



AOC Perioperative Analgesia Protocol for orthopaedic procedures in DOGS

AOC applies an evidence-based multimodal analgesia protocol to provide comfortable home-care after orthopaedic surgery.

We welcome other veterinary teams applying this protocol in their own clinics. Before use, cross-reference the medication doses.

Thanks to Dr Rebecca Weight for creating this protocol.

Preoperative

- Before surgery
 - Minimise central and peripheral sensitisation with a combination of NSAIDs +/- Paracetamol, Gabapentin, and Amantadine (doses below).
- Morning of surgery at 6am
 - Gabapentin 20-30 mg/kg PO ¹
 - Amantadine 3-5 mg/kg PO ^{2 3}
 - Omeprazole 0.75-1.25mg/kg PO ⁴

Intraoperative

- Premedication
 - Methadone 0.3mg/kg ⁵ IM
 - Clip and bandage EMLA cream over IV catheter site
 - Medetomidine 5-10Ug/kg IV following catheter placement ⁶ (dose based on patient temperament/age/ASA status)
- Locoregional analgesia
 - Placed early in prep period using a nerve stimulator to ensure adequate onset time before surgery
 - Type of block for each surgical location
 - Stifle and distal hindlimb - femoral and sciatic nerve blocks
 - Elbow and distal forelimb - RUMM block (radial, ulnar, median, musculocutaneous)
 - Forelimb proximal to the elbow - brachial plexus block
 - Pelvis, hip and femur - epidural
 - Doses
 - Peripheral nerve block
 - Dose “per nerve” for femoral and sciatic, dose “medial” and lateral” for RUMM



- Ropivacaine 0.75mg/kg ⁷
- Dexmedetomidine 1Ug/kg ^{8 9 10}
- Buprenorphine 4Ug/kg ^{11 12 13} (or Morphine 0.1mg/kg if Buprenorphine is unavailable)
- Epidural
 - For hindlimb proximal to stifle/pelvis ¹⁴
 - Ropivacaine 0.5mg/kg
 - Morphine 0.1mg/kg
- Constant rate infusion
 - Ketamine 0.5mg/kg (as part of co-induction) then CRI at initial rate 0.2mg/kg/hour titrating up to 0.6mg/kg/hour if required. ¹⁵
- Incisional block
 - Intra-articular/local site/ring block use of Ropivacaine, up to maximum total patient dose of 3mg/kg (including the dose used in nerve blocks/epidural). ¹⁶
- Additions
 - Only if needed (if nerve blocks/epidural are not effective intraoperatively):
 - Add Fentanyl loaded at 2Ug/kg IV and added to CRI at 4-10Ug/kg/hour titrated. ¹⁷
 - Add Paracetamol 15mg/kg IV intraoperatively. Otherwise Paracetamol is given at 2pm to encourage owner compliance with 8 hourly postoperative dosing (2pm, 10pm, 6am) ^{18 19}

Immediately postoperative

- Protocol
 - If nerve blocks/epidural were effective intraoperatively then immediately stop the CRI at the end of anaesthesia to minimise dysphoria.
 - Pain scoring begins as soon as extubated using GCPS-SF^{20 21}
 - Paracetamol 15mg/kg IV ²² (if not already given) at 2pm
 - Gabapentin 20-30mg/kg PO ²³ at 2pm
 - NSAID consistent with preoperative dosing regime, avoid an overlong gap between dosing in the first 24h. ²⁴

Discharge

- Owner support
 - Each owner receives an evening phone call on the evening of surgery which includes a GCPS (pain score).
 - Phone numbers of local after-hours centres are provided
- Dispensed
 - NSAID consistent with the preoperative dosing regime. 21 days minimum duration. If carprofen is used this is dosed at 2mg/kg BID ²⁵
 - Paracetamol 20-30mg/kg q8h for 5 days only at this dose ^{26 27}
 - Gabapentin 20-30mg/kg q8h^{28 29} for at least 5 days.



- Amantadine 3-5mg/kg PO sid ^{30 31} starting the evening of surgery (12 hour interval) for at least 5 days. BID dosing can be utilised when needed.
- Rescue Analgesia
 - One dose dispensed for each dog. Buprenorphine 50Ug/kg oral transmucosal, formulated into CMC gel. ^{3233 34} To be given PRN based on owner assessment, with the assistance of VN-assessed GCPS in a late evening phone call.
- Rescue Anxiolysis
 - Two doses dispensed for each dog. Trazodone 3-7mg/kg PO, with dose determined on an individual patient basis considering temperament and ASA level. To be administered PRN based on owner home assessment, with guidance through discharge instructions and assistance of VN evening phone call.

Modifications if the nerve blocks/epidural were not effective intraoperatively

- Adjustments to the above protocol
 - Start NSAID immediately rather than delay until the evening.
 - Consider fentanyl or methadone rescue analgesia.
 - Consider IM buprenorphine and followup OTM buprenorphine in CMC gel at 50Ug/kg q6-8h at home if IM dosing is efficacious in hospital.
 - If a pain score of GCPS-SF 5 or lower cannot be achieved without use of inpatient medications, recommend transfer to an after-hours clinic for continued inpatient care.

A note on orthopaedic procedures in CATS

- Adjustments to the above protocol
 - Omit all paracetamol dosing
 - Reduce total dose of Ropivacaine to 1.5-2mg/kg maximum total dose ³⁵
 - Add Buprenorphine 20-30Ug/kg OTM q6-8h to postoperative analgesia for 3-5d, beginning as an inpatient. Buprenorphine does not require CMC gel formulation in cats ^{36 37}
 - Meloxicam 0.05mg/kg PO for 14-21d post orthopaedic procedures. If no Meloxicam given prior to surgery, consider a starting dose of 0.1mg/kg SQ in appropriate cases, followed by oral dosing in 24h.
 - Reduce Gabapentin dose to maximum 20mg/kg q8h ^{38 39}



References

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- ¹⁷ [State of the art analgesia- recent developments in pharmacological approaches to acute pain management in dogs and cats. Part 1](#)
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- ¹⁹ [Clinical evaluation of postoperative analgesia, cardiorespiratory parameters and changes in liver and renal function tests of paracetamol compared to meloxicam and carprofen in dogs undergoing ovariohysterectomy](#)
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