

# Illegal in Scandinavia, This Misunderstood Procedure Is Still Routine in America

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By Dr. Becker

Traditionally, veterinary schools have taught only one technique to sterilize pets, which is what we know as spaying or neutering. The procedure involves the complete removal of the ovaries and uterus in female dogs, and the testes in males.

For females, early spaying (spaying at a young age) was thought to eliminate the risk of [pyometra](#) (a disease of the uterus), and reduce the incidence of mammary tumors. Results of a [study](#) published last year in the *Journal of Small Animal Practice* were unable to validate the theory that early spaying protects female dogs from mammary neoplasia. This leaves the elimination of the risk of pyometra as the sole health benefit of early spays.

Given the mounting evidence that intact animals may have fewer long-term [health problems](#) than sterilized pets, the last remaining issue surrounding this topic appears to be ethical, as in: responsible sterilization to reduce the millions of unwanted litters of puppies and kittens feeding the pet overpopulation crisis in this country.

There's actually a big difference between desexing an animal (which is removing all gonadal tissue), and sterilization, which depending on the technique, may preserve sex hormone-secreting tissues. Many dog owners are beginning to rethink what type of surgical sterilization technique is best for their pet. But most veterinarians are unable to offer anything other than spaying or neutering because those are the only procedures we learned to perform at vet school.

## Dr. Michelle Kutzler, an Expert in Animal Reproductive Physiology, Performs a Modified Spay Procedure That Preserves the Ovaries

Today I've invited an expert to discuss this topic in much more detail with us. Her name is Dr. Michelle Kutzler.

Dr. Kutzler graduated from veterinary school in 1993 and spent four years in a mixed-animal private practice in Minnesota. She became a diplomate of the American College of Theriogenologists in 1999 (theriogenologists are experts in animal reproduction), and received a Ph.D. in physiology from Cornell University in 2002. Dr. Kutzler is currently working in the Department of Animal Science at Oregon State University and has published scientific papers on a variety of animal reproduction topics.

I actually found Dr. Kutzler's demo video on how to perform an ovary-sparing spay procedure online. This procedure involves removal of the uterus while leaving the ovaries in place. It renders the dog sterile, but still able to produce important hormones. I contacted Dr. Kutzler and asked if she would consider talking with us about this topic, and she graciously agreed.

I expressed to Dr. Kutzler that her video was very enlightening and refreshing to see. I asked her to talk a little about how she decided to specialize in reproductive issues.

Dr. Kutzler explained that she first became interested in the subject during her undergraduate training at Washington State University, where she took a required course in reproduction. The instructor, Dr. Ray Wright, who is emeritus faculty at WSU, was very inspirational. Dr. Kutzler realized at that time that she wanted to specialize in veterinary reproduction.

## Connecting the Dots Between Spaying/Neutering, Endocrine Imbalance, and Increased Risk of Disease

### Story at-a-glance

- Dr. Becker interviews Dr. Michelle Kutzler, an expert in animal reproduction and the developer of a modified spay procedure that preserves the ovaries in female dogs.
- Dr. Kutzler began connecting the dots between traditional spays, endocrine imbalance and increased risk of disease early in her professional career. A Rottweiler longevity study published in 2009 was her watershed moment in understanding there are certain dog breeds that hugely benefit from maintaining their ovaries until later in life.
- In 2011, Dr. Kutzler began performing her ovary-sparing spay procedure. That same year, she also worked in partnership with the Parsemus Foundation to create an online video of the procedure for other veterinarians to learn from. The essential difference between the modified spay and a traditional spay is that the former leaves the ovaries in place, thereby preserving production of sex hormones.
- Female dogs who retain their ovaries still have estrous cycles, but without the messy discharge. They also continue to attract males during cycles, and may be receptive to them (allow mating). To prevent potential trauma to sex organs, owners of female dogs who've undergone the procedure should be vigilant in prohibiting mating.
- Dr. Kutzler also discusses non-surgical intratesticular injections that accomplish sterilization in male dogs while preserving testosterone production.

