ORIGINAL ARTICLE

Frequency of Epistaxis during Nasotracheal Intubation with or without Vasoconstrictor Drops in patients Undergoing Maxillofacial Surgery

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ABSTRACT

Background: Nasotracheal intubation is a commonly performed procedure not only in patients undergoing oral and maxillofacial surgery but also as an airway management technique in patients with facial trauma or any other anatomical abnormality that makes orotracheal intubation impossible. Most frequent complication encountered during this procedure is epistaxis.
Aim: To compare the frequency of epistaxis during nasotracheal intubation with or without xylometazoline drops in patients undergoing oral and maxillofacial surgery.
Study design: Randomized controlled trial.
Methods: After informed consent, 100 patients fulfilling the inclusion criteria were randomly allocated to Group A who received 5 drops of xylometazolin 0.1% five minutes prior to intubation and Group B in whom vasoconstrictor was not used. In both groups endotracheal tube was lubricated with lignocaine gel prior to insertion. Epistaxis due to tube placement was assessed by an independent observer, 2 minutes after intubation an 1 minute after extubation.
Results: Frequency of epistaxis was 28% in xylomtazoline group, where as 76% patients in control group had it.
Conclusion: Xylometazoline reduces frequency of epistaxis during nasal intubation
Keywords: Nasal intubation, fasciomaxillary surgery, xylometazoline, epistaxis

INTRODUCTION

Airway management in complex maxillofacial trauma is often difficult. The choice of intubation technique requires good assessment by a multidisciplinary team that includes maxillofacial surgeons, anaesthesiol-ogists as well as good communication between the surgeons and anaesthetist[1]. Nasotracheal intubation is used in patients undergoing oral and maxillofacial surgery[2]. It is also the method of choice when orotracheal intubation is not feasible (Patients with limited mouth opening), in patients with predicted difficult orotracheal intubation and in those with mechanical issues regarding the tongue and mouth (i.e., angioedema, Ludwig's angina, tongue hematomas, jaw fracture, etc.), Going through the nose bypasses the mouth altogether. Nasal intubation is ideally done using endoscopic imaging. Blind nasal intubation has a distinctly valuable role in emergency settings when fiber-optic bronchoscope is not available or inappropriate because of excessive bleeding which compromises vision.

Various complications resulting from nasal passage of the tube, such as turbinectomy or retro pharyngeal dissection, have been reported. The most common complication resulting fromnasotracheal intubation is epistaxis. Epistaxis can cause difficulty in intubation due to, obscuring of the view during laryngoscopy, aspiration of the blood into the lungs and also problems in airway management after induction.

Epistaxis may occur as a result of direct tissue trauma, inexperienced intubator, material of the tube or fragility of the nasal mucosa. Several methods have been used to reduce epistaxis during nasotracheal intubation, like topical vasoconstrictors such as epinephrine, phenylephrine, xylometazoline, oxymetazoline, cocaine, thermo-softening of the nasotracheal tube, red rubber catheter etc[3]. Xylometazoline has been shown to induce pronounced decongestion and vasoconstriction of the nasal mucosa that lasts for 6-8 hours[4].

Xylometazoline is asympathomimetic agent with marked alpha-adrenergic activity[5]. Itis intended for intranasal use. It is a sympathomimetic amine of the imidazoline class. It constricts the nasal blood vessels, thereby decongesting the mucosa of the nose and neighbouring regions of the pharynx.

As maxillofacial surgery Is routinely done in our setup with nasotracheal intubation for free access to surgical field and postoperative airway management,

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we conducted this study to determine the effect of xylometazoline on occurance of epistaxis.

METHODOLOGY

After approval from the hospital ethical committee and written informed consent, 100 adult ASA1&2 of both sexes planned to undergo oral or maxillofacial surgery fullfiling inclusion and exclusion criteria were selected (Nonprobability purposive sampling). Patients with nasal pathology and trauma e.g., septal deviation, turbinate hypertrophy, nasal polyp etc (on preoperative examination), hypertension (>140/90mmHg), those having bleeding diathesis, patients taking anticoagulents, antihypertensives or any symathomimetics were not included as were patients with history of epistaxis and obstructive sleep apnea. Patients were allocated to two groups A and B of 50 patients each using a random number table.

