

Anesthetic management of an overweight pediatric patient with smaller size classic LMA

S. Chhabra, H. Kumar

Department of Anaesthesiology, Pt. B D Sharma PGIMS, Rohtak, India

Corresponding author: S. Chhabra, Department of Anaesthesiology, Pt. B D Sharma PGIMS, Rohtak, India.
Email: swati_virgo83@yahoo.co.in

Key points

The LMAs for pediatric age group should be manufactured according to anatomy of pediatric patients rather than making them as miniatures of adult forms. As such LMAs are not available at present; a wide range of pediatric LMA sizes should be available at hand while anesthetizing overweight/obese or underweight pediatric patients.

Abstract

There is global epidemic of obesity affecting all ages. A 9 year old male child with height 139 cm and weight 56 kg (BMI 28.98) with penile hypospadias was posted for urethroplasty under general anesthesia. The attempts to secure the airway first with size four classic LMA (as per weight recommendation) and then with size three were unsuccessful. This case report describes successful management of airway with smaller size classic LMA.

Keywords: pediatric obesity; LMA; hypospadias; urethroplasty.

Introduction

It is now well recognized that there is global epidemic of obesity affecting all ages (1). More and more obese children are being posted for surgery. The laryngeal mask airway (LMA) is probably the most commonly used supraglottic airway device in children. There are several different sizes, and manufacturers recommend their use according to weight of the patient. However, these weight based guidelines may not be appropriate in over or underweight children since development of oropharyngeal cavity is related to age, rather than to weight (2).

Case report

A 9 year old male child with height 139 cm and weight 56 kg (BMI 28.98) with penile hypospadias was posted for urethroplasty [figure 1] under general anesthesia. Written informed consent was taken from the father of child. On preanesthetic evaluation child was found to have BMI >97th percentile for age and weight >120% of 50th percentile weight for height by national standards (3). All preanesthetic investigations were normal. Airway assessment was done. No abnormalities were detected. Mallampati grade was 2. Premedication was given in the form of Tab Ranitidine 150 mg and Tab Alprazolam 0.25mg at bed time and 2 hours before surgery. Induction of anesthesia was done with Glycopyrolate 0.2 mg IV, Fentanyl 60 mcg IV, Thiopentone 250 mg IV and Atracurium 25 mg IV. Patient was monitored with electrocardiography, non invasive arterial blood pressure, pulse oximetry and capnography. Patient was mask ventilated for 3 min. We were able to mask ventilate the patient adequately. We attempted to secure the airway first with size four classic LMA as per manufacturer's size



Figure 1. The obese child (wt 56kg, ht 139 cm) after hypospadias surgery.



Figure 2. Child with LMA size 2.5 in situ

recommendation for weight and then with size three classic LMA. Attempts were unsuccessful as evident from failure to ventilate. Now classic LMA size 2.5 was tried. Placement was successful and cuff was inflated with 14 ml of air and ventilation was found to be

adequate [figure 2]. Leak pressure was found to be 18 cm of water. Procedure took 40 minutes and we were able to ventilate the patient adequately throughout the procedure as observed on capnography [figure 3]. Reversal of neuromuscular blockade was done with intravenous administration of Neostigmine and Glycopyrolate. Patient had an uneventful recovery.



Figure 3. Adequate ventilation as observed with capnography

Discussion

The laryngeal mask airway is increasingly being used in pediatric patients. Present available ones are scaled down version of adult LMAs. The anatomy of the larynx of children is known to be different from that of adults (4). Use of LMA in children can result in difficult insertion, airway obstruction, increased ventilatory pressure, and oropharyngeal leak (5, 6). Usually size of LMA is recommended by manufacturer according to weight but development of oropharyngeal cavity is related with age, pure weight based method may not be most suitable (2). Kim et al (7) has recommended that in overweight children, LMA size according to the manufacturer's recommendation based on patient's weight is appropriate and in underweight children, LMA size by an ideal weight estimated from patient's age provides better ventilating conditions. But in our case we were able to ventilate the overweight patient with smaller size LMA. So it seems that other factors might

also exist and each case needs to be individualized. Till the time large scale studies are carried out to formulate new recommendation guidelines to ascertain appropriate size of LMA in overweight/obese/underweight children, wide range of LMA sizes should be available while anaesthetizing such pediatric patients.

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