovers across the U.S. are catching on to the fact that traditional spay/neuter surgeries, while helpful in controlling pet overpopulation, aren’t an ideal solution for the health and well-being of canine companions
- A 2023 study — the first of its kind involving over 6,000 dog owners — revealed that spayed/neutered dogs develop more health and behavioral problems than intact dogs and dogs who underwent hormone-sparing sterilization procedures
- The study results suggest that the bodies and brains of dogs benefit from maximum exposure to the sex hormones; the researchers concluded that “dogs might benefit from these alternative surgeries, with respect to general health and experience better behavior outcomes, compared to undergoing traditional spay-neuter surgery”
- Unfortunately, sterilization techniques that preserve the ovaries or testes aren’t taught in veterinary schools; however, there are resources available for dog parents determined to preserve their pet’s natural hormones

Thankfully, many more people in the U.S. are waking up to the reality that desexing dogs using traditional spay/neuter surgeries, while a positive for helping to control the pet overpopulation problem, is not always, or even often the best choice for our canine companions.

Groundbreaking Study of Over 6,000 Dogs

In early 2023, a first-of-its-kind study was published in the Journal of the American Veterinary Medical Association (JAVMA) comparing the health and behavior outcomes of dogs who underwent **hormone-sparing sterilization procedures** vs. spayed/neutered or intact dogs.[1]

The study authors analyzed owner surveys distributed by the **Good Dog** organization for over 6,000 dogs in the U.S. and Canada. The 6,018 dogs included 1,056 intact, 1,672 neutered, and 58 vasectomized males, along with 792 intact, 2,281 spayed, and 159 female dogs that had undergone ovary-sparing spay.

The extensive online survey was 36 pages and inquired about the health status and other characteristics of the dogs. Respondents also answered questions about problematic behaviors (including anxiety, fearfulness, and aggression) and “nuisance” behaviors such as urine marking and mounting.

As outlined by Linda Brent, PhD, Executive Director of the Parsemus Foundation who reviewed the study results, the researchers discovered that animals with longer exposure to their natural hormones:[2]

- Had reduced odds of developing health problems and problematic and nuisance behaviors
- Lived longer
- Enjoyed the benefits of normal hormones regardless of whether or not they reproduced

Male dogs who've undergone a vasectomy, and females who've had an ovary-sparing spay (hysterectomy) have the benefit of lifetime exposure to normal hormones just as intact dogs do. In addition, dogs who are spayed or neutered late in life may also get some of the health benefits of natural hormones.

The study was led by veterinarian and canine sports medicine expert Dr. Chris Zink and is the first to include dogs who have undergone a vasectomy or ovary-sparing spay. According to Brent:

> *"This study clarifies that it is the lack of normal hormones after spay or neuter that is related to the health and behavior issues. Hormone-sparing sterilization procedures were also highlighted as important options for pet owners."*[3]

As the study authors explain:

> *"Given the relatively low risk of these alternative surgeries, particularly in the hands of experienced veterinary practitioners, veterinarians might consider offering these alternative reproductive surgeries to allow dogs to obtain these benefits without experiencing unintentional reproduction."*[4]

Why Spay/Neuter Is Far From an Ideal Sterilization Solution

Spaying (which is a hysterectomy plus ovariectomy) in female dogs removes the uterus and the ovaries, which obviously prevents pregnancy, but which also halts the production of important female hormones that influence the chemical balance of the body and the brain and may even affect memory.[5]

Neutering of male dogs, aka castration, removes the testes, which again prevents puppy-making, but also halts the production of essential male hormones such as testosterone. Lack of testosterone can cause significant physical and behavioral changes and may also alter cognition.[6]

A growing body of scientific evidence indicates that 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 Large/Giant Breed Female Dogs	Effect of Neuter on Large/Giant Breed Male Dogs
Obesity	Moderate increase	Moderate increase
Cranial cruciate ligament disease	Moderate increase*	Moderate increase*
Urinary sphincter mechanism incompetence	Moderate increase*	--
Overall longevity	Mild increase	Mild increase
Hip dysplasia	Mild increase*	Mild increase*
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
Cystitis	Mild increase*	--
Perineal hernia	--	Moderate decrease
Mammary tumors	Marked decrease*	--
Perianal gland tumors	--	Marked decrease
Benign prostatic hyperplasia	--	Marked decrease
Testicular tumors	--	Prevents
Uterine, ovarian, vaginal tumors	Prevents	--
Prostatic carcinoma	--	Prevents
*Age at time of surgery may be important		

Sterilization alternatives to desexing that preserve the gonads (ovaries and testes) and the hormones they produce, including ovary-sparing spays and vasectomies, should be an option for pet parents. One of the main barriers to putting these alternative sterilization techniques to use is they aren't taught in veterinary schools. Another obstacle is a lack of scientific research to determine if these hormone-preserving procedures in fact result in better outcomes than spaying and neutering, which is why this study is so important.

