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CASE STUDY

ANESTHETIC MANAGEMENT IN A 2 YR OLD CHILD WITH LYMPHANGIOMA OF TONGUE POSTED FOR WEDGE RESECTION

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ABSTRACT

The American Society of Anaesthesiologists (ASA) defined a difficult airway as "The clinical situation in which a conventionally trained anaesthesiologist experiences difficulty with mask ventilation, difficulty with tracheal intubation or both". Lymphangiomas are the most common etiology of macroglossia in children. A 2 yr old female weighing 10 kg presented to paediatric surgery department with complaints of tongue protrusion since 3 months.Local examination showed non tender diffusely large tongue, protruding and keeping the mouth permanently open. Investigations revealed low Hb of 8.13 gm%, platelet count of 6.4 lac. Premedication was given in form of injglycopyrrolate 0.04mg, inj fentanyl 20 mcg, injEmset 0.2 mg. The child was first intubated orally then nasal RAE no. 4.0 uncuffed tube inserted after removal of oral endotracheal tube. The patient was successfully extubated with stable vitals. Anaesthetic management of lymapangioma of tongue is a real challenge to anaesthesiologist. The importance of a thorough preoperative evaluation, attention to difficult intubation and maintenance of airway should be emphasized.

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INTRODUCTION

Lymphangioma is a primarily disease of childhood, as a result of sequestration of lymphatic tissue that has retained its potential for growth and do not communicate with other lymphatic tissue (Rosenberg and Roseberg, 1983). It can be apparent at birth 60% of the time, with 95% becoming symptomatic by 2 years of life. As the difficult airway management in children is different from adult, anaesthesiologist and paediatrician team should plan and execute the anaesthesia technique as well as airway management. We present a case of recurrent lymphangioma of tongue leading to macroglossia in a 2 year-old girl who had presented for wedge resection of tongue.

Case report: A 2 yr old female weighing 10 kg presented to pediatric surgery department with complaints of tongue protrusion since 3 months. It was insidious in onset. The girl was operated for the same pathology at the age of 1.5 yrs under general anesthesia. There were no records of type of intubation and any perioperative complications during previous anaesthesia. There was no history of respiratory difficulty. She could take both solid and liquid diet. G/E: Patient was moderately nourished, conscious and crying. The vitals were stable. There were no other physical abnormalities present.

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L/E:It revealed a diffusely large tongue, protruding and keeping the mouth permanently open. There were dry scabs present on ventral side of the tongue. There were no teeth abnormalities. Mallampatti could not be assesed. On palpation, the tongue was non tender and firm in consistency. The pediatrician had looked for and ruled out all other congenital abnormality. Perioperative blood analysis revealed low hemoglobin of 8.13 gm%, platelet count of 6.4 lac. Serum electrolytes, chest Xray and ECG were normal. Anaesthetic management: Preoperatively both the nostrils were instilled with xylometazoline drops. Premedication was given in form of injglycopyrrolate 0.04mg, inj fentanyl 20 mcg, injEmset 0.2 mg prior to shifting her to operating room. All preparation for anticipated difficult intubation/ventilation and tracheostomy were kept ready. Monitoring was initiated with continuous ECG, non invasive blood pressure, arterial oxygen saturation monitoring. The surgeons were asked to remain standby, in case tracheostomy was required. Preoxygenation was started with anatomical facemask no. 2. Patient was induced intravenously with inj ketamine 20 mg, oxygen, sevofluranethrough mask. Initially oral intubation was tried for a secure airway which was successful on first attempt under vision with endotracheal tube no. 4.0 portex, uncuffed with spontaneous respiration. Bilateral air entry was checked. Then nasal RAE no. 4.0 portex, uncuffedtube inserted, simultaneously removing the oral endotracheal tube as there was likely possibility of difficult intubation. Bilateral air entry was checked and the tube was fixed. Oral packing was done to

prevent aspiration of trickled blood due to surgical bleeding. Neuromuscular blockade was achieved with atracurium. She was maintained on sevoflurane, oxygen and nitrous oxide. The patient was given inj Hydrocortisone 50 mg and inj Dexamethasone 2 mg. Wedge resection of the tongue was done. Incision was kept on lateral margin of the tongue. Upper and lower flap elevated till middle and wedge excised. Hemostasis was achieved. Both the flapsare approximated with chromic 3.0 continuous sutures. Similar procedure was done on opposite side. The surgery lasted for 1 hour and 10 min. Intraoperatively 200 ml of fluids was given. At the end of surgery the child was allowed to return back to spontaneous respiration and neuromuscular blockade was reversed after adequate return of muscle power and respiratory tidal volume.Oral pack was removed and theendrocheal tube was extubated. She maintained her vitals and arterialoxygen saturation within normal levels without any support.

