



EFFICACY OF EUTECTIC MIXTURE OF LIGNOCAINE AND PRILOCAINE IN CLOSED REDUCTION OF NASAL FRACTURES


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ABSTRACT

Aim: To study the efficacy of eutectic mixture of Lignocaine and Prilocaine (ELMA) as a topical anesthetic agent in closed reduction of nasal bone fracture. **Method:** Study was under taken on young patients with nasal bone fractures. Closed reduction of the nasal fracture was done under topical anesthesia in outpatient department after 7-12 days of trauma. Patients were asked to score pain, cosmetics and airway patency immediately after procedure and on subsequent follow up. **Results:** Result of the study was evaluated in terms of pain on VAS scale, post-operative cosmetic, airway patency and reduction of nasal bone fracture. Maximum pain score was 3 on Visual analogue scale of 1 to 10. All the patients were happy with cosmetics and had an adequate air patency. Reduction of nasal bone fracture was evident on post of radiograph. **Conclusion:** Eutectic mixture of Lignocaine and Prilocaine is an effective topical anesthesia for closed reduction of nasal bone fracture and is safe, convenient, and avoid the risk related to general anesthesia.

Keywords :-ELMA, Closed reduction, Out-patient procedure, Nasal fracture.

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INTRODUCTION

Nose is the most prominent part of face. Force required to fracture the nasal bone is less than any other facial bones because of its position and thinness [1]. 39% - 45% of maxillofacial fractures has been reported with nasal bone fracture alone [2]. Local anesthesia administered by internal method is significantly more painful than the technically easier external method. Anesthesia by external method is achieved by infiltration with solution containing 1% lidocaine (2% lignocaine, or 0.5% bupivacaine) and 1:100000 epinephrine (or 1:240000 adrenaline) anaesthetizing the supra trochlear nerves, infraorbital nerve and nasal dorsum. A topical intranasal solution using pledgets soaked in a vasoconstrictive agent (ie, 1:100000 epinephrine) and an anesthetic (ie, 4% cocaine or 2% lidocaine), are used for nasal mucosa anesthesia and

hemostasis. An alternative to external percutaneous method is application of EMLA to the nasal bridge to induce skin anaesthesia with concomitant intranasal cocaine, before reducing nasal fracture. This technique offers a similar outcome in cosmetics and airway patency, but is significantly less painful than manipulation using percutaneous infiltration of local anaesthetics. Aim of the present study was to evaluate the efficacy of EMLA for closed reduction of nasal fracture.

METHODS AND MATERIALS

Ten patients with nasal fracture were selected for study in division of oral and maxillofacial surgery, Rajah Muthiah Dental College and hospital. The procedure was explained to all patients before surgery and

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informed consent was obtained before surgery. Eutectic mixture of lignocaine and prilocaine (1:1) was applied one hour before manipulation, external nasal splint was placed after manipulation was over.

Procedure

Patients selected for study were of 22 year to 32 years. Eight male patient and two female patient was selected, of which four patients had isolated nasal fractures and the rest of the patients had nasal fractures associated with other maxillofacial fractures. This procedures were carried out in the outpatient department.

The nasal bone was examined for deformity which was recorded by photograph. The septum was examined for the presence of deformity, inspection and palpation of nasal tip was also done before starting the procedure [3]. A scoring system was used to record extent of nasal septum deformity; 0=straight, 1=minimal deviation, 2=moderate deviation, 3=obstructing nasal cavity.

Eutectic mixture of Lidocaine and Prilocaine (Prilox, Neon Laboratory, Mumbai) was applied on intact skin one hour before the procedure and was covered with occlusive dressing. The mixture was wiped off the area to be manipulated and was disinfected with iodine before starting the procedure [4].

Nasal bone fracture reduction was done using lateral nasal wall reduction forceps and Asch septal

reduction forceps. Digital manipulation of the nasal bone was done whenever necessary. External nasal splint was placed for two weeks [5].

The patients were taken to recovery room, where post operative vitals of the patients were monitored. Patients were asked to score pain on the visual analogue scale. Oral antibiotics and analgesics were prescribed [6] and patient was discharged within 30 minutes of manipulation.