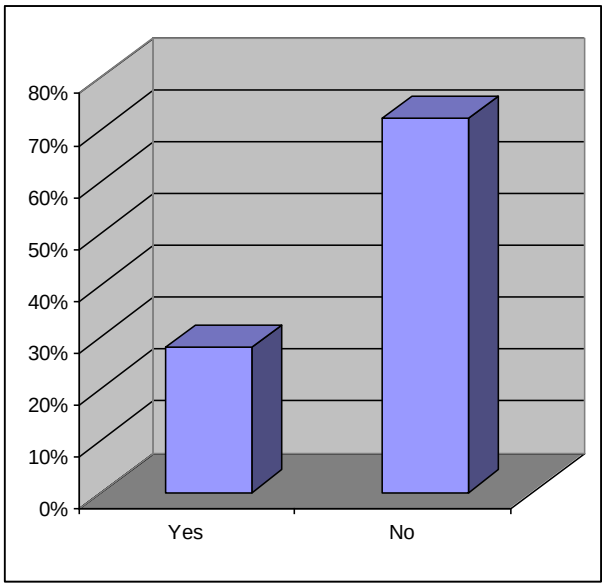
Data collection procedure; Mandatory monitoring using pulse oximetry, blood pressure, ECG, and capnography was carried out. Patients in group A recieved 5 drops of xylometazolin 0.1% five minutes prior to intubation while those in group B did not, thus serving as control group. Drops were administered by the anaesthesiologist himself. 2%. Xylocaine gel was used as lubricant in both groups.

Induction was done with intravenous Propofol 2mg/kg and Atracurium 0.5mg/kg, Patient was ventilated for 3 minutes using Isoflurane 2% in 50% nitrous oxide in oxygen followed by nasotracheal intubation with Murphy tip endotracheal tube of appropriate size. Epstaxis was measured 2 minutes after intubation and one minute after extubation, by aspiration of pharynx using 14F, 50cm long suction catheter serially connected with a 7.0-mm ID, 2.5 meters long suction tubing at a pressure of 100mmHg.The epistaxis was graded according to the distance traveled by blood up the suction catheter and tubing: none = no blood, slight=50cm, significant = 50-300cm. The sucker was turned off before it was introduced into the mouth. Epistaxis was assessed by an independent observer unaware of the treatment group to ensure blinding. All the data was entered in SPSS version16. Age was presented as mean±SD, .while gender and presence or absence of epistaxis as frequency and percentage. Frequency of epistaxis was compared in both groups by using chi-square test. P-value less than or equal to 0.05 was taken as significant.

