Letters to the Editor

Pyometra in dogs and cats following ovariectomy

I read with interest the commentary by Drs. DeTora and McCarthy[1] regarding the use of ovariectomy instead of ovariohysterectomy for elective sterilization of female dogs and cats and the follow-up letter from Dr. Dunn.[2] When I first purchased my practice nearly 40 years ago, I was confused over a diagnosis of pyometra in a dog with a history of having previously been spayed and subsequently found out that there had been a veterinarian in the community who commonly performed ovariectomy on client animals. I performed a number of pyometra surgeries on animals that had undergone ovariectomy during those first few years, and that experience led me to the philosophy that one should always remove both ovaries and the uterus. I do not believe the minute or two saved is worth the risk.

I currently work with a local nonprofit organization, performing ovariohysterectomies and castrations on approximately 40 cats/d. I am amazed at the number of apparently healthy patients with various stages of pyometra.

Mark R. Graves, DVM
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1. DeTora M, McCarthy RJ. Ovariohysterectomy versus ovariectomy for elective sterilization of female dogs and cats: is removal of the uterus necessary? *J Am Vet Med Assoc* 2011;239:1409–1412.
2. Dunn TJ. Ovariohysterectomy versus ovariectomy (lett). *J Am Vet Med Assoc* 2012;240:144.

The authors respond:

Thank you for your interest and comments regarding pyometra in animals after ovariectomy. It is important to remember that pyometra only develops secondary to hormonal influences. That is, pyometra is a result of endogenous or exogenous progesterones in combination with cystic endometrial hyperplasia. Ovariectomy and ovariohysterectomy are equally effective in eliminating hormonal influences, so pyometra cannot occur after either procedure unless there is an exogenous source of progesterone or a break in aseptic technique.[1,2] Two long-term studies[3,4] with follow-up times ranging from 6 to 11 years failed to demonstrate any differences between the two sterilization techniques in regard to the incidence of clinically apparent cystic endometrial hyperplasia–pyometra complex. What is most likely occurring in the case examples you provided is ovarian remnant syndrome (ie, failure to remove all ovarian tissue during the first surgery) causing continued hormone secretion and resulting in clinical pyometra.[5] Histologic examination of the remnant tissue or measurement of blood progesterone concentration would confirm this supposition. To date there has been no documentation in the literature that ovariectomy predisposes animals to pyometra, and it has even been suggested that because the incision is more cranial, ovariectomy is less likely to cause ovarian remnant syndrome than is ovariohysterectomy.[6]

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1. Verstegen J, Dhaliwal G, Verstegen-Onclin K, et al. Mucometra, cystic endometrial hyperplasia, and pyometra in the bitch: advances in treatment and assessment of future reproductive success. *Theriogenology* 2008;70:364–374.
2. Smith FO. Canine pyometra. *Theriogenology* 2006;66:610–612.
3. Okkens AC, Kooistra HS, Nickel RF. Comparison of long-term effects of ovariectomy versus ovariohysterectomy in bitches. *J Reprod Fertil Suppl* 1997;51:227–231.
4. Janssens LA, Janssens GH. Bilateral flank ovariectomy in the dog—surgical technique and sequelae in 72 animals. *J Small Anim Pract* 1991;32:249–252.
5. Ball RL, Brichard SJ, May LR, et al. Ovarian remnant syndrome in dogs and cats: 21 cases (2000–2007). *J Am Vet Med Assoc* 2010;236:548–553.
6. Van Goethem B, Schaefers-Okkens A, Kirpensteijn J. Making a rational choice between ovariectomy and ovariohysterectomy in the dog: a discussion of the benefits of either technique. *Vet Surg* 2006;35:136–143.

I do not disagree with Dr. Graves' decision to always remove both ovaries and the uterus when performing elective sterilization of dogs and cats. As the attending surgeon, it is his decision, and I respect his experience and concern for his patients' welfare. To be clear, in my letter about the benefits of ovariectomy versus ovariohysterectomy, I stated that I favor ovariectomy in young healthy female dogs and cats. I would not perform an ovariectomy alone in an animal that had had several estrus cycles, irregular estrus cycles, a litter of

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puppies or kittens, chronic urinary tract infection, vaginitis, or a visibly enlarged uterus or uterine horns. Regarding the patients with pyometra that Dr. Graves mentions, it would be interesting to know how old they were at the time of surgery and how many estrus cycles they had had prior to undergoing ovariectomy.

In addition, although development of pyometra after ovariectomy may be due to inappropriate patient selection, it might also be due to incomplete excision of ovarian tissue. If a fragment of ovarian tissue inadvertently becomes displaced in the abdomen during ovariectomy or ovariohysterectomy, there will be the potential for progesterone secretion that could have effects later in the animal's life. In any animal that develops pyometra following ovariectomy, I would recommend inspection of the abdomen for ectopic ovarian fragments at the time of hysterectomy.

I have confidence that in appropriately selected young healthy cats and dogs, ovariectomy will do no harm and may decrease patient stress, compared with ovariohysterectomy. Saving time isn't the issue; reducing patient stress is.

T. J. Dunn, DVM
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Request for pictures of rabies vaccine bait

I was very interested in the recent *JAVMA* article "National surveillance for human and pet contact with oral rabies vaccine baits, 2001–2009."[1] Is it possible for the authors to provide pictures of the baits so that practitioners would be better able to educate dog-owning clients?

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1. Roess AA, Rea N, Lederman E, et al. National surveillance for human and pet contact with oral rabies vaccine baits, 2001–2009. *J Am Vet Med Assoc* 2012;240:163–168.

The authors respond:

We thank Dr. Berlin for her request regarding photographs of the baits used for oral rabies vaccination of carnivores in the United States. Currently, two types of baits are used: a coated sachet (**Figure 1**) and a fishmeal-polymer bait (**Figure 2**). If intact baits are found, they may be left undisturbed for wild carnivores to consume or may be moved to a suitable habitat if there is a perceived risk for human or domestic animal contact. No serious adverse events have been reported for animals after bait consumption. People should not try to remove a bait from a pet's mouth, owing to the risk of a bite and the possibility of inoculation with the vaccinia rabies-glycoprotein recombinant virus in the vaccine. If transdermal or mucosal exposure to the bait does occur, the person should wash the site well and report the incident to the state health department. Immediate health care should be obtained to confirm a diagnosis and begin appropriate treatment if illness or lesions compatible with vaccinia develop.[1] Veterinarians can assist the US national program by educating clients about these baits and their intended use for wildlife rabies prevention and control.

Figure 1—Photograph of coated (top) and uncoated (bottom) sachet rabies vaccine baits. A quarter is pictured for scale. (Photo courtesy of the USDA Wildlife Services.)

Figure 2—Photograph of fishmeal-polymer rabies vaccine bait. (Photo courtesy of Dr. Charles Lewis.)

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1. CDC. Human vaccinia infection after contact with a raccoon rabies vaccine bait—Pennsylvania, 2009. *MMWR Morb Mortal Wkly Rep* 2009;58:1204–1207.