Effects of 4% Articaine and 2% Lidocaine Local Anaesthetics on the Vital Signs' Parameters and Dental Anxiety Level during Dental Extraction: A Comparative Study

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ABSTRACT

This study aims to compare the effects of Lidocaine and Articaine on heart rate, blood pressure, respiratory rate, body temperature, and dental anxiety, as well as the impact of different anaesthesia techniques (infiltration vs. nerve block) in patients undergoing routine dental extraction. This randomized, single-blind study included 80 participants, with 40 receiving 4% Articaine and 40 receiving 2% Lidocaine. Patients were blinded to the anesthetic used. Vital signs (heart rate, blood pressure, respiratory rate, and temperature) were recorded before and after anaesthesia administration. Dental anxiety was measured using the Modified Dental Anxiety Scale (MDAS). Data were analyzed to assess the effects of the anaesthetics and techniques on these variables. Articaine was associated with a statistically significant increase in heart rate (mean change = +0.23 bpm, p = 0.012), whereas Lidocaine led to a decrease (mean change = –1.38 bpm). No significant differences were observed in systolic blood pressure (p = 0.138), respiratory rate (p = 0.627), or body temperature (p = 0.116). Anxiety scores (MDAS) showed a slight, non-significant increase in the Lidocaine group (mean change = +0.58) and a smaller increase in the Articaine group (mean change = +0.30, p = 0.438). No statistically significant differences were found between infiltration and nerve block techniques for any outcome. Vital signs (body temperature, blood pressure, respiratory rate) and oral anxiety were not significantly affected by either lidocaine or Articaine procedures. However, Articaine may be associated with a statistically significant increase in heart rate compared to Lidocaine, which could be clinically relevant for patients with cardiovascular concerns. Practitioners should consider this when selecting anaesthetics, especially in patients with pre-existing heart conditions.

Keywords: Articaine, Lidocaine, Local anaesthesia, Heart rate, Blood pressure, Dental anxiety

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