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Dr. Kutzler's educational background, training and experience in the field qualify her as an expert in reproductive physiology. I asked her at what point along her professional path she began connecting the dots between the endocrine imbalance that results from spay/neuter, and increased disease potential.

Dr. Kutzler answered that she doesn't remember hearing anything about the side effects of spay/neuter in veterinary school. But once she was in private practice, she began treating cases of urinary incontinence after ovariohysterectomies (traditional spays). She asked the owners of the practice and her colleagues how common this was, and why it wasn't better documented as a problem following spay procedures. But at that time, there was still debate as to whether urinary incontinence was a result of trauma to pelvic nerves due to removal of the uterus, or whether it was the result of removing the ovaries and the hormones they produce.

The only treatment for the condition at that time was hormone supplementation (estrogens). The drug most commonly used was diethylstilbestrol (DES). Phenylpropanolamine (PPA) wasn't available, and the only alternative was phenylephrine, but it carried more side effects than PPA, including hypertension, anxiety and behavioral changes. So DES was the drug of choice.

Dr. Kutzler explained that as many of us are aware, dog bone marrow is exquisitely sensitive to the effects of estrogens. DES had to be used very carefully to prevent a decline in bone marrow production.

So it was early in her career that Dr. Kutzler started to question the need to remove the ovaries as part of sterilization of female dogs. But she really began connecting the dots in 2009 when Dr. David Waters published one of several papers looking at the effects of gonadal hormones and [longevity in Rottweilers](#).

## **Studies on Rottweiler Longevity Point to Significant Damaging Side Effects of Ovary Removal**

Dr. Kutzler explained that the Rottweiler studies were of particular interest because her in-laws in Minnesota have always had Rotties as pets. And over the last 17 years, they've seen five of their dogs die from bone cancer. Dr. Kutzler was so concerned about what seemed to be a higher-than-normal incidence of cancer in her in-laws' dogs that she had their water tested. She was also concerned about the food they were eating, so their diets were changed.

Then when Dr. Waters' paper was published in 2009 and Dr. Kutzler also had an opportunity to speak with him in person, it really brought home to her that there are certain breeds that definitely benefit from maintaining their ovaries until later in life.

Dr. Kutzler's in-laws now own a female Rottweiler. She's four years old and still intact. She's not had a hysterectomy (removal of uterus only) mainly because Dr. Kutzler lives in Oregon, the dog is in Minnesota, and there are very few vets who feel comfortable performing a modified spay. Traditionally trained DVMs aren't confident of their surgical skills in performing the procedure, and they also don't feel it's ethically responsible because there's insufficient scientific information available upon which to make a decision.

But Dr. Kutzler believes that more information is coming. More papers on the subject are being written every year. In 2009, there were just a few; more were published in 2010. And in 2013, she believes there are six papers published so far that evaluate the effects of gonadal hormones on longevity and health and disease risks. So the scientific evidence is definitely mounting.

## **Dr. Kutzler's Ovary-Sparing Spay Procedure**

Next, I asked Dr. Kutzler when she decided she would not only acquire these new sterilization skills for herself, but also help other vets learn them.

She replied that much of it came through her association with Elaine Lissner and the Parsemus Foundation. Ms. Lissner was also concerned about removing ovaries as part of surgical sterilization and was really the impetus for developing the video to train other veterinarians on how to perform the procedure. Dr. Kutzler says she felt comfortable talking to vets over the phone, trying to walk them through the steps, but Lissner believed they really needed a video they could watch. She provided the [Parsemus Foundation website](#) as a source to launch the video for anyone to view.

The video the Parsemus Foundation is hosting is really a significant gift to veterinarians who are interested in learning more about ovary-sparing spays, because the information has not been widely available. You can find mention of the procedure in journals and a few surgical textbooks, but seeing it with your own eyes is incredibly helpful.

