Case Report
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Anesthetic management of a large mandibular odontogenic myxoma in a child – a case report

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Numerous neoplastic lesions can arise in the orofacial region in the pediatric populations. Odontogenic tumors typically affect the mandible more than the maxilla. Airway management can be challenging in pediatric oral tumors because of the distorted anatomy and physiological variations. Conventional awake fiberoptic intubation is not always possible owing to limited cooperation from the pediatric populations. Herein, we report the case of a 1-year-old child with odontogenic myxoma of the mandible and an anticipated difficult airway. Given the expected difficulties in the airway, video laryngoscope-assisted orotracheal intubation under general anesthesia with maintenance of spontaneous breathing was scheduled. Proper planning and thorough examinations are vital for successful airway management in pediatric patients.

Keywords: Airway Management; Intubation; Myxoma; Odontogenic Tumors.

INTRODUCTION

Airway management is a major contributor to morbidity and mortality [1]. Managing the airways of pediatric oral tumors is difficult, even for experienced anesthesiologists [2]. The feasibility of conventional awake intubation for difficult airways in pediatric patients depends on the patient's age and expected cooperation from the child, which is not always possible. A more cautious approach is necessary in situations with a distorted airway anatomy and the possibility of bleeding into the airway. Here, we describe successful anesthetic management of a large odontogenic myxoma of the mandible.

CASE REPORT

A 1-year-old female child weighing 9.5 kg, presented with swelling of the lower jaw. Swelling was first observed by her parents when she was 5 months old, which slowly progressed thereafter. Over the past 2 weeks, growth rapidly increased. She had a recent history of episodes of difficult breathing and was switched to a liquid diet as the space available in the mouth decreased. There was no significant medical or surgical history. Upon examination, a 5 × 6 cm swelling was found protruding from the lower jaw (Fig. 1). Computed tomography of the head and neck revealed a posterior extent of the tumor and slight external compression of the airway by the tumor (Fig. 2). The diagnosis of

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Fig. 1. Odontogenic myxoma protruding from the lower jaw and occupying almost entire mouth opening. A) antero-posterior view B) lateral view

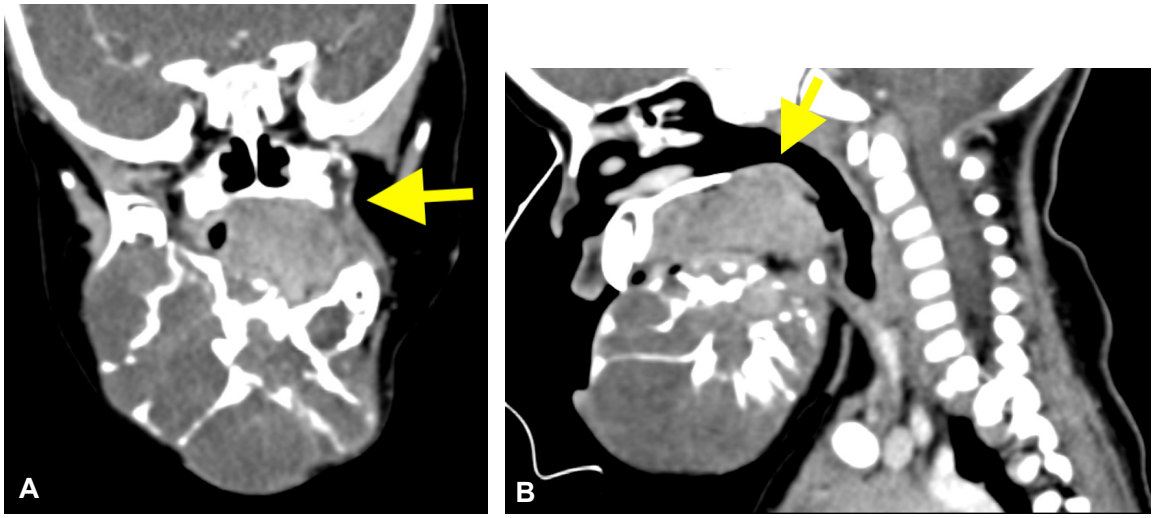

Fig. 2. A large multiseptate cystic/lytic lesion involving the mandible. It is compressing and pushing the floor of mouth and tongue upward against hard and soft palate, thereby causing oropharyngeal compromise. (yellow arrows) A) coronal and B) sagittal sections of contrast enhanced computed tomography image

odontogenic myxoma was confirmed after biopsy, and the infant was scheduled for enucleation and curettage under general anesthesia.

