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Short communication

Effects of articaine combined with dexamethasone on postoperative recovery following surgical extraction of impacted mandibular third molars: a split-mouth clinical study

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Introduction

Surgical extraction of impacted mandibular third molars is frequently associated with postoperative pain, edema, trismus, and increased analgesic consumption, which may impair patient recovery and quality of life (Herrera-Briones et al., 2013; Osunde et al., 2011). Dexamethasone has been widely investigated as an adjunctive therapy due to its anti-inflammatory properties and its potential to reduce postoperative morbidity following third molar surgery (Bamgbose et al., 2005; Grossi et al., 2007; Moraschini et al., 2016). The aim of this study was to evaluate the effectiveness of preoperative dexamethasone administered in combination with articaine on anesthetic efficacy, postoperative recovery, analgesic consumption, and patient satisfaction following surgical extraction of impacted mandibular third molars.

Materials and methods

A prospective split-mouth clinical study included 40 patients (24 females and 16 males; mean age 23.7 ± 5.8 years) requiring surgical extraction of impacted mandibular third molars. All procedures were performed under Gow-Gates mandibular nerve block anesthesia. The control group received articaine with epinephrine, while the experimental group received articaine with epinephrine combined with 4 mg dexamethasone administered preoperatively.

The evaluated outcomes included onset and duration of anesthesia, duration of postoperative analgesia, pain, edema, trismus, analgesic consumption, patient satisfaction assessed using the AAOMS questionnaire, and vital signs. Assessments were performed on postoperative days 1 and 7. Statistical analysis was conducted using SPSS 25.0, with significance set at $p<0.05$.

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Results and discussion

Baseline demographic and clinical characteristics did not differ significantly between groups. The addition of dexamethasone resulted in a significantly faster onset and longer duration of anesthesia ($p<0.001$), as well as prolonged postoperative analgesia ($p<0.001$).

Postoperative analgesic consumption during the first 24 h was significantly lower in the dexamethasone group ($p=0.0135$), and 15% of patients did not require any analgesics, whereas all control patients required postoperative pain medication. Patient satisfaction scores were significantly higher in the experimental group ($p=0.00123$).

Trismus was significantly reduced on postoperative day 1 in patients receiving dexamethasone (41.0 ± 5.2 mm vs. 36.7 ± 7.0 mm; $p=0.032$), although no significant difference remained on day 7. Both groups showed significant improvement in mouth opening over time ($p<0.0001$). These findings are consistent with previous reports demonstrating beneficial effects of dexamethasone on postoperative trismus (Al-Dajani, 2017; Bamgbose et al., 2005; Grossi et al., 2007; Moraschini et al., 2016).

Although lower edema values were observed in the dexamethasone group, no statistically significant differences were detected between groups on either postoperative day 1 or day 7 ($p>0.05$). This finding differs from several previous studies reporting significant reductions in postoperative swelling following corticosteroid administration (Grossi et al., 2007; Markiewicz et al., 2008; Moraschini et al., 2016). No significant differences were observed in blood pressure, heart rate, oxygen saturation, or antibiotic use, supporting the safety of dexamethasone administration.

Conclusion

Preoperative administration of dexamethasone in combination with articaine significantly improved anesthetic and postoperative outcomes following surgical extraction of impacted mandibular third molars. The treatment prolonged anesthesia and postoperative analgesia, reduced analgesic consumption, decreased postoperative trismus, and increased patient satisfaction without affecting vital signs. Although a trend toward reduced postoperative edema was observed, no statistically significant effect on swelling was demonstrated. These findings support the use of dexamethasone as a safe and effective adjunct in third molar surgery.

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