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ORIGINAL RESEARCH

Use of laryngeal mask airway for lacrimal duct syringing and probing in paediatric patients

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ABSTRACT

Background: Congenital nasolacrimal duct obstruction (CNLDO) is a common cause of epiphora in children, present in upto 8% of newborns, unlike adults, children requiring eye surgery do not tolerate sedation or local anaesthetic techniques and therefore usually require general anaesthesia. Our purpose of this study is to assess the safety and effectiveness of LMA for anaesthetic management. **Methods:** This prospective study was conducted in the Department of Anaesthesiology, SKIMS Medical College and Hospital Bemina. Study was conducted on 30 patients undergoing syringing and probing of one or both eyes between August 2021 to August 2023. **Results:** The use of LMA was associated with early recovery, lesser incidence o postoperative nausea and vomiting and early discharge. **Conclusion:** The use of LMA with spontaneous ventilation under general anaesthesia is a safe technique for syringing and probing for CNLDO in children.

Keywords: Nasolacrimal duct, syringing, probing, LMA, sevoflurane.

INTRODUCTION

Most children presenting for eye surgery are healthy, ASA I or II and usually managed as day care cases. A small number have underlying conditions, often of a chromosomal or metabolic nature, which pose specific anaesthetic challenges. [1,2]This topic of Congenital nasolacrimal duct obstruction is relevant to both anaesthetists and ophthalmologists. Around6 to 8% of newborns present with this condition. Out of them 25% have bilateral obstruction. Most of them undergo spontaneous healing in first year of life. [3,4,5] Usually syringing and probing is a simple and commonly performed intervention in these patients with general anaesthesia and endotracheal tube placement preferred choice of most anaesthetists. [6,7] The use of Endotracheal tubeunder general anaesthesia with useof muscle relaxants could be considered inappropriate in many of these short procedures as endotracheal intubation is an invasive procedure with more airway manipulation, haemodynamic changes like hypertension and tachycardia and effects of muscle relaxants and its antagonists. More chances of postoperative cough, laryngospasm, need for reintubation, desaturation episodes and postoperative nausea and vomiting after endotracheal intubation resulting in increased hours of hospital stay. [8] Laryngeal mask airway used for syringing and probing of lacrimal duct obstruction has resulted in shorter times of induction and recovery in paediatric patients with minimal risk of aspiration.[9] Therefore, the use of supraglottic devices like Laryngeal mask airway with spontaneously ventilating patient is a safer alternative to the endotracheal intubation.

RESEARCH METHODOLOGY

30 children between the age group from 9 months to 2 years belonging to ASA, class 1 and 2 scheduled for syringing and probing procedure were included in our study from August 2021 to August 2023. Anaesthesia management was provided as per standard protocol. Written, informed consent was taken from one or both parents of children being operated. Preoperative evaluation was done, during preanaesthetic visit. Children having recent upper respiratory tract infection were excluded. All children were kept fasting as per the standard paediatric fasting guidelines. [10]

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On arrival to the operating room, a 22/24G cannula was secured on the dorsum of hand after inhalational induction with 6 to 8% sevoflurane with 100% oxygen. Injection propofol 1%1-1.5 mg per kg and injection glycopyrolate 0.02mg per kg were administered intravenously. Injection fentanyl 1.5 mcg per kg was given for analgesia. As soon as the child was adequately anaesthetized, judged by no reaction to jaw thrust, LMA selected according to standard weight sizing (size 1.5 up to 10 KG and size 2 for 10 to 20 KG), was inserted and connected to Anaesthesia machine through Pediatric circuit. Confirmation of correct position was done by end tidal CO2, proper chest rise and negative gastric insufflation and peak airway pressures. Fresh gas flow used was 3 to 4 L per minute. Ventilation was assisted until the return of adequate spontaneous ventilation. Maintenance was given using oxygen and nitrous oxide in 1:1 ratio and sevoflurane 2 to 3% during the procedure. Intraoperative monitoring was done using ECG, NIBP, SPO2 and capnography.

After securing the LMA and adjusting gas flows, a transparent suction catheter was placed in hypopharynx and low suction/vacuum was maintained to allow removal of injected fluids and secretions. The usual volume of injected used for nasolacrimal duct injection was 2 to 3 ml and recovery of dye stained fluid from suction catheter was deemed successful intervention.

At the end of the procedure, N20 and sevoflurane was put off, and when exhaled sevoflurane concentration was </= 0.5, the LMA was removed. Post extubation, the child was monitored in the recovery and then shifted from recovery to regular ward when the child was awake, maintained SPO2 > 95% on room air. All children were followed post operatively for sore throat and aspiration.

RESULTS

Total 30 patients between the age group of 9 months to 2 years belonging to ASA class 1 and 2 were part of our study. Weight of these children was between 8 to 15 kg(average weight of 10 kg). Average duration of the procedure was 10 to 30 minutes. 9patients had bilateral nasolacrimal duct obstruction. Overall, the procedures went uneventful in all children. No significant complications were observed in the preoperative period. Vitals were maintained within the acceptable limits as per the age of the children. Only one child had to be given oxygen supplementation in the post-operative period as SPO2 decreased to around 90% and was promptly treated with hundred percent oxygen. In two children, the maneuver was unsuccessful and were subsequently directed to a more invasive surgical treatment.

DISCUSSION

The nasolacrimal duct obstruction in infant and children is a relatively common condition and needs optimum treatment at proper time. Syringing and probing is a simple and commonly performed procedure for this condition under general anaesthesia. Generally, endotracheal intubation is recommended to protect the airway for this procedure with the aim of preventing aspiration due to injection of fluid through nasolacimal duct. [6,7] A few studies have used LMA for this procedure. [2,11] In our study, we have LMA under general anaesthesia. Those with endotracheal intubation usually need muscle relaxant and have more length of stay in the hospital, more chances of post-operative, nausea, vomiting and desaturation.[12] Following standard fasting guidelines, and appropriate selection of size of LMA based on weight with maintenance of adequate depth of anaesthesia together contribute to decrease the risk of expiration. [13]In our study all these factors have been taken into consideration.LMA has been widely used in a number of procedures in children and has advantage over endotracheal tube use in day care surgery. [14-16] As syringing and probing is a day care procedure, the use of LMA is favourable. We have used LMA and spontaneous ventilation in our study. The patients had quick recovery, less chances of nausea, vomiting and decreased hospital stay. Also, our patients had earlier resumption of feeding. Overall satisfaction of parents and safety profile in our patients was good. In conclusion, our study supports the use of laryngeal mask airway as a safe airway management technique in paediatric patients for syringing and probing in congenital nasolacrimal duct obstruction.

Conflicts of interest: Nil.

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