

Optimising postoperative pain management in cats undergoing ovariohysterectomy

Charlotte Sandersen

OVARIOHYSTERECTOMY of cats, also known as spaying, is a routinely performed procedure in first-opinion veterinary practices worldwide. It not only contributes to animal welfare by reducing the stray cat population but also undoubtedly provides various health benefits (eg, reduced risk of certain cancers) that improve the quality of life of individual cats. However, as with other surgical procedures, cats may experience postoperative pain following ovariohysterectomy.

Pain management is best provided using a multimodal approach combining various intra- and postoperative techniques and molecules.¹ In the UK, most cats undergoing ovariohysterectomy receive non-steroidal anti-inflammatory drugs (NSAIDs) perioperatively.² These drugs work by inhibiting the enzymatic activity of cyclooxygenase (COX) to reduce the production of prostaglandins. They also work together with opioid analgesics to potentially reduce the required opioid dosage and thus the associated side effects.³

Among NSAIDs, meloxicam and robenacoxib are known for preferentially inhibiting the COX-2 enzyme, with robenacoxib showing an even higher selectivity for COX-2 than meloxicam.⁴ Both meloxicam and robenacoxib are licensed for use in cats, and clinical studies have demonstrated their effectiveness in providing postoperative pain relief for cats undergoing surgical neutering.⁵⁻⁷ Furthermore, despite robenacoxib having a shorter plasma half-life than meloxicam, both drugs achieve a similar duration of clinical effectiveness.⁸

Although the perioperative use of injectable NSAIDs to provide analgesia in cats undergoing ovariohysterectomy is well established, the requirement for postoperative administration is unclear, and prescribing practices vary between clinics. One possible reason for this lack of evidence regarding the need for postoperative oral NSAIDs is that studies assessing the

WHAT YOU NEED TO KNOW

- Pain, in its chronic as well as its acute form, is best managed using a multimodal approach combining different analgesic techniques and molecules.
- Perioperatively administered robenacoxib and meloxicam are both routinely used to provide postoperative analgesia in cats undergoing ovariohysterectomy. However, evidence suggests that meloxicam is more effective than robenacoxib in preventing postoperative pain in certain patient populations.
- Practices regarding the postoperative administration of NSAIDs to cats undergoing ovariohysterectomy vary widely. However, recent research demonstrates that applying a blanket approach to prescribing postoperative NSAIDs may not be necessary.
- Avoiding the unnecessary dispensing of NSAIDs not only has patient safety benefits but also reduces the procedure's cost and carbon footprint.
- Owners are able to recognise pain-related behaviours in their cats, and including owner-based assessment in the evaluation of pain can be a reliable tool with the potential to increase the vet-owner-animal bond.

efficacy of analgesic protocols typically rely on pain scoring by experienced clinicians within a hospital environment. However, most cats undergoing ovariohysterectomy are discharged within hours of recovery from anaesthesia.

To help address this knowledge gap, Hillen and colleagues conducted a randomised, prospective clinical trial, summarised on p 323 of this issue of *Vet Record*, evaluating the effectiveness of robenacoxib and meloxicam in controlling postoperative pain in cats, as assessed by their owners in the home environment.⁹ This study compares robenacoxib and meloxicam in terms of pain relief, side effects and overall postsurgical recovery.

Cats undergoing routine ovariohysterectomy were randomly assigned to receive either 0.2 mg/kg of meloxicam (n=79) or 2 mg/kg of



Providing a clear explanation of how to identify signs of pain is given before hospital discharge, cat owners can reliably assess behavioural changes associated with acute pain during the postoperative period

robenacoxib (n=65) perioperatively. All cats were discharged between four and six hours after anaesthetic recovery. A blinded assessor then contacted the owners three days after discharge and asked them to identify any physical or behavioural changes they had observed in their cat and assign them a pain score using an 11-point numerical rating scale.⁹

Although overall pain scores were very low in these cats, the pain scores of cats in the robenacoxib group were significantly higher than those of cats in the meloxicam group. This finding led the authors to conclude that both meloxicam and robenacoxib are effective in controlling postoperative pain, but meloxicam may have improved efficacy in certain patient populations.⁹ Therefore, applying a blanket approach to prescribing postoperative NSAIDs to cats undergoing ovariohysterectomy may not be necessary. This is important, as NSAIDs have a narrow safety margin in cats, meaning that indiscriminate use can pose a risk to patients.¹⁰

This study underscores the importance of tailoring pain management strategies for individual cats, as not all animals respond the same way to medications. Clinicians will find valuable guidance in the study's results, aiding them in making informed decisions regarding pain management protocols for cats undergoing ovariohysterectomy. Furthermore, the inclusion of owner-based assessments enriches our understanding of postoperative pain perception in cats and enhances the quality of care provided to these beloved companions.

