International Journal of Research in Medical Sciences
Mutha S et al. Int J Res Med Sci. 2023 Dec;11(12):4569-4572
www.msjonline.org
pISSN 2320-6071 | eISSN 2320-6012

DOI: https://dx.doi.org/10.18203/2320-6012.ijrms20233736

Case Report

Anticipated difficult airway management in a case of hemifacial microsomia

Sandeep Mutha[1], Shrirang Pandit[2], Sushmitha K.[1], Deepak Phalgune[3]*

[1]Department of Anaesthesiology, [2]Department of Plastic Surgery, [3]Department of Research Poona Hospital and Research Centre, Pune, Maharashtra, India

Received: 13 October 2023
Accepted: 11 November 2023

***Correspondence:**
Dr. Deepak Phalgune,
E-mail: dphalgune@gmail.com

ABSTRACT

Airway management in paediatric patients with facial abnormalities is challenging for an experienced anaesthesiologist. Both mask ventilation and intubation can be difficult or impossible, especially with associated congenital facial anomalies. Hemifacial microsomia (HFM) is linked with mandibular hypoplasia and temporomandibular joint anomalies. These abnormalities may cause problems for direct laryngoscopy and endotracheal intubation. A case report of a two-year-old child having HFM with a history of failed intubation in the past is presented here. We did manoeuvres for proper fitting of mask and to prevent air leak during mask ventilation. As there was a history of failed intubation, we kept difficult intubation kit including fiberoptic bronchoscopy, video laryngoscopy and ultrasound ready.

Keywords: HFM, Difficult mask ventilation, Difficult intubation

INTRODUCTION

A unilateral otomandibular dysostosis or lateral facial dysplasia is a congenital craniofacial malformation labelled as HFM. There is a hypoplasia and asymmetry in skeletal and soft tissue.[1] The structure of the first and second pharyngeal arches are included in the HFM. The maxilla, mandible, external ear, middle ear ossicles, facial and trigeminal nerves, temporal bone, and muscles of facial look are also included in the HFM.[2] The estimated incidence of HFM varies from 1:3500 to 1:5600. After cleft and palate deformities, HFM is the most common facial birth defect.[3] Managing the airway in children having HFM is a test for anaesthesiologists. Mandibular hypoplasia and temporomandibular joint abnormalities are linked with HFM. These deformities can cause problems for direct laryngoscopy and endotracheal intubation.[4]

We present a case of anticipated difficult airway management in a child of HFM.

CASE REPORT

A 2-year-old child weighing 10.7 Kgs with HFM syndrome, was posted for macrostomia repair. Congenital facial anomalies were on left side i.e., macrostomia, low set microtia, hypoplastic mandible and a corneal panus (Figure 1). Kaban-Prazunsky grade 2B and milestones were achieved till date. Airway examination revealed macrostomia extending till anterior border of left masseter, hypoplastic left mandible with jaw being rotated to left side, mento-hyoid distance 1 cm, neck girth 27 cm and good neck movements. Haemogram, renal function tests and coagulation profile were normal. An AP and lateral X-ray neck revealed large air shadow at oropharynx and glottis area and no differentiation between larynx and oesophagus was seen (Figure 2 and 3). Air shadow was because of macrostomia, 2D ECHO and renal ultrasound were normal.

The danger of the problematic airway was clarified to the parents. A consent for tracheostomy and cancellation of

