

## ABSTRACT

**AIM:** The purpose of this prospective, randomized, triple-blind study was to compare the anaesthetic efficacy of 2 % lidocaine + 1:80,000 epinephrine and 4 % articaine + 1:1,00,000 epinephrine buffered with 0.5 mol/l mannitol or 8.4 % sodium bicarbonate on the success of inferior alveolar nerve block for teeth with symptomatic irreversible pulpitis.

**MATERIALS AND METHODS:** 180 adult patients diagnosed with symptomatic irreversible pulpitis of a mandibular posterior tooth were randomly divided into 6 groups of 30 participants in each group. The patients received 1 cartridges of either 2 % lidocaine + 1:80,000 epinephrine or 4 % articaine + 1:1,00,000 epinephrine buffered buffered with 0.5 mol/l mannitol or 8.4 % sodium bicarbonate using conventional IAN block injections. Endodontic access preparation was initiated 15 minutes after injection. Pain on injection, pain on access preparation & pain on instrumentation was measured using Heft-Parker visual analog scale. Data were analyzed by the descriptive statistics, one way ANOVA & Tukeys post hoc tests.

**RESULTS:** There was no significant difference among any groups for pain on injection. Buffered local anaesthetics showed higher success rates compared to nonbuffered groups and articaine showed better efficacy than lignocaine in both buffered and non buffered groups for pain on access opening & pain on instrumentation.

**CONCLUSION :** Buffered local anaesthetic solutions found to be promising in reducing pain. 0.5mol/L Mannitol and 8.4 % sodium bicarbonate proved that adding these buffering agents will improve the anaesthetic efficacy of 4 % articaine + 1:1,00,000 epinephrine than 2 % lignocaine + 1:80,000 epinephrine. 4 % articaine + 1:1,00,000 epinephrine performed better than 2 % lignocaine + 1:80,000 epinephrine in reducing pain.

**KEY WORDS:** Lignocaine, Articaine, Buffered Local Anaesthetic solution, 8.4 % Sodium Bicarbonate, 0.5 mol/L Mannitol.