Letter to Editor

Tongue Cyanosis Associated with LMA Cuff Inflation in an Preterm Infant

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Dear Editor,

Overinflation of laryngeal mask airway (LMA) cuffs is associated with pharyngolaryngeal morbidity. While cuff pressure recommendations are available for adults, evidence guiding cuff inflation in neonates and preterm infants remains limited.(1) We report an unusual episode of tongue cyanosis following manometry-guided inflation of a size-1 LMA in an ex-preterm infant and discuss its implications for cuff inflation practices in this vulnerable population.

A 35-day-old ex-preterm infant with retinopathy of prematurity was scheduled for intravitreal anti-vascular endothelial growth factor injection under general anaesthesia. The infant was born at 29 weeks' gestation with a birth weight of 900 g. At the time of intervention, the postconceptional age was 34 weeks and body weight was 1350 g.

Anaesthesia was induced with sevoflurane in oxygen and a flexible size-1 LMA was inserted. The cuff was inflated with 2 mL air to a pressure of 60 cmH_2O using a cuff manometer. Adequate ventilation was confirmed clinically and by capnography. Anaesthesia was maintained with oxygen-air-sevoflurane and pressure-support ventilation. The procedure lasted approximately 15 minutes, during which oxygen saturation remained above 98% and haemodynamic parameters were stable.

Following emergence, the LMA was removed when the infant was awake and breathing spontaneously. Immediately after removal of LMA, a striking bluish discoloration of the tongue was noted (Figure 1). Simultaneously, the infant developed inspiratory stridor, suprasternal and subcostal retractions, and increased work of breathing, suggestive of dynamic upper airway obstruction. A jaw thrust manoeuvre promptly relieved the

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obstruction, and the tongue regained its normal pink colour within 1–2 minutes (Figure 2). No further episodes occurred, and the infant remained stable during subsequent observation.

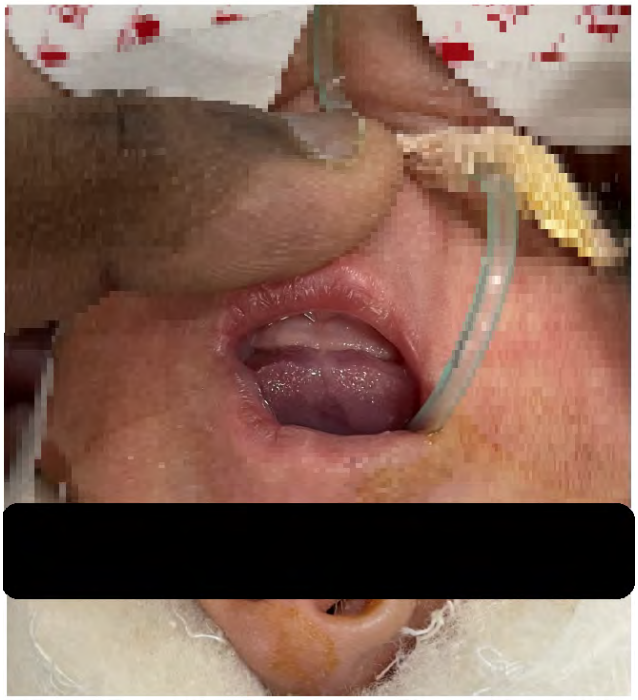

Figure 1- Bluish discoloration of the tongue noted immediately after removing the LMA.

Figure 2- Return of the pink colour of the tongue – 30s after.

In neonates and preterm infants, the larynx is positioned more cephalad and the epiglottis lies closer to the tongue base.(2) Consequently, the proximal portion of an inflated LMA cuff may exert greater pressure on adjacent pharyngeal and lingual structures than in older children or adults. Compression of lingual venous drainage, with or without transient impairment of arterial inflow, may explain the rapid onset and rapid resolution of tongue cyanosis observed in our patient. Progressive reduction in pharyngeal mucosal perfusion with increasing cuff pressures has previously been demonstrated, supporting a pressure-related mechanism for this complication.(3)

Current manufacturer recommendations advise maintaining LMA cuff pressures below 60 cmH_2O; however, these recommendations are largely extrapolated from adult data. Maino et al. demonstrated that very small increases in cuff volume can generate substantial cuff pressures in pediatric size-1 LMAs and reported marked variability between inflation volume and intracuff pressure.(4) Furthermore, lower cuff pressures (approximately 40–44 cmH_2O) have been associated with improved sealing characteristics and reduced pharyngolaryngeal morbidity in pediatric patients.(5)

Our observation suggests that cuff pressures considered acceptable according to current recommendations may still produce clinically significant tissue compression in very small infants. Although definitive conclusions cannot be drawn from a single

case, clinicians should consider routine cuff pressure monitoring and inflation with the minimum volume required to achieve an effective airway seal. Until neonatal-specific evidence becomes available, lower cuff pressures than those currently recommended for adults may be prudent in preterm infants.

Declaration of patient consent

Written informed consent was obtained from the parents for publication of the clinical details and images.

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Conflicts of interest

There are no conflicts of interest.

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