The preoperative biochemical investigations were unremarkable, with a hemoglobin of 13.4 g/dL. Written informed consent was obtained from the father explaining the possible need for post-operative mechanical ventilation. The manuscript, including the images and informed consent form, was reviewed by the Institutional Human Ethics Committee, which declared that there are no ethical concerns regarding its publication (IHEC AIIMS Bhopal, registration - ECR/775/Inst/MP/2015). The operating room was prepared for difficult pediatric airway with the necessary equipment, including a pediatric fiberoptic bronchoscope, needle cricothyroidotomy set, and manual jet-ventilation set [3-5]. An ear, nose, and throat surgeon was available to perform emergency tracheostomy if needed. The patient was administered

Fig. 3. Preparation for extubation with nasopharyngeal airway and tongue tie.

injections of ketamine (0.5 mg/kg) and glycopyrrolate (4 μg/kg) intravenously in the preoperative area to facilitate her transfer to the operating room.

Standard anesthesia monitors were attached to the patient in the operating room. Video laryngoscope-assisted orotracheal intubation under general anesthesia with maintenance of spontaneous respiration was planned, considering the anticipated difficulty of the airway [5-8]. The child was pre-oxygenated with 100% oxygen for 3 min. We were unable to seal the nose and mouth of the child using a standard age-appropriate face mask. The child required a larger mask and a two-hand technique to facilitate leak-proof preoxygenation and mask ventilation around the swollen lower jaw. She was administered additional ketamine at 0.5 mg/kg along with 2% sevoflurane in 100% oxygen, with a fresh gas flow of 6 L/min. Oxygen was administered using pediatric nasal prongs at 2 L/min and continued throughout the intubation process. The child received an intravenous infusion of propofol (100 μg/kg/min) to maintain the depth of anesthesia without neuromuscular blockade. Our primary aim was to achieve an adequate plane of anesthesia for laryngoscopy. Maintenance of spontaneous respiration is vital for successful and safe airway management. An experienced anesthesiologist performed the laryngoscopy using a video laryngoscope (MAC No. 1 blade), and the trachea was intubated with a 3.5-mm internal diameter cuffed polyvinyl chloride tube in one attempt. The modified Cormack and Lehane scoring system was VMac 2b [9,10]. As it was an intraoral

Fig. 4. Postoperative image of the patient just before discharge.

surgery, throat packing with saline-soaked gauze was performed to prevent soiling of the lungs with blood. The child was ventilated in volume control mode with a tidal volume of 80 mL, respiratory rate of 20, and a fraction of inspired oxygen of 40% to maintain the end-tidal carbon-dioxide between 35–40 mmHg during surgery. Anesthesia was maintained using isoflurane 1% and intravenous boluses of fentanyl and atracurium.

Additional intravenous access with 22 gauze cannula was secured to the dorsum of the right hand. Enucleation and curettage were performed and half of the mandibular body was excised from both sides. The surgery lasted for 120 min. The child received approximately 180 mL of lactated Ringer's solution, and blood loss was approximately 50 mL. Before planning for extubation, a laryngoscopy was performed to check for bleeding. After confirmation of proper hemostasis, the throat pack was removed, and a nasopharyngeal airway was placed. A tongue tie was used to prevent tongue falling following extubation (Fig. 3). Neuromuscular blockade was reversed with 60 μg/kg neostigmine and 10 μg/kg glycopyrrolate, and the infant was extubated. No postoperative airway obstruction or complications were observed. The tongue tie was removed, and the baby was observed in the intensive care unit for 1 day. The patient

was discharged on postoperative day 5 (Fig. 4).

DISCUSSION

Pediatric oral tumors pose a challenge for anesthesiologists. Effective face mask ventilation is critical for successful airway management. Difficult mask ventilation increases the risk of hypoxemia and adverse events, particularly when tracheal intubation is difficult. In our case, bag-and-mask ventilation was difficult because of the large swelling of the lower jaw. We used a larger mask and a two-hand technique to achieve a proper seal for preoxygenation and mask ventilation. Supraglottic airway devices are used as rescue devices during failed intubation. Insertion of a supraglottic device would have been difficult in our patient because she had restricted mouth opening and abnormal swelling of the lower jaw, which restricted tongue mobility. It would likely be difficult to perform laryngoscopy and intubation for the same reasons. Flexible fiberoptic intubation is an important option for patients with anticipated airway difficulty. However, given the likelihood of bleeding, considering the smaller airway and the lack of cooperation in our child, this option was not considered. Many studies have shown that video laryngoscopy increases first-pass success in tracheal intubation in children with airway difficulties [11-15].

Our plan was to sufficiently deepen the child until an experienced anesthesiologist could perform video laryngoscopy. Had video laryngoscopy proved difficult, and the view of the larynx was poor, even with the introduction of a gum-elastic bougie, we would have woken up the child or proceeded with a surgical airway. Necessary precautions must be taken throughout the procedure to minimize trauma and bleeding, as failing to do so may make subsequent attempts with alternative means more difficult or impossible [5].

Good preoperative preparation, supplemented by a thorough history and comprehensive examination, is necessary to secure a difficult airway in pediatric patients. Appropriate planning, execution, and experience of anesthesiologists play crucial roles in airway management of pediatric oral tumors.

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