Case Report

Supraglottic device for circumventing bag-mask ventilation in giant lip hemangioma

Garima Agrawal[1], Ranju Singh[2], Revathy Nair[3]

From [1]Professor, [2]Director Professor, [3]Resident, Department of Anaesthesiology, Lady Hardinge Medical College and Kalawati Saran Children's Hospital, New Delhi, India

ABSTRACT

Congenital hemangiomas are benign tumors of endothelium most often occurring as a solitary lesion with a predilection for the head-and-neck. This report presents a case of a giant friable hemangioma of the lower lip in a 1-month-old male child posted for excision of the lesion. Airway management was challenging as the size, site, and history of repeated local site bleeding made mask ventilation impossible. Bypassing mask ventilation, a supraglottic device (SGD) was directly inserted and adequate lung ventilation was ensured followed by C-MAC® video laryngoscope-guided intubation. Challenging extubation was also overcome by the use of a SGD. This case demonstrates how an airway with impossible bag and mask ventilation can be managed by securing the airway with SGD before intubation.

Key words: Airway management, Hemangioma, Intubation, Laryngoscope

Congenital hemangiomas are benign tumors of the endothelium. They occur as solitary lesions with a predilection for the head-and-neck region [1]. The incidence in the newborn is 1–3% which progressively increases with age up to 1 year with an incidence of 10%. Hemangiomas in the perioral region may lead to significant complications including ulceration, feeding difficulties, and lip contour distortion requiring surgical intervention [2].

This report presents the airway management of a case of giant lip hemangioma in which the size, site, and friability of the lesion made mask ventilation impossible.

CASE REPORT

A 1-month-old male child weighing 2.4 kg presented with lower lip swelling since birth with a history of repeated local site hemorrhage. The child was fourth born to a 26-year-old mother, delivered at term by normal vaginal delivery with an APGAR score of 8 on 10. The antenatal period of the mother was uneventful.

On examination, there was a huge swelling of size approximately 10 × 8 cm causing outward displacement of the lip and also caused the mouth to be left open. The swelling was noticed after birth which progressively increased in size to attain the present size.

Routine blood investigations revealed low hemoglobin (10 g/dl). A thorough medical history revealed no other comorbidities. Based on the history and clinical examination findings, a diagnosis of congenital hemangioma of the lip was made.

Informed consent was taken from the guardian. An adequate fasting period was ensured. Difficult airway cart including fiberoptic bronchoscopes was kept ready. On arrival in the operating room, pulse oximeter probe, electrocardiography electrodes, and a non-invasive blood pressure cuff were attached. All the vital signs were within normal limits. Oxygenation through nasal prongs was started and the intravenous line was secured. The child was pre-medicated with injection fentanyl@ 2 μgs/kg. Anesthesia was induced with an injection of propofol @ 1 mg/kg maintaining spontaneous ventilation. Since mask ventilation was impossible, #1 i-gel® was directly inserted to ensure oxygenation and help in assisted ventilation as shown in Fig. 1a. Anesthesia was maintained with sevoflurane 2–4% in 100% of oxygen. Anticipating intraoral bleeding during the resection, securing the airway with an endotracheal tube (ETT) was imperative. Injection atracurium 5 mg was administered intravenously to facilitate intubation through i-gel® but was not successful. The i-gel® was removed and was followed by

Access this article online

Received- 05 September 2022
Initial Review- 20 September 2022
Accepted- 19 November 2022

DOI: 10.32677/ijcr.v8i11.3622

Quick Response code

Correspondence to: Dr. Ranju Singh, Department of Anaesthesiology, Lady Hardinge Medical College and Kalawati Saran Children's Hospital, Patparganj, New Delhi, India. E-mail: ranjusingh1503@yahoo.com

Figure 1: (a) Placement of i-gel®; (b) after endotracheal tube insertion; (c) Postoperative picture of the patient

C-MAC® videolaryngoscope-guided intubation of the trachea with #3.5 mm ID microcuffed ETT, as shown in Fig. 1b. Oropharyngeal throat packing was done to prevent the trickling of blood into the airway. The intraoperative period was uneventful.

Although the lesion was excised, reconstruction of the lip was not done and the mouth contour remained unstructured. The intraoral pack was removed and the trachea was extubated in a deep plane of anesthesia and i-gel® was reinserted. Shortly afterward, anesthesia was terminated and neuromuscular blockade was reversed. The child was awakened and i-gel® was removed. The injection of paracetamol 15 mg/kg was given for pain management. The post-operative period was uneventful, as shown in Fig. 1c.