I asked Dr. Kutzler when she started modifying her spay technique. She answered that she believes it was in 2011 – the same year the video was produced. It was during that year that she started performing the procedure. Dr. Kutzler goes on to explain that the majority of procedures she and her colleagues perform are still routine ovariohysterectomies.

Oregon State University's veterinary college teaches both the traditional ovariohysterectomy as well as ovariectomy (removal of the ovaries only while leaving the uterus), but does not teach the modified spay surgery as it is still considered fairly controversial and is viewed negatively by many surgeons and veterinarians. Again, because it is a new technique, there is a very narrow foundation of scientific research available at the current time.

## **Other Countries Are Ahead of the U.S. in Recognizing the Importance of Maintaining a Dog's Ovaries**

Dr. Kutzler explains that she looks at data from countries outside the U.S. that don't routinely remove the ovaries of female dogs. Those countries have conducted 10 years or more of studies of pet health as a basis for the importance of maintaining the

ovaries.

In Scandinavian countries – Sweden, Norway, Denmark and Finland – routine surgical sterilization of pets is prohibited. It's actually illegal unless medically necessary. The responsibility for controlling an animal's reproduction falls to the owner.

There are also more non-surgical alternatives for sterilizing pets available in Europe than in the U.S. Of course, this is primarily due to pet owner demand in countries where surgical sterilization for purposes of contraception is illegal. But regardless, being a responsible pet owner is a very important part of the equation.

As Dr. Kutzler explains, it's too easy for pet owners to say, "I'm not going to worry about my pet's reproductive health. I'm just going to remove the reproductive tract, and then I don't have to worry about it."

In addition to the convenience factor, spaying and neutering procedures have traditionally been viewed not only as harmless, but actually beneficial to an animal's health. So it's no wonder they've been so popular for so long with both pet owners and veterinarians.

But Dr. Kutzler makes the point that most female dogs only cycle once or twice a year, and some females may only cycle once or twice every two years. So the period when owners need to be responsible for their pet's reproductive health in order to prevent unwanted litters is a short amount of time over the entire lifespan of a dog.

And, of course, if the entire lifespan of the dog is decreased to three or four years because of the early onset of bone cancer or hemangiosarcoma, it really comes down to making the best decision for the pet's health and longevity.

## **The Difference Between Traditional Spaying and an Ovary-Sparing Spay**

I asked Dr. Kutzler if she actually developed the ovary-sparing spay technique herself or learned it from someone else. She responded, "I guess you could say I developed it." She explained that she followed anatomy and veterinary surgery textbook guidelines on the location of the vasculature that needs to be ligated (tied up/closed off), and how to remove the uterus without removing the ovaries.

Technically, the procedure is similar to an ovariohysterectomy. The main differences are that the incision needs to be made further back (caudal) because it's important to remove the entire cervix. Instead of ligating the ovarian pedicle between the ovary and the dorsal body wall (instead of ligating the ovarian vessels), you're doing the ligation between the ovary and the uterine horn or across the uterine tubes. So technically, the two procedures are fairly similar.

Of course, the first few times you do a new procedure it's going to take you longer. You're going to want to consult with other members of your practice to make sure you're doing things correctly. Dr. Kutzler says she can appreciate those insecurities because that's how she felt when she performed her first anal gland removal.

She explained that she never learned how to do that particular surgery while in veterinary school, but she had to do it once she started practicing. She put pictures of the anatomy and also of the surgical procedure on the wall of the surgery room. This is how she approaches new surgical techniques that aren't commonly taught in veterinary school but are needed in a companion animal practice.

## **Potential Availability of the Ovary-Sparing Spay Procedure**

I asked Dr. Kutzler if she thinks more vet schools will begin teaching alternatives to traditional spays and neuters anytime in the near future. Especially since pet owners are becoming more concerned about removing their dog's sex hormones.

