



EXTRACTION OF PERMANENT MAXILLARY ANTERIOR TEETH USING SINGLE BUCCAL INFILTRATION OF 2% LIDOCAINE.

Mandeep sharma*

PG student omfs kvg dental college and hospital sullia *Corresponding Author

Praveen Akhter lone

Professor and HOD (OMFS) Indira Gandhi Govt dental college jammu.

ABSTRACT

Background & Objectives: Pain management is the most important tenet in any oral surgical procedure. Extraction of tooth should be pain free with limited dosage of anesthetic and limited pricks. Objectives of the study was to compare the efficacy of single buccal infiltration of 2% lignocaine with buccal and palatal infiltration of 2% lignocaine in maxillary anterior tooth extraction.

Methodology: A study was carried on 60 patients of age group 20-60 years who required maxillary anterior tooth extraction in a randomized controlled manner, visiting the Department of Oral and Maxillofacial surgery. Buccal infiltration of 1.8ml of anesthetic solution was given randomly to 30 patients in group A and buccal and palatal infiltration was given to 30 patients in group B. Objective signs were checked. Postoperatively VAS score and FPS score was noted.

Results: In group A (only buccal infiltration) extraction was done symptoms free in 29 patients. Additional injection was required in 1 case. In group B (buccal and palatal infiltration) including 30 patients extraction was done without the need of additional injection. The VAS score and FPS score values for both the groups was not statistically significantly (p value >0.05).

Interpretation & Conclusion: The single buccal infiltration of 1.8ml lignocaine can be used for extracting permanent maxillary anterior teeth.

KEYWORDS : : Extraction, palatal injection, lignocaine.

INTRODUCTION- Fear of pain has been associated with the dental treatment. There are various methods used to control pain among which use of local anaesthetic agent is the commonly employed technique in dental practice. In 1943, Lofgren synthesized lidocaine, which was the first "modern" local anesthetic agent. It is the gold standard for pain management in dentistry and has intermediate duration of action¹. Lignocaine, 2-diethylaminoaceto-2',6'-xylylidide (C₁₄H₂₂N₂O), is an amide local anesthetic² and is a stable, crystalline, colour less solid whose hydrochloride salt is water soluble. The elimination half-life for lidocaine is 90 min³. The primary site of biotransformation of amide drugs is the liver where it is metabolized by the microsomal P450 enzyme system to monoethylglycine and xylylidide; xylylidide is a local anesthetic and potentially toxic Liver function and hepatic perfusion therefore significantly influence the rate of biotransformation of an amide local anesthetic⁴.

Pain on palatal injection is a very commonly experienced symptom in dentistry. A number of techniques may be used to reduce the discomfort of intra-oral injections^{5,6}, the application of topical anesthetic being a well-known and frequently used option others including transcutaneous electronic nerve stimulation (TENS)⁷, topical cooling of the palate⁸, computerized injection systems⁹. However, it is effective only on surface tissues (2–3 mm) and tissues deep to the area of application are poorly anesthetized so palatal injection is still painful.

The purpose of this study is to ascertain whether the extraction of permanent maxillary anterior teeth can be done using a single buccal injection of lignocaine.

Aim- To evaluate the efficacy of single buccal infiltration of 2% lignocaine in extraction of maxillary anterior teeth.

Objectives- To assess the presence or absence of pain in buccal gingiva and lingual gingiva after infiltration using objective method. To record the subjective pain during procedure using VAS and FPS scale. To measure the duration of the anesthesia.

Methodology- A randomized study was carried on 60 patients of age group 20-60 years who required maxillary anterior teeth extraction, visiting the Department of Oral and Maxillofacial surgery. Buccal infiltration of 1.8ml of anesthetic solution was given randomly to 30 patients in group A whereas buccal plus palatal

infiltration was given in 30 patients in group B. Objective signs were checked after 10 minutes.

Inclusion criteria: Patients who require maxillary anterior teeth extraction due to appropriate causes. Patients not having any acute periapical infection. Patients in the age group of 20-60 years.

Exclusion criteria: Subjects with any previous history of complications associated with local anaesthetic administration. Pregnant women and lactating mother. Presence of acute infection or swelling. Patients unable to give informed consent. Those with teeth showing mobility.