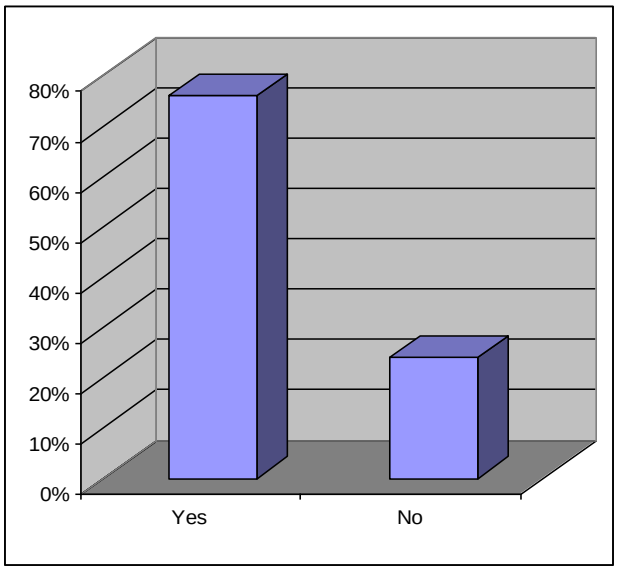
RESULTS

One hundred patients were included in the study; 50 in xylometazolin group and 50 in control group. In xylomtazolin group, there were 24(48%) males and 26(52%) female and mean age of patients in it was 41.26±8.26 where as in control group, there were 23(46%) male and 27(54%) female and their mean age was 42.20±6.84. Both groups were comparable to each other regarding age and gender distribution (P value 0.094). Overall, epistaxis was observed in 52(52%) of patients. 14(28%). Patients in xylomtazolin group had Epistaxis as compared to 38(76%) in control group. Difference in frequency of epistaxis among both groups was found to be statistically significant (value of chi was 6.515 at level of significance 0.05 with 1 degree of freedom)

Graph 1: Epistaxis in xylometolazine group



Graph 2: Epistaxis in control group



DISCUSSION

Facial trauma and tumors are not an uncommon site in a tertiary care hospital. With the rise in the incidence of road traffic accidents number of patients reaching emergency with polytrauma specially injuries of the face is constantly increasing. These patients present an unique challenge of airway management. In addition to these there are patients who undergo tumor surgery in the oral and maxillofacial region.

Many of these patients are intubated nasally rather than the traditional oral route because of either non availability of the oral route or to provide surgeon space. Attempts can be made to intubate the patient while maintaining spontaneous ventilation more easily with nasal as compared to oral route. Many of these patients require a post-operative nasopharyngeal airway or even elective ventilation. A nasotracheal tube serves both these purposes as it is better tolerated also jaws of the patients may be wired shut at the end of several maxillofacial procedures, making nasotracheal passage the only route available.

The most common complication of nasotracheal intubation is abrasion of the nasal mucosa as the tube is passed posteriorly resulting in epistaxis.[6] This usually occurs from damage to Kiesselbach's plexus in Little's area in the anterior part of the nasal septum.[7] This is more likely to occur with the use of an oversized tube, use of excessive force or repeated unsuccessful attempts.[8,9] If bleeding does occur on insertion of the tube, it is suggested that intubation should be completed, provided it can be accomplished quickly. The incidence of bleeding following nasotracheal intubation reported in the literature is variable[10,11,12].

Several methods have been used to reduce epistaxis during nasotracheal intubation, like topical vasoconstrictors such as epinephrine, phenylephrine, xylometazoline, oxymetazoline, cocaine, softening of the nasotracheal tube by placing it in warm saline (thermosofetning) and using red rubber catheter etc[13.] Xylometazoline has been shown to induce pronounced decongestion and vasoconstriction of the nasal mucosa that lasts for 6-8 hours[4].

We found that the overall incidence and severity of intubation-related epistaxis were significantly less in xylometazoline compared to control. The overall 76% of patients in control group had episode of epistaxis as compared to only 28% in xylometazoline group. Our results were comparable to O'Hanlon and Harper, who suggested that the use of the xylometazoline helped reduce epistaxis during nasal intubation[14].

Frequency of epistaxis in our study group was 28% which is comparable to the 29% incidence of bleeding reported by Elwood and colleagues, who used oxymetazoline (an imidazoline topical vasoconstrictor similar to xylometazoline) but no lubricating gel before nasotracheal intubation in children[15]. Kihara and colleagues who tested the hypothesis that a silicone-based tube is superior to a polyvinyl chloride (PVC-based) tube for nasal intubation, found that the incidence of epistaxis was 32.5% with silicone ETTs vs 80% with PVC tubes.[16] Immersing preformed tubes in saline at 37^{o}C resulted in less epistaxis, but thermo-softening appeared less effective in increasing flexibility[17].

Assessment of epistaxis by subjective method was done by El-Seify[18] but in our study we used a more objective method to define epistaxis and assess it by use of catheter attached to suction**.**

There are some limitations in our study. Xylometazoline was used in study group but nothing was used in control group, so complete blinding was not possible.However, standardizing the independent observer to all subjects along with the reassessment of bleeding after intubation improved the validity of this method.

CONCLUSION

Intranasal xylometazoline drops reduce the frequency of epistaxis associated with nasotracheal intubation in patients undergoing oral and maxillofacial surgery.

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