A COMPARITIVE, RETROSPECTIVE STUDY INVESTIGATING POST-OPERATIVE PAIN RESPONSE WHEN COMPARING ADMINISTRATION TIMINGS OF NON-STEROIDAL ANTI-INFLAMMAOTORY DRUGS (NSAIDS) FOR FELINES UNDERGOING OVARIOHYSTERECTOMY AND VETERINARY PROFESSIONALS' PERSPECTIVES



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BVNA British Veterinary Nursing Association

Harper Adams University

Introduction and background

Pain management in felines has improved in recent years, however further changes and refinements are still required to determine the most appropriate analgesic protocols, which historically have not always been considered (Steagall et al., 2022). Non-steroidal anti-inflammatory drugs (NSAIDs) are often used in feline ovariohysterectomy (OVH), due to their analgesic, anti-pyretic and anti-inflammatory properties, although there is still controversy regarding administration timings, especially in cats (Steagall *et al*. 2022; Wun et al., 2025).

Veterinary datasheets do not state specific times to administer NSAIDs, but it is recommended to administer meloxicam preoperatively, however there is no data or evidence to provide exact timings within the pre-operative period for optimal effect.
Validated pain scores and blood pressure measurement, are useful and accurate methods to assess pain in feline patients, although are still underused (Conroy et al, 2018;Basra et al., 2025).

Research aim- To determine whether timing of NSAID administration (preoperative vs. postoperative) influences postoperative pain response

Objective 1	To identify gaps or inconsistencies in postoperative pain management strategies used in the study population, with the aim of informing improved analgesic protocols
Objective 2	To compare postoperative pain responses in felines undergoing ovariohysterectomy following administration of different NSAID timings, while examining associated preoperative and postoperative blood pressure trends
Objective 3	Identify veterinary professionals' opinions of NSAID administration within practice and what protocols are used.

Methods and materials

Ethical approval was first granted by the Harper Adams university committee

Questionnaire data

Distribution: Online questionnaire was created and distributed across various social media platforms, emailed to individual veterinary practices and distributed from BVNA social media.
Subjects: Student veterinary nurses (SVNs) Registered veterinary nurses (RVNs) and Members of the Royal College of veterinary surgeons (MRCVS).
Data type: Qualitative and Quantitative data was collected via open and close ended questions to determine opinions on administration timings and NSAID protocols across different practices.
Sample size: 80 required, 105 responded, totalling a 131.25% response rate.
Statistical analysis: Chi-squared and permeation tests via GenStat and Microsoft excel

Retrospective data

Obtained from a Vetsforpets practice in Halifax, West Yorkshire, over an 18-month period
Statistical analysis: Microsoft Excel, median and ITQ range and One-way Anova via GenStat.
Subjects: Female felines >6months for flank OVH split into 2 groups: NSAIDs administered before surgery (19), and NSAIDs administered after surgery (11).
Data collected: Pain scores taken before and after surgery and blood pressure before and after surgery
Sample size: A study by Tobias et al., (2006) with similarities to the research question was used.., and recommended sample size was 46, (23 before surgery and 23 post-surgery).

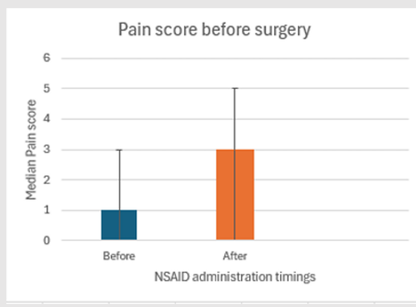
Results

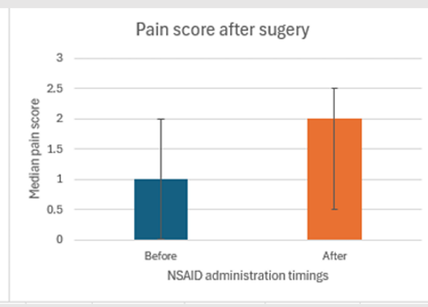
Retrospective data

Median and interquartile ranges were calculated for pain scores completed before and after NSAID administration. The results were not normally distributed.
NSAID administration before surgery: before pain score had a median of 1 and remained at 1 for pain score after surgery.
NSAID administration after surgery: before pain scores had a median of 3 and reduced to 2 for pain scores after surgery, highlighting an active reduction and potentially indicating a reduction in pain.

