

Update on Analgesic Medication for Adult and Pediatric Dental Patients



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KEYWORDS

- Analgesic medications • Opioid analgesics • Nonsteroidal antiinflammatory drugs
- Acute oral pain • Pain control for dental patients • Pediatric dental pain

KEY POINTS

- This is an update on analgesia for acute oral pain.
- Analgesic medications in the dental setting are reviewed.
- The article includes updates for nonsteroidal anti-inflammatory drugs (NSAIDs) for dental pain.
- The article includes updates for opioid analgesics for dental pain.
- A review of analgesia for pediatric dental pain is presented.

One of the most important criteria that patients appreciate and rank a dental care provider for, far beyond knowledge and academic background, skills, and professional accolades, is effective pain management. Pain and analgesia are subjects often inherent (the former) and imperative (the latter) to oral health care. Today, despite the great scientific advances and breakthroughs in dentistry (and in its specialties) there are no real “game changers” in the world of analgesia; this fact calls for meticulous knowledge, by the clinician, of the current armamentarium and techniques to provide optimal pain control. This article navigates through this vast subject, limiting and filtering the information as to what is pertinent and useful in the dental care setting and the dental patient, adult and pediatric.

Three types of pain can be distinguished:

- Acute physiologic nociceptive pain that is generated by acute noxious stimuli and forms a protection from tissue damage (needle injection, incision);
- Pathophysiologic nociceptive pain that accompanies tissue inflammation or injury in absence of intentional stimuli (burn, postincision, local inflammation); and

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- Neuropathic pain that is elicited from either peripheral or central disease, or injury, of neurons. It is not related to noxious stimuli and it is perceived as unnatural (diabetic neuropathy, trigeminal neuralgia).¹

This classification may be oversimplified because new types of pain have been described and in many cases different types coexist. A more fundamental distinction, one that is recognized even by the general public and our patients, is the one between acute and chronic pain. Chronic pain has been described as one that lasts longer than 6 months.² Recently, state boards have adapted the following time frames regarding pain, to form guidelines for controlled substances:

- Acute pain: up to 4 weeks from onset;
- Postoperative pain: up to 4 weeks from date of surgery;
- Subacute pain: 4 to 12 weeks from onset; and
- Chronic pain: greater than 12 weeks from onset.

Chronic pain is more complex and the relation between nociception and pain is not linear. It may be affected by neuroendocrine dysregulation and impaired physical or mental status.² Chronic pain frequently has significant effects on psychological health. Frequently, there is a direct association of chronic pain with depression and anxiety that in turn can profoundly affect pain perception.³

It is beyond the purpose of this article to analyze the complex mechanisms of pain and describe the nociceptive system, yet we must recognize that a thorough understanding of those parameters will form a better and more comprehensive appreciation and selection of analgesic medications in the clinical setting.

We can consider 3 main categories of analgesics medications in the clinical dental setting:

1. Opioids,
2. NSAIDs, and
3. Nonopioid, non-NSAID drugs.

Of course there are other categories used in the broader sense of head and neck analgesia like:

- Triptans (serotonin receptor agonists) that are mainly indicated for acute migraines and cluster headaches;
- Anticonvulsants and antidepressants that target mainly neuropathic pain that follows nerve injury; and
- Local anesthetics used, not for common local anesthesia, but to treat symptoms of chronic pain. Intravenously administered local anesthetics have shown remarkable results for neuropathic pain. This indication is not relevant to the usual dental clinical setting.⁴

Different classes of analgesic medications modulate different mechanisms and vary in their effectiveness in managing different pain states in adults (**Table 1**). Significant pharmacodynamic and pharmacokinetic differences also exist between the adult and the pediatric populations that need to be recognized by clinicians.⁵ Here's an outline of few differences, perhaps oversimplified:

- Immature blood-brain barrier in neonates may facilitate drug delivery to the brain.
- Lower plasma levels of albumin in neonates will result in less protein binding of drugs thus increasing action potential or even toxicity.

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