Dr. Kutzler answered that every veterinary school's curriculum and area of specialty is different. The opportunity students get to perform even routine spays is very different from one school to the next. She thinks the veterinary college at Oregon State University has an advantage because of its relationship with the Oregon Humane Society. All Oregon State vet students spend three weeks in a dormitory at the Oregon Humane Society and perform from 15 to 30 traditional spays before graduating.

But again, the students during that time are working for the humane society, and the principles that guide decisions about what kinds of surgeries to perform are made outside the veterinary college and there isn't a focus on what would be the best training for the students.

As for opportunities for vet students to learn the ovary-sparing spay procedure, Dr. Kutzler believes it may be several years to decades to perhaps never that it is taught in every veterinary school, based on whether or not it would fit into the curriculum. But she does see the potential for teaching the procedure as a wet lab at American Veterinary Medical Association (AVMA) conferences or other large national conferences. It would be similar to the way in which practicing DVMs currently learn new surgical techniques like laser surgery or cryotherapy.

## **Female Dogs That Keep Their Ovaries Continue to Have (Clean) Estrous Cycles and Are Attractive to Male Dogs**

Dr. Kutzler has moved from the veterinary college at Oregon State to the Department of Animal Science where she is able to do more research and consulting. She maintains hospital privileges at nearby Reed Animal Hospital and she and the other veterinarians at that practice offer the ovary-sparing procedure (which is actually called a hysterectomy – removal of the uterus only).

Dr. Kutzler wants to make the point that because the ovaries are preserved, female dogs do continue to have estrous cycles. Since the uterus has been removed, there's no bloody discharge, however, the vulva does enlarge. Females continue to secrete pheromones that are attractive to male dogs, and are also receptive to male dogs during their cycles.

Dr. Kutzler's recommendation to all clients with dogs that have undergone hysterectomies is to prohibit breeding from occurring during estrous cycles. This is because a small portion of the cranial aspect of the vagina must be removed in order to remove the entire cervix. There shouldn't be a problem anatomically for the female if intercourse occurs, but Dr. Kutzler can't entirely rule out the possibility of trauma to the vagina. It's a matter of being safe rather than sorry.

None of her clients have reported a problem keeping their female dog away from males during cycles, which of course makes the point that the clients who are making these types of decision for their dogs are very responsible pet owners to begin with. They are aware of when their pet is going through proestrus and estrus, and they make sure no mating occurs.

## **Intratesticular Injections for Sterilization of Male Dogs**

I next asked Dr. Kutzler to talk about how owners of intact male dogs can act as responsible pet owners, insuring their dogs never impregnate a female dog. I asked for her thoughts on hormone-sparing techniques for male dogs.

Dr. Kutzler answered that there's a drug on the market now called Zeuterin, which is a zinc-based solution designed for intratesticular injection. It can be given to any male dog over the age of three months. General anesthesia is not required, and in some cases, it can be done without any chemical restraint at all.

Dr. Kutzler realizes the idea of an injection into the testicles makes many people cringe, even women. She explained that in reality, the majority of discomfort from the procedure is due to the increase in pressure inside the testes after the solution is injected. But doing the injection very slowly can minimize even that discomfort.

The zinc solution causes degeneration of the seminiferous epithelium. This is the part of the testes where germ cells – the cells that will become sperm cells – are developing. The injection renders the testes no longer capable of producing sperm. The interstitial tissues, specifically the interstitial cells or the Leydig cells, are still present and still produce testosterone.

Depending on which study you reference, testosterone levels may be reduced by as much as 50 percent. Other studies show there's no significant difference in testosterone levels between intact male dogs and dogs that have received the injection. But in either case, there is an amount of testosterone that is still in circulation, so the gonadal hormone-sparing effects are still present even though the dogs are incapable of reproducing.