Patients were recalled for review every week for four weeks. Patients were asked to reassess their nasal shape and compare it with pre trauma, before and after manipulation. Nose was examined by surgeon for nasal shape, deformity and nasal obstruction. Post-operative photograph was taken and compared with the pre-operative photograph [7].

RESULTS

The closed reduction was done between 7 to 12 days from the time of injury. None of the patients had previous history of nasal injury. Eight patients had un-deviated nasal septum after surgery while two patients had deviated nasal septum with mild nasal obstruction. Average time for procedure was 85 minutes. When asked to rate the procedure on visual analogue scale, two patients had no distress (VAS-1), four patients had distress (VAS-2), whereas two male and two female patient had annoying experience (VAS-3).

Fig 1. Armamentarium



Fig 2. Patient profile



Fig 3. CT facial bone

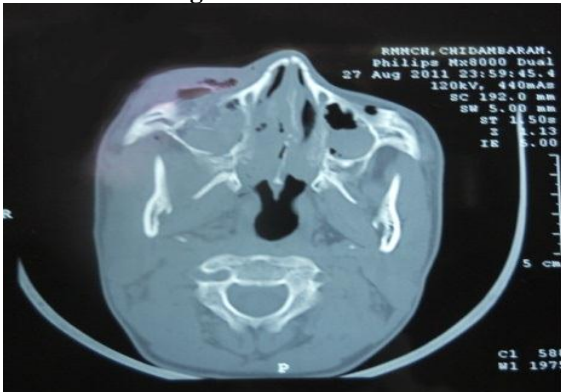


Fig 4 .True nasal lateral view

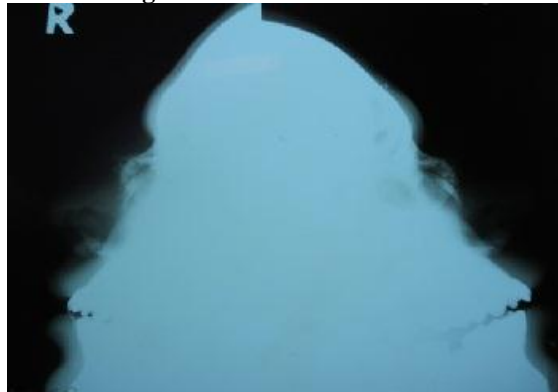


Fig 5. Marking of area for topical application



Fig 6. Eye protection and application of ointment



Fig 7. Occlusive dressing



Fig 8. Supporting the root of nose



Fig 9. Close reduction using forceps



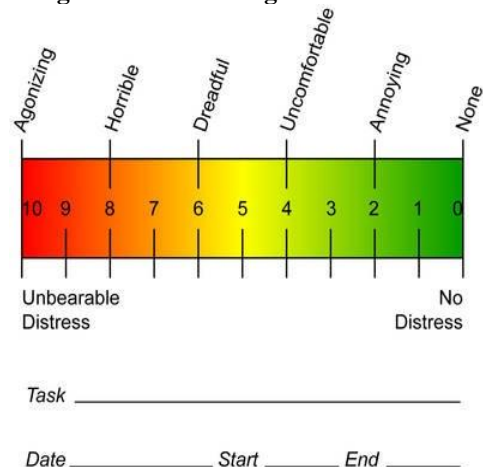
Fig 10. External nasal splint



Fig 11. Post -OP profile



Fig 12. Visual Analogue Scale for Pain



DISCUSSION

The standard treatment for a broken nose has been closed reduction since antiquity [8]. There have been conflicting opinions in the past as to the most effective ways to manage the nasal bone fractures, which ranges from open reduction under general anaesthesia to closed reduction under local anaesthesia.

In 1980, Murray and Maran reported [9] significant results indicating that open reduction was the best treatment for patients with a deviation of more than half the bridge width of the nose. Although research had suggested that open reduction (with primary septoplasty) to ensure good results, in countries like U.K vast majority of fractured noses were simply manipulated under general anaesthesia [10].