DISCUSSION

The anesthetic concern in this child was impossible mask ventilation due to the huge size and peculiar site of the lesion over the lip, and the need for endotracheal intubation in view of intraoral dissection of the lesion and subsequent bleeding. We bypassed mask ventilation and directly secured the airway with a supraglottic device (SGD). Although previous studies by Jagannathan *et al*. have reported the use of a SGD for securing the airway and facilitating ventilation in pediatric difficult airway [3], none have highlighted their usefulness in maintaining oxygenation and check ventilation before intubation.

Blind intubation attempt through i-gel® was unsuccessful. Zamudio *et al*. demonstrated that blind intubation through i-gel® in pediatric patients was successful only in 23% of cases, while the success of intubation under fiberoptic guidance was 70% [4]. Fiberoptic bronchoscope-guided intubation is considered as the gold standard for securing a difficult airway [5] but it requires time for preparation. Furthermore, in pediatric patients, either general anesthesia or deep sedation is necessary, which is fraught with danger as there always looms the probability of losing the airway even before it is secured. Another option was intubation through an SGD which enables blind endotracheal intubation such as the Blockbuster™ Laryngeal Mask [6] but the appropriate size device was not available at that time in our operating room. A cohort analysis revealed that in children with a difficult airway, the success rate of tracheal intubation with the use of direct laryngoscopy as the first device was found to be only 3% in comparison to video laryngoscopy which offers a success rate of up to 55% in the first attempt [7]. We could also intubate the trachea in the first attempt with the use of C-MAC® video laryngoscope.

Jeon *et al*. described the emergency airway management following extubation using an SGD in an infant with Goldenhar syndrome having a facial anomaly where mask ventilation was difficult [8]. In our patient, the suture line interfered with proper placement and mask ventilation. Therefore, we removed the ETT and reinserted i-gel® post-extubation to continue with ventilation and avoid any emergency situation related to the inability to oxygenate. In a meta-analysis by Koo *et al*., the incidence of airway complications has been compared between deep extubation and awake extubation in pediatric patients after general anesthesia with an ETT or laryngeal mask airway and concluded that though extubation in deep is associated with fewer complications such as cough but can lead to airway obstruction [9]. In our patient, the trachea was extubated in a deep plane whereas i-gel® was removed after awakening and there were no complications during extubation.

CONCLUSION

The successful management of difficult pediatric airway patients, where mask ventilation is not feasible, can be done by directly inserting SGD for oxygenation both before intubation and after extubation.

REFERENCES

1. Bajwa SS, Panda A, Bajwa SK, Singh A, Parmar SS, Singh K, *et al*. Anesthetic and airway management of a child with a large upper-lip hemangioma. Saudi J Anaesth 2011;5:82-4.
2. Cawthorn TR, Fraulin FO, Harrop AR. Infantile hemangiomas of the lip: Complications and need for surgical intervention. Plast Reconstr Surg Glob Open 2019;7:e2308.
3. Jagannathan N, Sequera-Ramos L, Sohn L, Wallis B, Shertzer A, Schaldenbrand K. Elective use of supraglottic airway devices for primary airway management in children with difficult airways. Br J Anaesth 2014;112:742-8.
4. Zamudio-Burbano MA, Gaviria-Rivera E, Gómez-Castellanos G, Rodríguez CA, Ramirez SM, Latorre JLR, *et al*. Tracheal intubation with I-gel supraglottic device in pediatric patients: A prospective case series. Colomb J Anesthesiol 2018;46:37-41.
5. Apfelbaum JL, Hagberg CA, Caplan RA, Blitt CD, Connis RT, Nickinovich DG, *et al*. Practice guidelines for management of the difficult airway: An updated report by the American society of anesthesiologists task force on management of the difficult airway. Anesthesiology

2013;118:251-70.
6. Xiufeng Z, Tian M. The effect of blockbuster laryngeal mask equipped with ETT to patients under general anesthesia. J Pract Med 2016;32:506-7.
7. King MR, Jagannathan N. Best practice recommendations for difficult airway management in children-is it time for an update? Br J Anaesth 2018;121:4-7.
8. Jeon MS, Seo KS, Kim HJ, Yum KE. Emergency airway management using a laryngeal mask airway (LMA) following extubation in an infant with a congenital facial anomaly-A case report. Korean J Anesthesiol 2008;54:569-72.
9. Koo CH, Lee SY, Chung SH, Ryu JH. Deep vs. Awake Extubation and LMA removal in terms of airway complications in pediatric patients undergoing anesthesia: A systemic review and meta-analysis. J Clin Med 2018;7:353.

Funding: Nil; Conflicts of interest: Nil.

How to cite this article: Agrawal G, Singh R, Nair R. Supraglottic device for circumventing bag-mask ventilation in giant lip hemangioma. Indian J Case Reports. 2022;8(11):344-346.