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**Popular Article**

* 1. **Regional Anesthesia for The Oral Surgery in Dog and Cat**

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***Abstract***

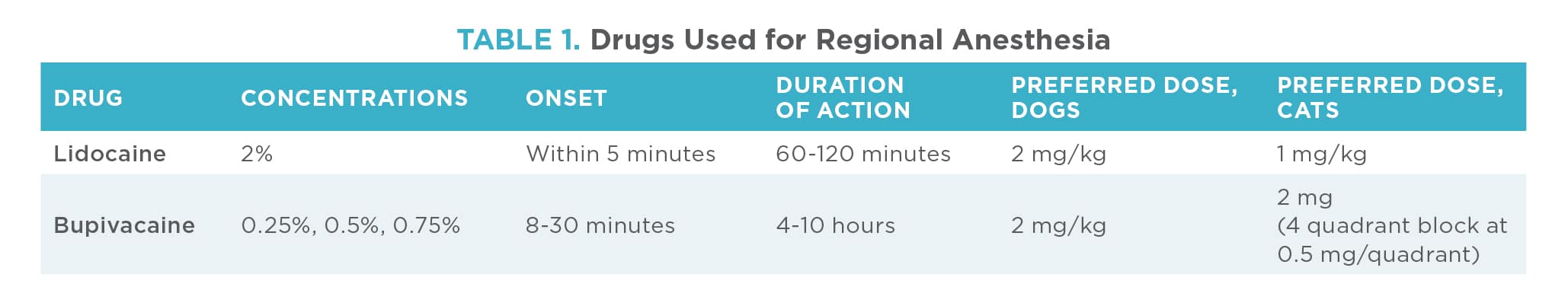
Effective pain management is essential in veterinary care, and employing a multimodal analgesia approach that combines systemic and local/regional drugs is typically the most efficient method. Local anesthetics used in regional or local blockade play a unique role in completely blocking pain transmission in conscious patients or nociceptive signals in anesthetized patients, resulting in profound analgesia. Compared to systemic bolus administration, local and regional drug administration generally reduces the risk of dose-related adverse effects. Due to their potential to offer significant pain relief and a high safety margin when used appropriately, local anesthetics are recommended as part of the analgesic protocol for most surgical procedures or traumatic injuries in veterinary patients. This article emphasizes the significance of incorporating regional and local anesthesia into multimodal analgesia in dogs and cats, along with a range of procedures used on these animals.

**Keywords:** analgesia, regional anesthetic, dog, cat

**Introduction**

Administering effective analgesia is a vital aspect of providing appropriate care for patients in pain, especially those with acute surgical or traumatic pain (Lascelles and Kirkby-Shaw, 2016). Various drug classes, including opioids, anti-inflammatory drugs, and local anesthetic drugs, can be employed to address acute pain. Local anesthetic drugs stand out due to their unique analgesic effects, which are achieved through local or regional administration rather than systemic methods such as intravenous (IV), intramuscular (IM), subcutaneous (SQ), or oral (PO) routes. This localized approach reduces the likelihood of adverse effects that may arise from systemic administration. For the dentistry and oral surgery patient, regional anesthesia can eliminate transduction and transmission, thereby decreasing pain perception and central sensitization (Kumar et al., 2014).  Use of regional anesthesia reduced the minimum alveolar concentration of isoflurane needed without causing any adverse effects on the hemodynamic state of the patients (Snyder CJ and Snyder LB. 2013). Keeping patients in a lighter plane of anesthesia increases client satisfaction because the patients recover quickly from the effects of anesthesia and are therefore less likely to be discharged with a drug “hangover.” Regional anesthesia helps create a painless transition from general anesthesia to consciousness and continues to work after the procedure to reduce patient discomfort and allow oral pain medication to begin working. Due to their ability to profoundly decrease both intraoperative nociception and postoperative pain, local anesthetic drugs are recommended for use in the majority of surgical procedures and traumatic injuries, as outlined in recent veterinary pain management guidelines (Epstein et al., 2015; Mathews et al., 2014). This article emphasizes the significance of incorporating regional and local anesthesia into multimodal analgesia in dogs and cats, along with a range of procedures used on these animals.

**Commonly used drugs**

[](https://todaysveterinarypractice.com/wp-content/uploads/sites/4/2019/01/T1901F01Table01.jpg)

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| Table 1: Nerve blocks of the oral cavity and corresponding anesthetized nerves and anatomic structures |