## **Vasectomy vs. Intratesticular Injection**

I asked Dr. Kutzler for her thoughts on vasectomies for male dogs. She replied that she's not opposed to doing them. And she's done them on dogs and cats for research purposes. The technique is not difficult to perform. The main drawback, again, is that it's an additional surgical technique veterinarians would need training on as it's not a procedure that's taught in veterinary school.

With the hysterectomy for female dogs, the approach is similar to the one taken for an ovariohysterectomy. But with a vasectomy, the approach is different from a pre-scrotal castration (neutering). It's therefore a more difficult procedure for veterinary surgeons in private practice to learn and master on their own.

Dr. Kutzler points out that the intratesticular injection, in contrast, is very quick. It's done on an outpatient basis, and it's gaining acceptance in Latin countries where castration is not popular. Intratesticular injection is an acceptable alternative to doing nothing.

I asked Dr. Kutzler if there are any long-term health consequences from intratesticular injections. She answered that she hasn't heard of any beyond injection-site reactions. The percentage of those is small, and it could be because the injections were performed in very rural areas where veterinarians might not have access to a clean environment in which to perform the procedure.

According to Dr. Kutzler, injection-site reactions can be as minimal as just some heat and discomfort around the testes for one or two days, which resolve without any medication at all, to a chronically draining tract that requires a complete scrotal ablation. That happens in a very low percentage of cases. Depending on the reports, anywhere from 0.5 percent to maybe 1.8 percent of injections result in that type of complication.

As for long-term health complications, Dr. Kutzler says she really hasn't heard of any. And she believes that's important because the original version of the drug was approved in 2003 – it was called Neutersol. She believes we would have heard about complications associated with the product by now, 10 years later. Many shelter dogs were injected with Neutersol as a sterilization method.

I asked Dr. Kutzler if she feels Zeuterin will be used for shelter dogs on a broader scale in the future. She believes it will be, because it's important that both veterinarians and shelter managers have lots of sterilization options available. If you are the Oregon Humane Society and have a fresh group of fourth-year vet students coming to work in your facility every three weeks, then traditional spays and neuters may be the best option for you.

But according to Dr. Kutzler, if you're in a small county that's not well funded and you're operating a no-kill shelter, you're looking for every opportunity to cut costs. The animals in your shelter must be sterilized before they leave your facility in order to prevent unwanted pregnancies. Intratesticular injection is less costly than a surgical procedure, it can be done quickly, at high volume, and

right there in the shelter.

## **One Final Question and a Huge Thank You to Dr. Michelle Kutzler**

I had one final question for Dr. Kutzler: If she were to rescue a puppy today from a shelter and could leave it intact, what would she do? Would she leave it intact for life? How does she preserve the hormone balance of her personal pets?

She replied that of the four dogs she has today, three are intact, and the fourth has received a traditional spay. She said if she got a puppy today, her decision about sterilization would be based on the breed and future plans she had for the dog.

If it was a medium to giant-breed dog and she intended to get involved in performance events – whether agility, lure-coursing, barn hunting, or any of the other fun activities we can do with our dogs – she would leave the dog intact or remove just the uterus to preserve the health benefits associated with gonadal hormones.

Dr. Kutzler thinks with smaller-breed dogs, the health benefits of ovary-sparing aren't as clear. Small dogs tend to cycle or go through more heats per year than large breed dogs. She said she'll continue to recommend traditional spaying for small breed dogs until she has more evidence to persuade her in another direction.

I asked Dr. Kutzler if any evidence exists, since I see more spay-related typical Cushing's in small dogs than large dogs. She replied that while she completely agrees, she views it as similar to a case of spay-related urinary incontinence. Owners can treat Cushing's (and dogs don't die from it), whereas with cancer (as we see in the large breed dogs), the choice to remove the ovaries or not is really a matter of life and death.

I want to thank Dr. Michelle Kutzler for taking time to talk with us today and share the details of her modified spay technique that sterilizes female dogs while allowing them to maintain their sex hormones. I so appreciate the work and research she is doing in the area of alternatives to traditional spaying and neutering.

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