

Twin Mix formulation for Mandibular Anaesthesia for Minor Oral Surgical Procedures

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Abstract: In minor oral surgical cases expected to produce post-operative edema are managed with the use of steroids which are strong anti-inflammatory agents. Glucocorticosteroid are the preferred group for management of post-surgical edema, where indicated. In practice, glucocorticosteroid are administered via intravenous or intramuscular route. In minor oral surgical procedures requiring mandibular anesthesia, intra-pterigomandibular space administration of steroids may be utilized in combination with local anaesthetic solution.

I. INTRODUCTION

Dexamethasonized local anesthetic solutions have been used in the past with documented intra-operative and post-operative benefits in cases expected to have post-surgical edema following minor oral surgical procedures like transalveolar mandibular wisdom tooth surgery. [1] Intra-space administration of dexamethasone along with the local anaesthetic solution is a novel route of drug delivery for minor oral surgery. The obvious advantages of such an administration include ease of administration of the drug for oral and dental clinicians, single prick for dual drug delivery, lesser sting of local anaesthetic injection due to altered pH of the combination, short latency for local anesthetic, prolonged duration of the soft tissue anaesthesia and improved quality of life in the post-operative period after the surgical procedure. [2]

II. COMPOSITION AND ADMINISTRATION

The dexamethasonized solution of local anesthesia is a freshly prepared mixture of 1.8ml of 2% Lignocaine with adrenaline (1:200000) and 1 ml (4mg) dexamethasone making 2.8 ml solution of twin mix [1]. The 1.8 ml anesthetic solution is composed of Lignocaine hydrochloride (21.3mg/ml), Adrenaline (0.005 mg/ml), Sodium chloride (6.0 mg/ml), Sodium metabisulphite (0.5 mg/ml), Methylparaben (1.0 mg/ml) and distil water for injection as a vehicle. The 1 ml dexamethasone solution used for the combination contains Dexamethasone sodium phosphate (4 mg/ml), Sodium methylparaben (0.15 % w/v), Sodium propylparaben (0.02 % w/v) and distil water for injection.[3] The analysis of chemical stability of both the chemicals together was done using double beam UV-visible spectrophotometry and it was concluded that there is no deterioration of the active components in a freshly prepared solution. The photospectrometric wavelength (λ_{max}) of lignocaine and dexamethasone in twin mix is in the spectrum of 223 nm and 291.5 nm respectively. The additional advantage of twin mix is that it alters the pH of local anesthetic solution and thereby reducing the sting while administration of anesthesia, the pH of the twin mix solution is in the range of 5.5 to 6. The freshly prepared mixture also demonstrates clinically reduced latency period for anesthetic onset when compared to lignocaine alone, which is 49.47 ± 16.2 seconds. Use of this combination has a clear advantage of reduced post-operative edema and discomfort in patients due to the presence of strong anti-inflammatory effects of steroid. The soft tissue anesthesia with the use of this solution for inferior alveolar nerve block is recorded as 299.17 ± 57.3 minutes which is more than the soft tissue anesthetic effect of lignocaine alone. [2]

III. METHOD

The mixture of 1.8 ml 2% lignocaine (with 1:200000 adrenaline) anesthetic solution and dexamethasone 1 ml (4 mg) is prepared just before the injecting for inferior alveolar nerve block. The mixture (twin mix) is deposited in pterygomandibular space following the standard technique of inferior alveolar nerve block using an luer-lock type aspirating syringe with a long 26-gauge needle. The subjective symptoms conform the successful nerve block.

IV. CONCLUSION

The twin mix solution can be adapted for use in surgical cases of Oral and Maxillofacial Surgery as there remain many advantages including increased efficacy of local anesthesia and reduced patient discomfort. The chemical stability of the combination is well established with validation of its clinical effects based on power-analysis trials. [4]

Authors Declare No Conflict of Interest

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REFERENCES

- [1]. Bhargava D, Sreekumar K, Rastogi S, Deshpande A, Chakravorty N. A prospective randomized double-blind study to assess the latency and efficacy of Twin-mix and 2% lignocaine with 1: 200,000 epinephrine in surgical removal of impacted mandibular third molars: a pilot study. *Oral Maxillofac Surg.* 2013;17(4):275-80.
- [2]. Bhargava D, Deshpande A, Khare P, Pandey SP, Thakur N. Validation of data on the use of twin mix in minor oral surgery: comparative evaluation of efficacy of twin mix versus 2 % lignocaine with 1:200000 epinephrine based on power analysis and an UV spectrometry study for chemical stability of the mixture. *Oral Maxillofac Surg.* 2015;19(1):37-41.
- [3]. Bhargava D, Sreekumar K, Deshpande A. Effects of intra-space injection of Twin mix versus intraoral-submucosal, intramuscular, intravenous and per-oral administration of dexamethasone on post-operative sequelae after mandibular impacted third molar surgery: a preliminary clinical comparative study. *Oral Maxillofac Surg.* 2014 Sep 1;18(3):293-6
- [4]. Bhargava D, Deshpande A. Twin-mix anesthesia as pterygomandibular nerve block for surgical removal of impacted mandibular third molars. *Int J Stomatol Occlusion Med.* 2015;8:29-32