

The following pain management protocol is tiered to ensure a global relevance, recognizing that not all analgesic modalities are available to veterinary practitioners and vary from region to region around the world. Its implementation will be guided by the various analgesic modalities available along with the needs of the individual patient requiring treatment. This protocol is reproduced from the WSAVA Global Pain Treatise, a succinct yet comprehensive review of pain assessment, various pain modalities, and the treatment of various clinically painful scenarios in both dogs and cats. The WSAVA GPC Pain Treatise published in the *Journal of Small Animal Practice* and is available for open access at the GPC pages of www.wsava.org.

Castration and ovariohysterectomy/ovariectomy: dogs

Castration and ovariohysterectomy/ovariectomy performed in dogs is associated with pain of varying severity and is influenced by the degree of surgical trauma. General anaesthesia and preemptive/multimodal analgesia techniques are strongly recommended. There are many options available for perioperative management; below are examples of some. Postoperative treatment with analgesics may be required for up to 5 days after surgery. The same NSAID should be used pre- and postoperatively.

Protocol for castration

Preoperative:

- *Analgesia:* Opioid
- *Sedation:* Acepromazine and/or benzodiazepines (midazolam or diazepam 0.25–0.4 mg/kg IM; diazepam is best given IV – painful IM); alpha₂ adrenoceptor agonist
- *Induction of anaesthesia:*
 - Intravenous: Propofol to effect (3–5 mg/kg), ketamine (3–5 mg/kg) + diazepam or midazolam (0.25 mg/kg), or alfaxalone (1–2 mg/kg)
 - Intramuscular: Alpha₂ adrenoceptor antagonist + ketamine (3–5 mg/kg) or tiletamine/zolazepam (3–4 mg/kg).

Maintenance of anaesthesia: Inhalation anaesthesia or propofol, alfaxalone or ketamine (1/3 or 1/2 of initial dose) to effect; venous access is recommended. Equipment should also be available for endotracheal intubation.

Local anaesthetic techniques: Intra-testicular block, incisional block.

Postoperative analgesia: NSAID.

Protocol without controlled drugs:

Preoperative: Combination of a NSAID and an alpha₂ adrenoceptor agonist ± tramadol (2–5 mg/kg IM)

Otherwise as above.

Protocol with limited availability of analgesic drugs:

Preoperative: Alpha₂ adrenoceptor agonist ± NSAID.

Induction and maintenance of anaesthesia: Any available injectable or inhalant agent; venous access is recommended.

Local anaesthetic techniques: Intra-testicular block, incisional block.

Postoperative analgesia: NSAID.

Protocol for ovariohysterectomy/ovariectomy

Preoperative:

- *Analgesia:* Opioid
- *Sedation:* Acepromazine and/or benzodiazepines or alpha₂ adrenoceptor agonist
- *Induction of anaesthesia:*
 - *Intravenous:* Propofol to effect (3–5 mg/kg), ketamine (3–5 mg/kg) + diazepam/midazolam (0.25 mg/kg) or alfaxalone (1–2 mg/kg).
 - *Intramuscular:* Alpha₂ adrenoceptor agonist + ketamine (5.0–7.5 mg/kg) or tiletamine/zolazepam (3–4 mg/kg).

Maintenance of anaesthesia: Inhalation anaesthesia, or propofol, alfaxalone, ketamine (1/3 or 1/2 of initial dose) to effect; venous access is recommended.

Local anaesthetic techniques: Incisional and intraperitoneal/ovarium ligament block.

Postoperative analgesia: NSAID.

Protocol without controlled drugs:

Preoperative: Combination of a NSAID and an alpha₂ adrenoceptor agonist ± tramadol (2–5 mg/kg IM).

Otherwise as above.

Protocol with limited availability of analgesic drugs:

Preoperative: Alpha₂ adrenoceptor agonist ± NSAID.

Induction and maintenance of anaesthesia: Any available induction agent; venous access is recommended.

Local anaesthetic techniques: epidural or incisional and intraperitoneal/ovarium ligament block.

Postoperative analgesia: NSAID.

Analgesia may be supplemented after most surgical techniques by application of non-drug modalities such as cold therapy, laser therapy, acupuncture, mild exercise, nursing care and massage.

For additional pharmaceutical dosing information, see the dosing tables in the WSAVA GPC Treatise at www.wsava.org