case was taken from the parents. A transparent plastic adhesive cut into required size were prepared if required. Problematic airway cart such as laryngeal mask airway (LMA), diverse sizes of face masks, Magill's forceps, bougie, stylet, McCoy's laryngoscope blade, video laryngoscope, fibreoptic bronchoscope, ultrasound, retrograde intubation kit and a tracheostomy kit were also arranged if required. Standard monitors like non-invasive blood pressure, electrocardiogram, oxygen saturation and rectal temperature probe were attached. Anaesthesia was induced with oxygen and sevoflurane 2-6.0 % on spontaneous ventilation using size 3 transparent face mask. Once the child became unresponsive, intravenous access was achieved with 24G peripheral intracath and a transparent plastic adhesive was used to cover the left lateral cleft lip (macrostomia) which prevented air leak. Fentanyl 1 µ/Kg, and ondansetron 0.08 mg/Kg were given. With proper fit of mask, we could mask ventilate the child and then succinylcholine 1 mg/Kg was given. Laryngoscopy was done by Mac 1 blade of C-Mac video laryngoscope. At 1-1.5 cm from the central incisor, epiglottis was visualised with Cormack-Lehane grade 3 with rotated larynx. With external manipulation, arytenoids and posterior cords were visualised and then 4.5 ID RAE cuffed endotracheal tube was passed orally followed by throat pack (Figure 4). Patient was maintained on end tidal sevoflurane of 1.5% and cisatracurium 1.5 mg. The vitals were continuously supervised. Surgical restoration comprised of straight-line closure, creating a neocommisure (Figure 5). The child was reversed and extubated with oral airway. Postoperative course was smooth.

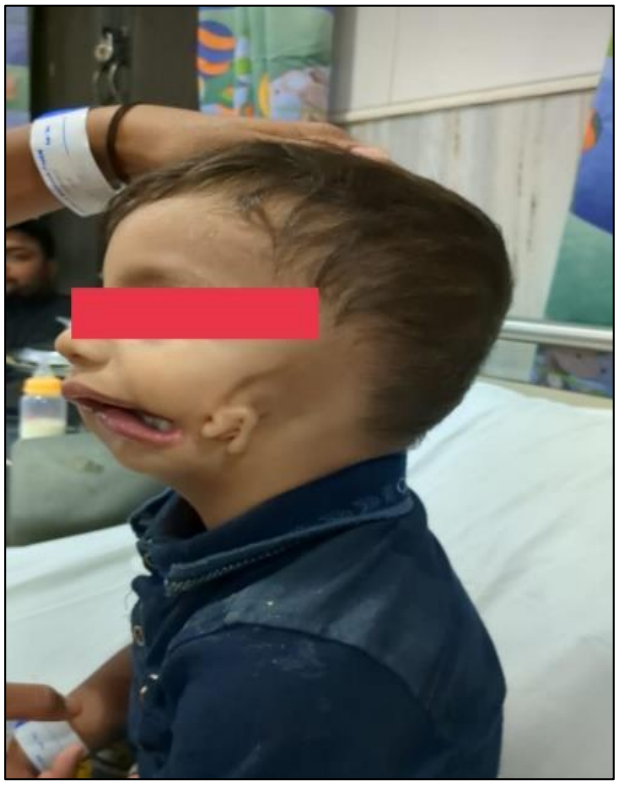

Figure 1: HFM child.

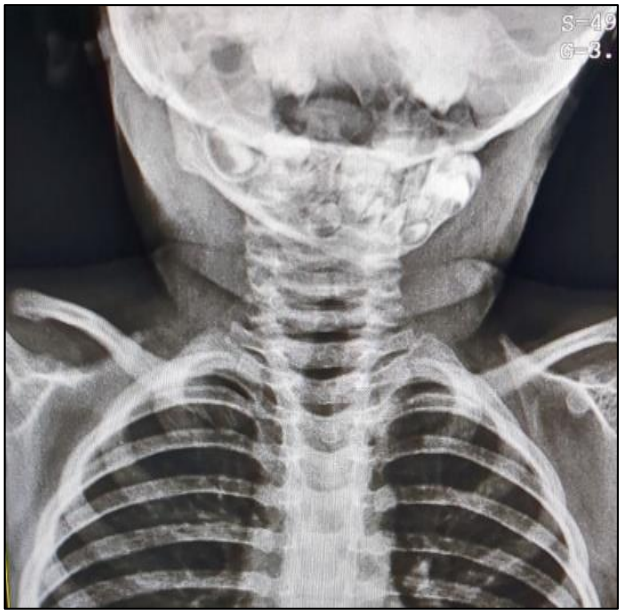

Figure 2: X-ray neck AP view.