Several previous studies have validated the owner-based approach in chronic or orthopaedic feline pain assessment^{11,12} and quality of life evaluation.¹³ However, data on the validity of owner-based assessment of acute pain are scarce.

One study aimed to evaluate the agreement and reliability of the feline grimace scale (FGS) among cat owners, veterinarians,

veterinary students and nurses and showed that intraparticipant reliability was excellent for students and veterinarians, who were considered the gold standard, and good for owners and nurses.¹⁴ Female participants assigned higher FGS scores to the cats than males, but male participants were underrepresented in this study. The age of participants did not affect their scores, and neither did the number of cats they owned. Overall, this study concluded that FGS is a reliable tool for acute pain assessment in cats, even when used by individuals with different levels of experience.¹⁴

Another similar study aimed to investigate the effect of participant demographics on cat caregivers' reliability in assessing acute pain using the FGS.¹⁵ This study also showed that FGS scores had good reliability when used by cat caregivers, regardless of demographic variables, demonstrating the potential applicability of the instrument to improve feline pain management and welfare worldwide.¹⁵

Following on from these studies, Hillen and colleagues' study⁹ not only rigorously adheres to scientific methodology but also recognises the practical importance of involving cat owners in assessing their pets' pain experience. This approach acknowledges the subjective nature of pain perception in animals and harnesses the power of pet owners as key observers in the postoperative period. As such, this study is a commendable contribution to the field of veterinary medicine, promoting the welfare and wellbeing of feline patients.

Charlotte Sandersen, Department of Companion Animals and Equids, Faculty of Veterinary Medicine, University of Liège, Liège, Belgium

email: charlotte.sandersen@uliege.be

References

- Gruen ME, Lascelles BDX, Collieran E, et al. 2022 AAHA pain management guidelines for dogs and cats. *J Am Anim Hosp Assoc* 2022;58:55–76
- Hunt JR, Knowles TG, Lascelles BDX, et al. Prescription of perioperative analgesics by UK small animal veterinary surgeons in 2013. *Vet Rec* 2015; doi: 10.1136/vr.102834
- Bovill JG. Mechanisms of actions of opioids and non-steroidal anti-inflammatory drugs. *Eur J Anaesthesiol Suppl* 1997;15 9–15
- Giraudel JM, Toutain PL, King JN, et al. Differential inhibition of cyclooxygenase isoenzymes in the cat by the NSAID robenacoxib. *J Vet Pharmacol Ther* 2009;32:31–40
- Slingsby LS, Waterman-Pearson AE. Comparison between meloxicam and carprofen for postoperative analgesia after feline ovariohysterectomy. *J Small Anim Pract* 2002;43:286–9
- Staffieri F, Centonze P, Gigante G, et al. Comparison of the analgesic effects of robenacoxib, buprenorphine and their combination in cats after ovariohysterectomy. *Vet J* 2013;197:363–7
- Kamata M, King JN, Seewald W, et al. Comparison of injectable robenacoxib versus meloxicam for perioperative use in cats: results of a randomised clinical trial. *Vet J* 2012;193:114–8.
- Giraudel JM, Diquelou A, Laroute V, et al. Pharmacokinetic/pharmacodynamic modelling of NSAIDs in a model of reversible inflammation in the cat. *Br J Pharmacol* 2005;146:642–53
- Hillen F, Polson S, Yates D, et al. Robenacoxib versus meloxicam following ovariohysterectomy in cats: a randomised, prospective clinical trial involving owner-based assessment of pain. *Vet Rec* 2023; doi: 10.1002/vetr.3264
- Lascelles BDX, Court MH, Hardie EM, et al. Nonsteroidal anti-inflammatory drugs in cats: a review. *Vet Anaesth Analg* 2007;34:228–50
- Enomoto M, Lascelles BDX, Gruen ME. Development of a checklist for the detection of degenerative joint disease-associated pain in cats. *J Feline Med Surg* 2020;22:1137–47
- Benito J, Depuy V, Hardie E, et al. Reliability and discriminatory testing of a client-based metrology instrument, feline musculoskeletal pain index (FMPI) for the evaluation of degenerative joint disease-associated pain in cats. *Vet J* 2013;196:368–73
- Maniaki E, Murrell J, Langley-Hobbs SJ, et al. Do owner-reported changes in mobility reflect measures of activity, pain and degenerative joint disease in cats? *J Feline Med Surg* 2023; doi: 10.1177/1098612X231178765
- Evangelista MC, Steagall PV. Agreement and reliability of the feline grimace scale among cat owners, veterinarians, veterinary students and nurses. *Sci Rep* 2021; doi: 10.1038/s41598-021-84696-7
- Monteiro BP, Lee NH, Steagall PV. Can cat caregivers reliably assess acute pain in cats using the feline grimace scale? A large bilingual global survey. *J Feline Med Surg* 2023; doi: 10.1177/1098612X221145499