Complete history of all patients was taken. Intra oral periapical radiograph (to rule out any periapical pathology) was taken for every patient. Informed consent was taken and patient was randomly allocated to the study. Buccal infiltration along the long axis of the tooth to be extracted was given. With slow injection technique (approximately 1ml/min) and full cartridge (1.8ml of solution) was deposited. Objective signs were checked after 10 minutes and if the patient complains of pain, then additional palatal infiltration was given and was mentioned. The patients were asked to mark their pain perception after the extraction on the VAS scale and the operator marked the pain score on the FPS. Following the surgery, the standard postoperative instructions were given to the patients along with the antibiotics and analgesics as and when required.

RESULTS

For statistical analysis, Chi square test and Mann-Whitney Test were done and "p" value less than 0.05 was accepted as indicating statistical significance.

A total of 33 males and 27 females included in the study with 16 males and 14 females participated in group A and 17 males and 13 females participated in group B. A mean age of 41.32 years in group A and 39.43 years in group B was found.

Pain on buccal instrumentation: Group A and group B shows no statistically significant difference between pain perception on buccal side. There was effective reduction in the pain in both groups. Pain on palatal instrumentation: No statistically significant difference ($P > 0.05$) between group A and group B was seen on palatal instrumentation. This indicates effective reduction in the

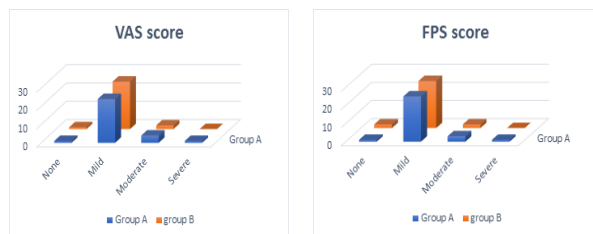
palatal pain in both groups. Only 1 patient in group A experienced pain and for that additional palatal injection was given.

VAS score and FPS score after extraction: VAS scores and FPS scores after extraction in Group A and group B patients showed no statistically significant result ($P > 0.05$) indicating that in both groups effective analgesia was obtained. (table 1, graph 1,2)

Table 1- Percentage of VAS and FPS score.

Score	VAS in group A	VAS in group B	FPS in group A	FPS in group B
None	3.33%	3.33%	3.33%	6.66%
Mild	80.0%	86.66%	83.33%	86.66%
Moderate	13.33%	10.00%	10.00%	6.66%
Severe	3.33%	0%	3.33%	0%

VAS scores for group A were: none for 1 patient (3.33%), mild for 24 patients (80.0%), moderate for 4 patients (13.33%) and severe for 1 patient (3.33%). Group B scores after extraction in were: none for 1 patient (3.33%), mild for 26 patients (86.66%), moderate for 3 patients (10.00%) and severe for 0 patients (0%). FPS scores for group A were none for 1 patient (3.33%), mild for 25 patients (83.33%), moderate for 3 patients (10.00%) and severe for 1 patient (3.33%). FPS scores after extraction in Group B were: none for 2 patients (6.66%), mild for 26 patients (86.66%), moderate for 2 patients (6.66%) and severe for 0 patients (0%).



Graph 1,2- VAS score and FPS score for group A and group B.

DISCUSSION

Extractions are the most frequently performed oral surgical procedures and it mandates complete pain control in order to gain patient's cooperation and to manage patient's anxiety. Pain perception depends upon the patient's pain threshold⁴. Use of local anaesthetic agents is the most commonly employed technique in dental practice. It is essential for a local anaesthetic agent to have rapid onset of action, sufficient duration of action, easily metabolized and the injection has to be least painful¹⁰. The number of pricks of anesthetic agent should be less. Palatal injection is a painful experience to patients⁵. Various studies including Luqman et al¹¹, sharma et al¹², Kandasamy et al¹³ have used articaine as anesthetic agent for single buccal infiltration and found it to be effective. On the contrary study by ozec et al¹⁴ could not find any evidence to confirm this.

In our study we took 10 minutes latency time for lidocaine to act. Study conducted by kumaresan et al found out that time taken to achieve successful palatal anesthesia by single buccal infiltration is 7-9 min¹⁵. In our study the statistical analyses showed no significant difference in extraction pain for the visual analogue scale and faces pain scale scores of group A and group B patients.