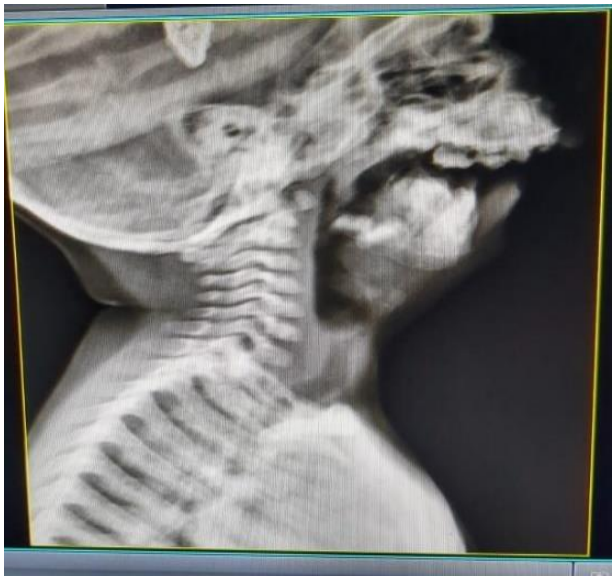

Figure 3: X-ray neck lateral view.

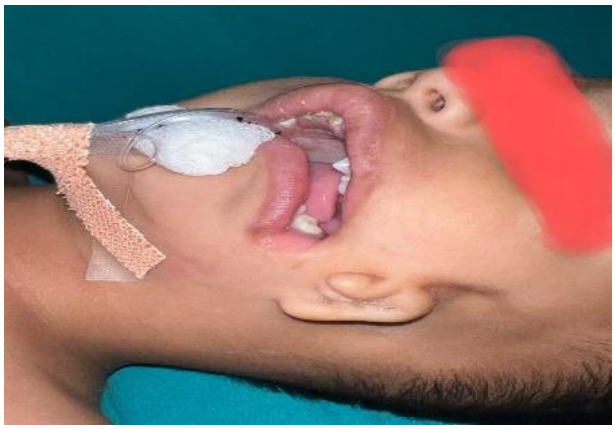

Figure 4: HFM child-post intubation.

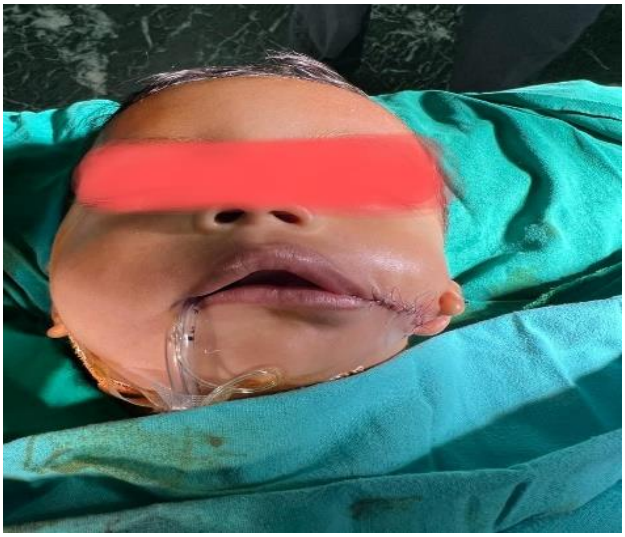

Figure 5: HFM child-post surgical procedure.

DISCUSSION

Macrostomia can be a single entity or can be linked with other congenital anomalies or syndromes, such as Treacher Collins syndrome and HFM.[5] Approximately 25% of one-sided macrostomia patients have HFM.[6] Macrostomia generally occur with defects of the surrounding bone, muscle and soft tissue derived from the first and second branchial arch. Mandible hypoplasia, maxillary duplication and zygomatic bone abnormality are generally present. Approximately 60-70% of patients have anomalies of the external and middle ear, preauricular skin and cartilaginous tags. Anomalies of the parotid gland and ducts, the trigeminal and facial nerve are generally not linked with macrostomia.[6] Congenital abnormalities like polydactyly, cardiac and renal anomalies have been described.[7]