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| Technique | Anesthetized nerves | Anesthetized structures |
| Maxillary nerve block (1) high tuberosity approach | Maxillary nerve, infraorbital nerve, caudal, middle and superior alveolar dental nerves, incisivomaxillary nerve and rostral superior alveolar dental nerves. | Possibly pterygopalatine nerve and caudal nasal nerve Ipsilateral maxilla (i.e. teeth, bone and soft tissues), skin of the nose, cheek, upper lip.Possibly ipsilateral hard and soft palate (pterygopalatine nerve), and nasal mucosa (caudal nasal nerve) |
| (2) transcutaneous approach |
| (3) [infraorbital Approach (transcutaneous or transmucosal)] |
| Caudal palatine nerve block  (1) (high tuberosity approach) | Pterygopalatine nerve, minor and major  palatine nerves, accessory palatine nerve, caudal nasal. Possibly maxillary nerve, infraorbital nerve, caudal, middle and rostral superior alveolar dental nerves, incisivomaxillary nerve | Bone and soft tissue of ipsilateral hard and soft palate. Possibly ipsilateral maxilla (i.e. teeth, bone and soft tissues), skin of the nose, cheek, upper lip (maxillary nerve, infraorbital nerve, caudal, middle and rostral superior alveolar dental nerves, incisivomaxillary nerve). |
| (2) (transcutaneous approach) |
| (3) [infraorbital approach (transcutaneous or transmucosal)] |
| Rostral (major) palatine nerve block | Major palatine nerve | Bone and soft tissue of ipsilateral hard palate |
| Caudal infraorbital nerve block (1) (intraoral approach) | Infraorbital nerve, middle and rostral superior alveolar dental nerves, incisivomaxillary nerve, external nasal, internal nasal and superior labial nerves | Ipsilateral premolar, canine and incisor teeth and associated soft tissues, skin of the muzzle and the upper lip |
| (2) (transcutaneous approach) |
| Rostral infraorbital nerve block (1) (intraoral approach) | Infraorbital nerve, incisivomaxillary  nerve, rostral superior alveolar dental nerves, external nasal, internal nasal and superior labial nerves | Ipsilateral third to first premolar teeth,  canine and incisor teeth and associated  soft tissues, skin of the muzzle and the  upper lip |
| (2) (transcutaneous approach) |
| Caudal inferior alveolar nerve block (1) (intraoral approach) | Inferior alveolar nerve, caudal, middle and rostral mental nerve, incisive nerve  Possibly lingual nerve and mylohyoid  nerve | Ipsilateral mandibular molar,premolar, canine and incisor teeth and associatedlabial tissues, rostral lower lip, rostral intermandibular tissues. Possibly tissues lingual to the mandible, floor of the mouth and rostral two-thirds of the tongue (lingual nerve), the skin of the lower lip and cheek, and the caudalintermandibular region (mylohyoid nerve) |
| (2) (transcutaneous  approach) |
| Mental nerve block (intraoral and transcutaneous approach) | In the subzygomatic approach, if a needle is introduced too deeply, the tip may contact the lateral side (plate) of the pterygoid bone. Should this occur, the needle must be withdrawn for a short distance before injecting the solution. |  |
| Rostral inferior alveolar nerve block (intraoral and  transcutaneous approach) | Middle mental nerve Ipsilateral rostral lower lip,rostralintermandibular tissues Rostral portion of the inferior alveolar nerve, middle androstral mentalnerves. Possibly caudal mental nerve | Ipsilateral mandibular first and second premolar, canine and incisor teeth, and labial soft tissues, rostral lower lip, rostral intermandibular tissues |
| Splash block | Terminal nerve endings at the injection site | Soft and hard tissues at the surgical site (i.e. alveolus) |
| Infiltration | Terminal nerve endings at the injection site and at the apex of the tooth | Bone, soft tissues, apical and pulpal tissues of a single tooth |
| Intraosseous injection | Terminal nerve endings at the injection site and at the apex of the tooth | Bone, soft tissues, apical and pulpal tissues of a limited area or a single tooth |
| Intraseptal injection | Terminal nerve endings at the injection site and at the apex of the tooth | Bone, soft tissues, apical and pulpal tissues of a limited area or a single tooth |
| Periodontal ligament injection | Terminal nerve endings at the injection site and at the apex of the tooth | Bone, soft tissues, apical and pulpal tissues of a single tooth |
| Intrapulpal injection | Terminal nerve endings at the injection site | Pulp tissues of a single tooth |

*Source:Luis Campoy and Matt R. Read. Small Animal Regional Anesthesia and Analgesia. 1st edition, USA. Wiley-Blackwell, 20 November 2012.*

**Conclusion**

Regional anesthesia is an important component of the development of pain management strategies in the field of small animal dentistry and oral surgery. It ensures the safety and comfort of patients receiving dental procedures by reducing systemic side effects and providing precise pain relief. As the field develops, more research and technique advancements are anticipated to lead to ongoing improvements in regional anesthesia practices for small animal oral health.

**References**

Epstein ME (2015). 2015–2015 AAHA/AAFP pain management guidelines for dogs and cats. Journal of the American Animal Hospital Association, 51:67–84.

Kumar S, Gupta R, Kaleem AM, Pandey AK (2014). Mitigation of pain and anesthetic drugs. OA Anesthetics, 2(1):2.

Lascelles BDX, Kirkby Shaw K. (2016). An extended-release local anesthetic: potential for future use in veterinary surgical patients? Vet Med Sci, 2(04):229-238.

Mathews K, Kronen PW, Lascelles D, Nolan A, Robertson, S, Steagall PV, Wright B, Yamashita K (2014). Guidelines for recognition, assessment and treatment of pain: WSAVA Global Pain Council. Journal of Small Animal Practice, 55(06):10-68.

Snyder CJ, Snyder LB (2013). Effect of mepivacaine in an infraorbital nerve block on minimum alveolar concentration of isoflurane in clinically normal anesthetized dogs undergoing a modified form of dental dolorimetry, *JAVMA* 242(02):199-204.

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