Hence it can be stated that palatal anesthesia achieved by depositing lidocaine to the buccal vestibule was as effective as buccal plus palatal infiltration of lignocaine. This finding is in accordance with the study done by Kumaresan et al¹⁵, Shekhar et al¹⁶.

Adverse effects of lignocaine and other amide local anesthetic agents are similar in nature. lignocaine toxicity can result when either the correct dose of lignocaine is inadvertently administered or delivered via the intravascular route, or when doses, even if given

by the correct route, are excessive¹⁷. Number of factors influence or directly affect the severity of lignocaine toxicity. These include the vascularity of the site of injection, speed of the injection, acid base status, and underlying hepatic or renal impairment¹⁸. In our study we did not encounter any lignocaine toxicity.

Conclusion: In our study we can conclude that permanent maxillary anterior teeth can be extracted by giving only buccal infiltration with 2 % lidocaine, thereby eliminating the need for a palatal injection.

REFERENCES

- Covino BG (1986) Pharmacology of local anaesthetic agents. British journal of anaesthesia 58:701-716.
- Williams V. Classification of antiarrhythmic drugs. 1st ed. Sodertaje: AB Astra; 1970;
- Isen DA. Articaine: Pharmacology and clinical use of a recently approved local anesthetic. Dent Today 2000;19:72-77.
- Malamed SF. Handbook of local anaesthesia. 4th ed. St. Louis, Mosby; 1997.
- Sina U, Dayangac E, Araz K et al (2006) Is permanent maxillary tooth removal without palatal injection possible? Oral Surg Oral Med Oral Pathol Oral Radiol Endod 102:733-735
- Henry H (1989) Topical ice: a precursor to palatal injections. J Endod 15(1):27-28
- Meehan JG, Winter RA. A comparison of topical anesthesia and electronic nerve stimulation for reducing the pain of intra oral injections. Br Dent J 1996;181:333-5.
- Harbert H. Topical ice: Precursor to palatal injections. J Endod 1989;15:27-8.
- Friedman MJ, Jochman MN. A 21 st century computerized injection system for local pain control. Compend Contin Educ Dent 1997;18:995-1000.
- Malamed SF, Gagnon S, Leblanc D. Articaine hydrochloride: the study of safety of a new amide local anesthetic. J Am Dent Assoc. 2001 ; 132: 177-185.
- Luqman U, Majeed Janjua OS, Ashfaq M, Irfan H, Mushtaq S, Bilal A. Comparison of articaine and lignocaine for uncomplicated maxillary exodontia. J Coll Physicians Surg Pak. 2015 Mar;25(3):181-4.
- Sharma K, Sharma A, Aseri M, et al. Maxillary Posterior Teeth Removal Without Palatal Injection – Truth or Myth: A Dilemma for Oral Surgeons. Journal of Clinical and Diagnostic Research : JCDR. 2014;8(11):ZC01-ZC04.
- Kandasamy S, Elangovanb R , Johnb RR, Kumar N Removal of maxillary teeth with buccal 4% Articaine without using palatal anesthesia—A comparative double blind study. Journal of Oral and Maxillofacial Surgery, Medicine, and Pathology 2015 ; 27 : 154–158.
- Ozeç I, Taşdemir U, Gümüş C, Solak O. Is it possible to anesthetize palatal tissues with buccal 4% articaine injection? J Oral Maxillofac Surg. 2010 May;68(5):1032-7.
- Kumaresan R, Srinivasan B, Pendayala S. Comparison of the effectiveness of lidocaine in permanent maxillary teeth removal performed with single buccal infiltration versus routine buccal and palatal injection. J Maxillofac Oral Surg. 2015 Jun;14(2):252-7.
- Sekhar GR, Nagaraju T, Kolligiri, Nandagopal V, Sudheer R; Sravan. Is palatal injection mandatory prior to extraction of permanent maxillary tooth: a preliminary study. Indian J Dent Res. 2011 Jan-Feb;22(1):100-2.
- Becker DE, Reed KL. Local anesthetics: review of pharmacological considerations. Anesth Prog. 2012;59:90-101; quiz 102-103.
- Catterall W, Mackie K. Goodman and Gilman's the pharmacological basis of therapeutics. 9th ed. New York: McGraw-Hill; 1996.