



Postoperative pain: what are the ways we can find to minimize it

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Understanding pain in attempt to try to control it has always been among the main goals of science. According to the International Association for the Study of Pain, pain can be defined as “an unpleasant sensory and affected experience associated with or similar to that associated with actual or potential tissue damage”. Furthermore, pain is a personal experience that can be influenced differently by social, biological and psychological factors, showing that individuals learn its meaning through life experiences (1).

The comprehension of pain mechanisms through its physiology and the discovery of the main ways to its prevention and mitigation are essential points and the focus of clinical research in this area. The pain caused by tissue damage is derived from the inflammatory process. Its purpose, through increased sensitivity, is to minimize the risk of further damage. In this manner, it helps to promote wound recovery. However, even with the need to adapt to this pain, it requires to be reduced in order to minimize the adverse effects on the individual (2).

Despite being a procedure that tends to generate low levels of pain, dental implant insertion surgeries still cause pain as one of its main complications. Seeking to find the most appropriate therapy to decrease postoperative pain after dental implant surgeries, a systematic review of the literature assessing the clinical efficacy of various analgesic drugs used in clinical trials around the world (3). The authors presented a statistically significant level of pain on the first postoperative day, with a gradual decline from the fourth postoperative day. Furthermore, no significant differences were found in the level of postoperative pain between the different groups of analgesics (NSAIDs, glucocorticoids and codeine adjuvants). Through these

findings, this study drives its focus to other directions. The dosage regimen becomes an important point in the attempt to minimize post-surgical algesia. When conducting a meta-analysis between two studies whose main difference was the dosage of NSAIDs (preoperative *vs.* postoperative), this study corroborated the theory of preemptive analgesia, first described by Crile in 1913 (4).

Preemptive analgesia is characterized by a treatment that starts before the surgical procedure, preventing the establishment of central sensitization caused by incisional and inflammatory lesions, embracing the period of surgery and the initial postoperative period (5). This mechanism may be behind some of the answers to these questions. Perhaps, the first question should be “*What is the best dosage regimen for analgesics and anti-inflammatory drugs that should be used to mitigate post-surgery pain?*” After getting this answer, we could think about finding the best analgesic drug available for use in implant dentistry.

In a meta-analysis (6) evaluating studies that addressed the use of preemptive medication, it was demonstrated that there is a risk of bias classified as “some concerns” according to the Cochrane Bias Risk Tool for Randomized Trials (RoB 2.0) (7). According to the Classification of Recommendations, Assessment, Development and Assessment Tool (GRADE) (8), the certainty of the evidence was reduced due to issues related to risk of bias and imprecision for pain 1–2 hours after surgery. By 6–8 hours after surgery, certainty of evidence was reduced due to serious issues of risk of bias, inconsistency and imprecision.

These findings, added to those by Kouly *et al.* (3), support the need to future clinical trials with more rigid designs, seeking to reduce potential bias. It is also important to focus

on to the type and quantity of anesthetic drugs used. Two studies showed a better anesthetic effect of 4% articaine with 1:100,000 epinephrine compared to 2% lidocaine with 1:100,000 epinephrine (9,10). The anesthetic technique used can also play an important role in the perception of postoperative pain, masking the effects of preemptive analgesia. As an example, we can mention the alveolar nerve block, which has greater postoperative residual analgesia when compared to infiltrative techniques (11). Studies evaluating preemptive analgesia should consider these data in its methodological planning and in the interpretation and discussion of the results. Ideally, the test and control groups should be comparable in terms of surgical sites and, consequently, in terms of the anesthetic techniques used.

In this sense, according to Kouly *et al.* (3), the main limitation of the available evidence is the small number of clinical trials evaluating pain management in dental implant surgery, the heterogeneity of the implemented interventions, the way the results were evaluated and the different follow-up periods.

Thus, there is no sufficient evidence to recommend or discourage the use of an analgesic regimen for pain control after dental implant surgery in clinical practice. Ultimately, analgesic prescription should be guided by the patient's medical history in order to increase pain management success in a short period of time and decrease potential adverse effects.

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