

**Republic of Iraq  
Ministry of Higher Education  
and Scientific Research  
University of Baghdad  
College of Dentistry**



**The efficacy of 4% articaine infiltration anesthesia  
in the extraction of mandibular molars**

A Thesis

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## **Abstract**

**Objectives:** The aim of this study was to evaluate the effectiveness of using 4% articaine infiltration for extraction of mandibular molars by comparing it to the use of 2% lidocaine inferior alveolar nerve block in terms of success, the volume of local anesthetic agents and the pain experienced during the procedure.

**Materials and Methods:** A prospective randomized controlled study included 210 patients indicated for extraction of unrestorable mandibular molars, they were randomly assigned into 2 groups; a control group in which the extraction was carried out under inferior alveolar nerve block with 1.8 mL 2% lidocaine with 1:80,000 epinephrine and a study group in which the extraction of the mandibular molars proceeded under infiltration with 1.8 mL articaine with 1:100,000 epinephrine. The variables investigated included; the success and failure of anesthetic technique, the volume of local anesthetic required to complete the extraction 1.8 or 3.6 mL and the degree of pain experienced during extraction assessed by pain numerical rating scale.

**Statistical analysis:** Descriptive statistical analysis included calculation of percentages and mean  $\pm$  standard deviation (SD) and inferential analysis included using unpaired t-test, Chi square, and Fisher's exact test. Probability values  $<0.05$  were considered statistically significant.

**Results:** Both groups showed a statistically non-significant difference in providing local anesthesia although the control group had a higher success rate. With respect to the volume of anesthesia required to complete the extraction the study group required 3.6 mL anesthesia more often than the control group with a statistically significant difference, also the study group demonstrated statistically higher scores of pain than the control group.

**Conclusions:** 4% Articaine infiltration demonstrated a comparable success to that of 2% lidocaine inferior alveolar nerve block in the extraction of

mandibular molars, and it was less profound as patients needed additional anesthesia more often.