Studies of Waldron et al and Ridder et al [11,12] suggested that simple nasal bone fractures could be treated, 7 to 15 days after the injury, in the outpatient departments by manipulation under local anaesthesia, producing results comparable with those obtained by manipulation under general anaesthesia. Given the high incidence of such injuries, the chance to manipulation under local anaesthesia represented a significant time saving procedure avoiding risk related to a general anaesthetic. This technique offered a similar outcome in cosmetic appearance and airway patency but is significantly less painful than manipulation using percutaneous infiltration of local anaesthetic [10].

EMLA cream acts by diffusing through intact skin to block neuronal transmission from dermal receptors. 1-2 gm of EMLA is to be applied per 10 cm² area of intact skin at least one hour before the procedure and covered with occlusive dressing. Blood flow, epidermal and dermal thickness, duration of application, and the presence of skin pathology are important factors affecting the onset, efficacy, and duration of EMLA analgesia. Blanching of the skin may be seen after 30 to 60 min, probably due to vasoconstriction. Longer application times may result in erythema due to vasodilation. Plasma levels of lidocaine and prilocaine according to Juhlin et al [13] was much lower than toxic levels. The Maximum plasma level was reached 2-2.5 hrs after application to the face.

Bjerring et al [14] studied the depth and duration of analgesia after application of EMLA cream for 30, 60, 90, and 120 min at multiple sites on 12 healthy volunteers. After a 60-min application, the pain threshold depth was approximately 3 mm. The maximum depth of analgesia of approximately 5 mm was achieved 30 min after a 90-min application. In this study, the pain threshold depth increased approximately 30 min before the sensory threshold depth increased. It is postulated that nerve fibers located more deeply in the dermis are blocked sooner than the more superficially located mechanoreceptors.

The duration of action of EMLA is dependent on the dose of cream applied and the duration of contact with skin under the occlusive dressing, with improved pain

scores noted with increased application time [15] However, anesthesia to pinprick increases 30-60 min after removal of the cream from the skin. This suggests continuing penetration of EMLA from a depot in the superficial layers of the skin [12].

EMLA has been used successfully for electrocochleography, myringotomy, and grommet insertion [16], in the management of otitis externa, relieves pain and anesthetized the auditory canal prior to cleaning [17]. EMLA cocaine combination was used for manipulation of fractured nasal bones without discomfort in 12 patients [18].

EMLA is useful for venipuncture and venous cannulation in the pediatric patients, However, it is also effective in decreasing pain during myringotomy placement, minor skin surgery, lumbar puncture, and radial artery cannulation. EMLA has a limited depth of penetration so, research should be directed to finding newer drugs that penetrate skin more quickly and to a greater depth [19].

EMLA cream is contraindicated in patients with congenital or idiopathic methemoglobinemia and patients taking methemoglobin inducing drugs (e.g., sulfonamides, acetaminophen, nitroglycerine, nitroprusside, and phenytoin)

- It is not recommended for patients with skin wounds, due to increase in the risk of wound infection.
- It is contraindicated in patients with a known history of sensitivity to local anesthetics
- It should be used with caution in patients receiving Class I antiarrhythmic drugs (e.g., tocainide, mexiletine) because the toxic effects are additive and potentially synergistic.

CONCLUSION

When treating patients with a fractured nose, it is worth noting that there is often a discrepancy between the objective and subjective assessment of nose appearance. What a surgeon may judge to be an anatomical deviation is not always perceived by the patient as an unacceptable result, and failure of the technique should not be judged on that score alone. Follow-up is fundamental to the final outcome of the treatment of the nasal bone injuries. After repositioning, nasal bone can move due to further minor trauma or drift back towards their position before the reduction.

There is no doubt that septal injury in association with nasal bone fracture is the main cause of postoperative nasal deformity and obstruction. Manipulation is an effective first line treatment for simple nasal fracture in the absence of significant septal trauma.

When the results of simple nasal fracture reduction under local anaesthesia are comparable with those obtained under general anaesthesia, manipulation under local anaesthesia offers several advantages, as it avoids the risk of general anaesthesia, less time

consuming, hospitalization is not essential and it is more convenient for patients. Thereby, reduction of the

fractured nasal bone under local anesthesia should consequently become standard practice.

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