Dogs Who Maintain Their Natural Hormones Fare Better

As noted above, the researchers, led by Zink of Integrative Sports Medicine in Ellicott City, Maryland, formerly of Johns Hopkins University, discovered that the single most important predictor of behavioral and health outcomes in dogs is the length of time their bodies are exposed to gonadal hormones. Spayed or neutered puppies have only brief exposure to sex hormones; dogs desexed as young adults have the benefit of longer exposure; and dogs who are intact or underwent a hormone-sparing sterilization procedure have lifelong exposure.

The study results suggest that the bodies and brains of dogs benefit from maximum exposure to the sex hormones. In general, dogs who were spayed or neutered wound up with more health problems — including orthopedic disorders, increased cancer risk, endocrine system abnormalities, increased likelihood of obesity, and shorter lifespans — than intact dogs and dogs who received hysterectomies or vasectomies.

In terms of behavior, the study results confirmed earlier findings that spaying and neutering resulted in a significant increase in problematic behaviors (aggression, fearfulness) compared to intact dogs. Nuisance behaviors were also more prevalent in spayed and neutered dogs. Behavioral changes in general were also much less evident in dogs with vasectomies and hysterectomies, presumably because they, like intact dogs, retained the benefit of functioning gonads and normal levels of sex hormones.

Zink and colleagues concluded that when it comes to decisions about surgery to prevent reproduction, "dogs might benefit from these alternative surgeries, with respect to general health and experience better behavior outcomes, compared to undergoing traditional spay-neuter surgery." They also suggest that "Delaying traditional spay-neuter surgery could offer similar benefits."

Sterilization Without Desexing

Spays and neuters are desexing procedures (i.e., they remove the animal's ability to produce sex hormones) used primarily for purposes of sterilization to prevent pregnancy. What many pet owners don't realize and veterinarians aren't taught in vet school, is that dogs can be sterilized without being desexed.

As mentioned above, female dogs can undergo a modified spay, also called an ovary-sparing spay or hysterectomy (vs. ovariohysterectomy) that removes the uterus but leaves the ovaries in place, and male dogs can have a vasectomy that preserves the testes. Both procedures result in sterilization, but without removing the gonads and the hormones they produce.

Because the ovaries are preserved in modified spays, female dogs continue to have estrous cycles (go into heat), but since the uterus has been removed, there's no bloody discharge. However, the vulva does enlarge. In addition, females continue to secrete pheromones that are attractive to male dogs, and they are receptive to males during their cycles.

It's recommended that female dogs who've undergone ovary-sparing spays not be allowed to mate while in heat, for post-surgery anatomical reasons that may increase the risk of vaginal trauma.

You can read more about ovary-sparing spays at the **Parsemus Foundation**, which also provides information on vasectomies for male dogs:

> *"Vasectomy in dogs is similar to the procedure for men. Each vas deferens (a tube that carries sperm from the testes and epididymis to the urethra during ejaculation) is cut or clamped so that sperm cannot move through. The procedure is completed under anesthesia but is relatively quick and simple. Technical details can be found **here**. This method of sterilization is accepted by the American Veterinary Medical Association.*
>
> *There are few health concerns when completing a hormone-sparing sterilization on a male dog, since the only health conditions prevented by neuter are benign prostatic hyperplasia in older dogs (which is treatable by neuter or noninvasive electromagnetic therapy), and testicular cancer (which is also a disease of old age and is treated by castration, which is usually curative).*
>
> *The dog will be sterile but will still have hormones and be attracted to females in heat. Thus, owners must be willing to keep their dogs from roaming in search of females."*[7]

Unfortunately, there are relatively few veterinarians across the country who have learned these techniques. Please take a minute to email your state veterinary teaching hospital (if you have one) or the **AVMA** and ask that students be taught alternative techniques while in vet school. The good news is that the Parsemus Foundation has compiled a state-by-state list of veterinarians who do provide such services at **this link**.

Be sure to read the information at the top of the page before searching for a vet in your area. Other potential resources include the Facebook **Ovary Sparing Spay and Vasectomy Info Group**, and the **Society of Theriogenology**.

Sources and References

[1,4] Zink, C. et al. Journal of the American Veterinary Medical Association, 2023 Jan 19;261(3):366-374

[2,3] Parsemus Foundation, February 16, 2023

[5,6] Psychology Today, February 7, 2023

[7] Parsemus Foundation