DISCUSSION

A difficult airway is a result of complex interaction between patient factors, the clinical setting, and the skills of the anaesthesiologist. The American Society of Anaesthesiologists (ASA) defined a difficult airway as "The clinical situation in which a conventionally trained anaesthesiologist experiences difficulty with mask ventilation, difficulty with tracheal intubation or both" (Caplan *et al*., 1993). Macroglossia is defined as a tongue that protrudes beyond the teeth or alveolar ridge. Complication owing to macroglossia includes articulation errors particularly in pronouncing consonants requiring tongue tip in approximation with the alveolar ridge or roof of the mouth. Deglutition problem is also important complication and results in failure to thrive owing to inadequate intake. Airway obstruction may be further complicated and may lead to pulmonary hypertension and corpulmonale. Acute respiratory distress owing to sudden respiratory obstruction has also been described. Neonatal hypothyroidism, cretinism has been associated with macroglossia (Teitelbaum, 2003; Horn *et al*., 2001). Lymphangiomas are the most common etiology of macroglossia in children. It can be apparent at birth 60% of the time, with 95% becoming symptomatic by 2 years of life. They typically involve the anterior two-third of the tongue. Hemangiomas, congenital vascular malformation may also present as macroglossia. Rhabdomyosarcoma of the tongue causes macroglossia and accounts for 20% of head and neck rhabdomyosarcomas. Neurofibromatosis may be associated with macroglossia when affected individual develop neurofibromatosis of the tongue (Teitelbaum, 2003; Horn *et al*., 2001; Gray and Parkin, 1996; Caplan *et al*., 1993). In a known difficult airway patient, preanaesthetic examination of upper airway and nostrils patency is important. Because of protruding tongue mask ventilation would be difficult to maintain. Soft nasopharyngeal airway offers better airway patency, as sharp tip of a blindly advancing nasotracheal tube may skewer adenoidal tissue, precipitate nasopharyngeal bleeding, trigger laryngospasm or aspiration of blood. When facial or oral pathology prevents visualization of larynx by direct laryngoscopy, then alternate means of tracheal intubation should be planned, so that excessive attempts to intubate the trachea with conventional techniques are avoided (Rosenberg and Roseberg, 1983; James, 1992).

Inhalational induction is the method of choice. This permits the anaesthesiologist to assess for any airway obstruction as the soft tissue tone decreases. Halothane and sevoflurane are the two currently available inhalational agents, which are least irritating to the airway and produce smooth induction. Sevoflurane has the advantage of a rapid and smooth induction. Halothane, in a gradually increasing concentration is a more suitable induction agent as the time available for performing a difficulty laryngoscopy and intubation is significantly more. In case of any doubt about ability to ventilate through the face mask, maintenance of spontaneous ventilation and use of topical anaesthesia in place of muscle relaxant is recommended. Spontaneous breathing may offer a patent airway and provide sight and sounds necessary to direct tracheal intubation (James, 1992). Preanaesthetic medication with anticholinergic agents reduces the volume of secretions and prevents reflex bradycardia during airway manipulations. Preanaesthetic narcotics or barbiturates are contraindicated because of the potential for cardiorespiratory depression. The intubation techniques in these cases include fiberopticnasotracheal intubation, blind nasal intubation and tracheostomy (Rosenberg and Roseberg, 1983; James, 1992; Kadis, 1981)

Fiberoptic intubation of the awake spontaneous breathing patient is the gold standard for management of an anticipated difficult or compromised airway. Its successful use in paediatric patients depends on several factors. Infants and children do not cooperate during awakefiberoptic intubation. So it is generally easier to keep them anaesthetized but breathing spontaneously. Loss of patency of child's airway can also occur rapidly with hypoxemia and desaturation due to high baseline oxygen consumption. Therefore, during airway manipulation administration of supplemental oxygen as well as atropine to prevent bradycardia and to dry secretions are essential steps to ensure success of the technique [(8)]. However, fiberoptic intubation is not a panacea and difficult or failed fiberoptic intubation is an ever present problem [(9)]. Common reasons for failure are inadequate training, lack of clinician's experience, limited field of view exacerbated by blood or secretions in the airway, poor airway anaesthesia, inability to advance the endotracheal tube over the fiberscope, distorted airway anatomy and limited space between epiglottis and posterior pharyngeal wall. In addition, fiberoptic bronchoscopes are expensive and fragile instruments and variety of sizes are needed in paediatric patients. Paediatric bronchoscopes are also smaller with reduced field of vision and have an insertion cord that is thinner and more flexible with different range of tip angulation. Bronchoscopes small enough for infants lack working channel (Auden, 1998).

In the absence of sophisticated paediatric fiberoptic equipment, blind nasal intubation remains the only non-surgical option for control of airway. When performed, it requires adequate sedation, topical anaesthesia, and vasoconstriction or general anaesthesia with preservation of spontaneous ventilation. The patient is placed in the classical intubating position with the neck flexed and head extended. After the endotracheal tube is inserted through the nostril, it is advanced blindly and directed into the glottis by listening for maximal breath sounds, observing fogging of the tube or by capnograph tracing (Wheeler, 1998). Various maneuvers may be employed to aid intubation. Flexion or extension of the head or manipulating the larynx by external pressure may line up the tube and larynx (Chung *et al*., 2003). Rotating the tube may be helpful (Hall and Shutt, 2003). A stylet can be inserted into the tube to help advance the tip through the vocal cords (Williamson, 1988).

The cuff may be partially inflated in the oropharynx to elevate the tip from posterior pharyngeal wall and centre it (Chung *et al*., 2003). The cuff is deflated before the tube is advanced into the trachea. A suction catheter that is inserted into the tube may facilitate passage through the larynx (Meyer, 1989). A bougie can also be used (Arora *et al*., 2006). A success rate from 72% to 86% has been reported for blind nasal intubation (Chung *et al*., 2003). Treatment of macroglossia with surgical excision is based on the effect on feeding, dentition, speech and airway compromise. Management involves a multidisciplinary team of an otolaryngologist, a speech therapist and an orthodontist.

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