

Study title: **Should maxillary buccal infiltration anesthesia be given in a closed mouth technique? – a clinical study**

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Should maxillary buccal infiltration anesthesia be given in a closed mouth technique? – a clinical study

Background: Local anesthesia is an essential part of dentistry. The most commonly used technique to anesthetise maxillary posterior teeth is buccal infiltration with a local anesthetic agent [1]. The technique described in the literature focuses on the location of injection, the direction of the needle insertion in relation to the root apex, the direction of needle bevel in relation to the cortical bone plate, the size of needle and the type and amount of the local anesthetic agent used [2, 3]. However, there is no mention to whether the patient should open their mouth or maintain their teeth in intercuspation during the injection procedure.

Aims: This research aims to a) compare two techniques of injection (open and closed-mouth techniques) in terms of the discomfort experienced by patients during the injection procedure and b) evaluate the dentists' preference of performing either technique.

Methods:

Part 1: 100 patients scheduled for root canal treatment for a vital maxillary posterior tooth (from first premolar to the second molar teeth) will be included in this study and randomly divided into 2 groups according to the anesthesia technique used; group A: open-mouth technique and group B: closed-mouth technique. The two anesthetic techniques will be performed using the same needle size (20mm, gauge 25), anesthetic agent type (4% Articaine with 1:100,000 adrenaline) and quantity (1.8ml), and the same operator.

Patients will be asked to answer questions (Appendix A) regarding the level of discomfort they experienced during the injection procedure.

Exclusion criteria: patients diagnosed with psychological issues, intraoral soft tissue abnormalities, or necrotic pulp and/ or apical pathology will be excluded from this study.

Statistical analysis: the independent t-test at a significance level of 0.05 will be used to detect any statistically significant difference between the discomfort level experienced during the two techniques.

Part 2: A questionnaire will be designed and distributed to 50 dentists regularly performing root canal treatments. The dentists will be asked to complete 10 questionnaires for 10

different patients using each technique 5 times and register their own perception of the two techniques. Statistical analysis will be performed using the independent sample t-test and Chi-square test at 5% significance level.

References:

1. Costa, C.G., et al., Onset and duration periods of articaine and lidocaine on maxillary infiltration. *Quintessence Int*, 2005. 36(3): p. 197-201.
2. Kanaa, M.D., J.M. Whitworth, and J.G. Meechan, A comparison of the efficacy of 4% articaine with 1:100,000 epinephrine and 2% lidocaine with 1:80,000 epinephrine in achieving pulpal anesthesia in maxillary teeth with irreversible pulpitis. *J Endod*, 2012. 38(3): p. 279-82.
3. Kandiah, P. and J.F. Tahmassebi, Comparing the onset of maxillary infiltration local anaesthesia and pain experience using the conventional technique vs. the Wand in children. *Br Dent J*, 2012. 213(9): p. E15.

Appendix A:

Patient general information:

Patient's gender: M / F

Patient ID:

Age: _____

Tooth #: _____

Apprehensiveness towards dental injections in general:

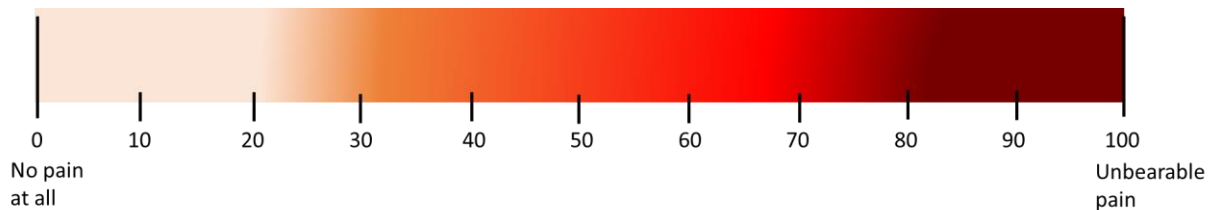
Not apprehensive at all

Moderately apprehensive

Severely apprehensive

Technique: Open-mouth / closed-mouth

Using the 0-10 scale below, please rate the discomfort experienced during the injection procedure in terms of:



i- Needle penetration _____

ii- Cheek retraction _____

iii- Overall discomfort during the injection procedure _____

Appendix B:

Part 1: Dentist general information:

Gender: M / F

Age: _____

Speciality: _____

Years of experience: _____

Appendix B:

Part 2: Technique- specific information

Patient's details:

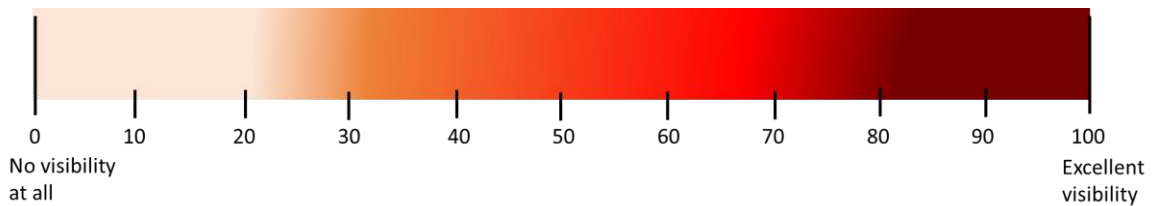
Gender: M / F

Age: _____

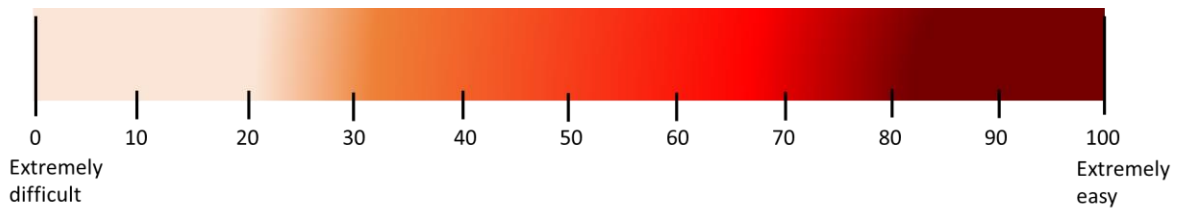
Tooth #: _____

Technique used: Open-mouth / Closed-mouth (please circle one)

Using the standard visual analogue scales provided, please rate the following:



a- Visibility to the injection site (0: poor visibility, 10: Excellent visibility): _____



b- Ease of cheek retraction (0: extremely difficult, 10: extremely easy): _____

Appendix B:

Part 3: Conclusion page:

After completing the experiment for 10 different patients (using the 2 techniques 5 times each) please choose your preference:

a- I prefer the closed-mouth technique

b- I have no preference

c- I prefer the open mouth technique

Reasons for your answer:
