PAIN MANAGEMENT

coxib, carprofen, or meloxicam or 2) NSAIDs plus a fentanyl patch. We strongly urge clients to consider preemptive versus “treat pain as you see it” management. Most clients choose the in-hospital protocol, which can include injectable NSAIDs, opioids, and perhaps an epidural narcotic as well. Due to the expense of the patch, most clients choose the basic NSAID at-home package.

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One-Shot Approach

Working as a staff veterinarian in a shelter, a nonprofit organization, I perform between 20 and 30 spay/neuter surgeries a day. The pain control used in dogs (males and females) is buprenorphine, while butorphanol mixed with ketamine and medetomidine is used in cats as part of the anesthesia protocol. These injections are given once, at the time of surgery.

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You have asked ...

What do you dispense/prescribe for pain control at home following ovariohysterectomy?

The next questions are:

Do you feel that your local animal shelter poses serious financial competition to your clinic? Does it provide important services for pets of indigent people and for abused animals?

Are you concerned about legal liability regarding zoonotic parasitic disease? What precautions do you take to protect patients and clients and thus your practice and yourself?

What the EXPERT says ...

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Preemptive and Postoperative Approaches to Pain Management

Ovariohysterectomy is a painful procedure in both dogs and cats, and patients should receive both preemptive and postoperative analgesics. Ovariohysterectomy involves both somatic and visceral pain which—on a scale of mild, moderate, or severe—is likely to be moderate and last several days. Many female cats undergo onychectomy at the same time as ovariohysterectomy, thereby increasing the intensity and duration of pain. Behavioral changes after ovariohysterectomy are well documented and can be minimized with the use of appropriate analgesic agents.1, 2

Pain is easier to prevent than treat and this is the basis of preemptive analgesia. If steps are taken to use analgesics as part of the anesthetic plan, the postoperative requirements may be reduced, simplifying the treatment of outpatients once they return home.

continues
**NSAIDs & Other Drugs**

Nonsteroidal antiinflammatory agents (NSAIDs) provide effective analgesia for canine ovariohysterectomy. Preoperative carprofen is more effective than postoperative administration,\(^3\) and meloxicam is more effective than butorphanol.\(^4\) NSAIDs offer the advantages of being noncontrolled substances with a long duration of action—often 20 to 24 hours after a single dose. Both carprofen and meloxicam are now available in the United States for use in dogs in an injectable formulation, making it easy to incorporate them into the anesthetic premedication protocol. Both drugs can be continued in the postoperative period. Carprofen is available as caplets or chewable tablets and the oral preparation of meloxicam is a palatable honey-flavored liquid; both require just once-a-day dosing. However, it should be pointed out that carprofen is the only licensed NSAID for perioperative use in dogs undergoing soft tissue surgery. There are no licensed NSAIDs for use in cats in the U.S. but in other countries carprofen, ketoprofen, and meloxicam have been effective for providing postoperative analgesia in cats for the first day after ovariohysterectomy.\(^5\)

**Approval Status**

Cats are more susceptible to the toxic side effects of NSAIDs because of their limited ability to metabolize these compounds; however, with appropriate doses and dosing intervals NSAIDs can be used safely. Carprofen is licensed for cats in the United Kingdom but only in injectable form and for one dose. Although the oral preparation of meloxicam is not approved for multiple-day dosing, it has been widely used this way in cats with few reported side effects. Ketoprofen can also be used for several days in cats, but requires compounding.

NSAIDs do not decrease anesthetic requirements, so it is advisable to incorporate a sedative and/or an opioid at the time of surgery. Sedatives, such as acepromazine or medetomidine, decrease requirements for induction or maintenance agents and usually result in better-maintained blood pressure and respiration. Opioids are also recommended prior to surgery as they provide additional analgesia and anesthetic-sparing actions. In dogs morphine, hydromorphone, and buprenorphine are all excellent choices and in cats the latter would appear to be most appropriate.\(^6\) Butorphanol is short acting and provides insufficient analgesia for abdominal surgery.\(^7\) Other techniques that may minimize the requirements of postoperative analgesics include local anesthetics instilled into the abdomen and incision.\(^8\)

Once the animal returns home, administration of analgesics must be simple for the owner to ensure compliance. The choices are opioids or NSAIDs.

**Dogs**

NSAIDs are simple to administer and in dogs the obvious choice would be oral carprofen for 3 to 4 days starting 24 hours after the injectable formulation is given. Options for oral opioids include butorphanol and morphine. The analgesia provided by butorphanol is inferior to that of the NSAIDs.\(^4\) Many owners do not like the sedation that may be seen with some opioids, especially morphine, so they may not be a good choice for home use. In addition, the opioids have the added inconvenience of being controlled substances.
Cats
Meloxicam is easily administered to cats and can be given for several days. For an ovariohysterectomy, the injectable preparation can be given preoperatively or immediately postoperatively with oral dosing beginning on the first day after surgery. Buprenorphine provides excellent analgesia for up to 6 hours and can be absorbed by the oral mucous membranes. Cats do not resent the taste of the injectable formulation administered orally and it can be given easily by owners at home. Cats often become euphoric on opioids but they remain easy to handle. Because of opioid-induced mydriasis, they should be kept away from bright light. Opioids are recommended for a maximum of 3 days; longer use can lead to inappetence. Although controlled, buprenorphine is a schedule III drug.

Transdermal Fentanyl
To simplify administration and provide a long duration of action, transdermal fentanyl (TDF) patches have been studied in both dogs and cats undergoing ovariohysterectomy. Although attractive because they offer a “hands-off” approach, uptake is not always adequate in every animal. The patches are best applied at least 12 hours prior to surgery to allow time for steady-state plasma concentrations to be achieved; this is not always convenient for outpatient procedures. Elevated rectal temperatures in cats have been reported after TDF use. Another factor to be considered is the patient’s environment. If there are children in the home, the issues in cats have been reported after TDF use. Another factor to be considered is the patient’s environment. If there are children in the home, the issues of a schedule II drug and the potential for accidental human exposure should be carefully considered.

If adequate preemptive analgesia is provided, most bitches can be sent home with an oral NSAID such as carprofen (4 mg/kg preoperatively [injectable formulation]; then 4 mg/kg PO Q 24 H) for 3 to 4 days. The choices for cats are meloxicam for up to 3 days (0.3 mg/kg pre- or postoperatively [injectable formulation]; then 0.1 mg/kg Q 24 H) or buccal buprenorphine (0.01–0.02 mg/kg administered onto oral mucous membranes every 6-8 hours) for 2 to 3 days.

I premedicate with acepromazine, buprenorphine or morphine, and injectable carprofen; induce with propofol or diazepam and ketamine; and maintain on isoflurane. Postoperatively, I give 1 or 2 further in-hospital doses of opioids starting 4 hours after the premedication dose. Dogs are sent home with oral carprofen (caplets or chewable) for 3 to 4 days. It is important not to switch from one NSAID to another but use the same one for the course of perioperative pain management. As with all NSAIDs, if the dog vomits, refuses to eat, or has blood in the feces, the owner should be instructed to stop medication and call.

See Aids & Resources, back page, for references, contacts, and appendices.

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SERUM ALKALINE PHOSPHATASE • Cynthia R.L. Webster

References