The aesthetic and functional problems of the mouth can occur because of macrostomia. These comprise of eating problems, dribbling, talking disjointedness and trouble in puffing. The purpose of surgery is to correct these difficulties. Bütow and Botha classified the Tessier 7 clefts according to the severity. The best aesthetic results can be obtained if these sub-classifications are considered carefully and the surgery is performed accordingly.[8] If the surgery is conducted at an early age, the normal speech can be restored. When to perform surgery usually depends upon the severity orofacial abnormalities.[8]

The most common reasons of airway related morbidity in children are because of the inability to ventilate.[9] A methodical individualised approach with clear plans is required for the safe and effective airway management. Adequately trained personnel in airway management are required. An assessment before surgery, expectation of trouble, preparation, planning for alternatives, sensible use of airway aids and management of complications are crucial for successful airway management in children.[10] A major airway disaster was avoided in this case because of satisfactory preparation.

Various methods including LMA, fibreoptic intubation and the use of micropore adhesive are reported to manage the airway.[7] Transparent plastic adhesive is easily obtainable, inexpensive, atraumatic, leak proof, transparent and easy to use. As intubation is difficult in these cases, extubation should also be done with difficult airway cart ready.

CONCLUSION

Problematic airway in children is every anaesthesiologist's nightmare. Airway management procedure depends on the availability of appropriate equipment, experience and expertise of the attending anaesthesiologist. Proper assessment of airway and evaluation of head and neck with x-ray and other imaging techniques is essential. In this case we had anticipated difficult mask ventilation due to macrostomia and hypoplastic mandible. To overcome this, we reduced the size of macrostomia with the use of transparent plastic adhesive with the oral airway. Also, for proper fit of mask, transparent mouldable silicone anatomical mask was used. As mentohyoid distance was less, we used video laryngoscope and could see the epiglottis at a distance of 1.5 cm from the incisors and the trachea was rotated to hypoplastic side. With external laryngeal manoeuvre, the vocal cords were visualised.

Funding: No funding sources
Conflict of interest: None declared
Ethical approval: Not required

REFERENCES

1. Wang X, Feng S, Tang X, Shi L, Yin L, Liu W et al. Incidents of mandibular distraction Osteogenesis for Hemifacial Microsomia. Plast Reconstr Surg. 2018;142(4):1002-8.
2. Keogh IJ, Troulis MJ, Monroy AA, Eavey RD, Kaban LB. Isolated microtia as a marker for unsuspected hemifacial microsomia. Arch Otolaryngol Head Neck Surg. 2007;133(10):997-1001.
3. Hartsfield JK. Review of the etiologic heterogeneity of the oculo-auriculovertebral spectrum (Hemifacial Microsomia). Orthod Craniofac Res. 2007;10(3):121-8.
4. Xu J, Deng X, Yan F. Airway management in children with hemifacial microsomia: a restropective study of 311 cases. BMC Anesthesiol. 2020;20(1):120.
5. Gunturu S, Nallamothu R, Kodali RM, Nadella KR, Guttikonda LK et al. Macrostomia: a review of evolution of surgical techniques. Case Rep Dent. 2014;2014:471353
6. Kobraei EM, Lentz AK, Eberlin KR, Hachach-Haram N, Hamdan US. Macrostomia: A Practical

Guide for Plastic and Reconstructive Surgeons. J Craniofac Surg. 2016;27(1):118-23.
7. Joshi M, Khandelwal S, Doshi B, Samvatsarkar S. Lateral cleft lip and macrostomia: Case report and review of the literature. J Indian Assoc Pediatr Surg. 2014;19(4):242-3.
8. Bütow KW, Botha A. A classification and construction of congenital lateral facial clefts. J Craniomaxillofac Surg. 2010;38(7):477-84.
9. Jimenez N, Posner KL, Cheney FW, Caplan RA, Lee LA, Domino KB. An update on pediatric anesthesia liability: A closed claims analysis. Anesth Analg. 2007;104(1):147-53.
10. Cardwell M, Walker RW. Management of the difficult paediatric airway. Br J Anaesth CEPD Rev. 2003;3:167-70.

Cite this article as: Mutha S, Pandit S, Sushmitha K., Phalgune D. Anticipated difficult airway management in a case of hemifacial microsomia. Int J Res Med Sci 2023;11:4569-72.