BP vs NSAIDs had no statistical significance (P>0.05) and mild to severe left sided skewness on histograms and residual plots
Pain scores vs NSAIDs also had no statistical significance (P>0.05) with moderate to severe left sided skewness on histograms and residual plots

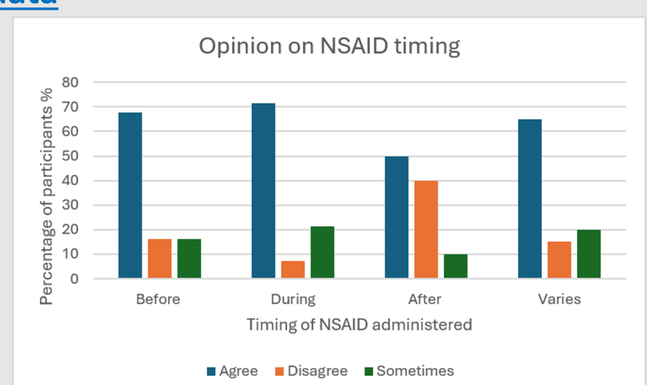
3 patients who received NSAIDs prior to surgery required rescue analgesia. Patients who received NSAIDs after surgery required none.

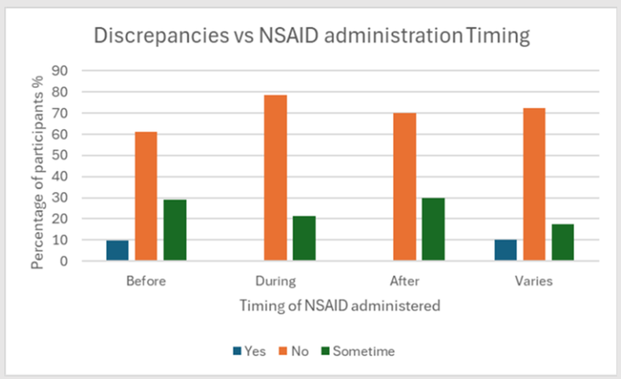




Questionnaire data

Statistical significance (p=<0.001) between NSAID administered and VP's opinion if it works for their patients.
Most agreed with their practice analgesic protocol supporting Kerr *et al,* (2025), further confirming controversy over administration timings.
Disagreement amongst timings is more significant amongst professionals with administration after surgery, supporting Carroll *et al*, (2005).





A statistical significance was found (P=<0.001) when comparing the timing NSAIDs had been administered and discrepancies found.
Regular discrepancies were noticed when NSAIDs were administered prior to surgery or at varied times.
When asked about discrepancies associated with NSAID administration timing, some stating:

'Never had increased pain scores for the patients who do not receive NSAIDS until later in the procedure due to hypotension. I utilise methadone, alpha 2 agonists, ketamine and local blocks so there is sufficient pain relief through other modalities' Member of the Royal College of Veterinary Surgeons

'… if the analgesia is administered at pre-medication time, at the end of the procedure some patients might display signs of discomfort. Overall, when we have decided to give the analgesia at the end of the procedure, patients have been more comfortable and calmer during the recovery time…' Member of the Royal College of Veterinary Surgeons

'…The patient always scored higher on pain score, and more opioids had to be given. They were also more reactive under GA and needed higher iso.' Registered Veterinary Nurse

Over **80%** of participants wanted to know the results to possibly update their practice analgesic protocols

Discussion/Conclusion

It is undetermined on whether NSAID administration affects post-operative pain scores based on administration timing. More trends were found favouring post-operative administration, further supporting (Aguiar *et al.* 2014; Warne *et al*., 2018), however further data is needed to confirm/deny this

Retrospective findings:

- Three cats receiving pre-operative NSAIDs required rescue analgesia
- BP was not affected depending on NSAID administration times
- Median pain scores reduced when NSAIDs were administered after surgery
- Inconsistencies seen with incomplete records
- Pain scores and NSAID administration had no statistical significance

Survey findings

- Over 80% wanted to know the results to implement change
- Opinions and administration protocols are very varied across the UK
- Regular discrepancies seen with before administration or at varied times
- Disagreements more commonly with administration after surgery
- RVNs only ones to see regular discrepancies
- Many practices will not administer until a baseline BP has been taken- showing implementation increasing. Only 7% do not use it at all
- Over 50% participants state VPS are used regardless of procedure

Further research should include:

- NSAIDs administered during surgery to determine effects on patients
- Longitudinal studies with a larger and more even sample size
- Assessment of Onsior and meloxicam
- More than one post operative pain score
- Limit staff completing pain scores and VS performing surgeries
- Ensure records are fully complete

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