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Case Report

Video Laryngoscopes: A Boon for Parapharyngeal Tumors of Childhood

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ABSTRACT

Parapharyngeal tumors often distort the airway anatomy leading to obstruction and hinderance for intubation thus posing a challenge for the anesthetist at securing airway with least damage to the nearby structures.

We present our experience through a series of 5 such cases in children managed successfully using video laryngoscope.

Working in places where availability of advanced airway equipment such as pediatric size fiberoptic is unavailable, a video laryngoscope can help to appropriately assess the airway and prevent disastrous outcomes.

Introduction

Parapharyngeal space is a potential space lying lateral to upper pharynx & resembles like an inverted pyramid that extends from the floor of skull to the hyoid bone. It accounts for 0.5% of all head and neck neoplasms, out of which schwannoma is the most common type [1]. Beside presenting as a bulging mass in the oropharynx, these tumors are associated with dysphagia, hoarseness of voice, foreign body sensation, discomfort, hypernasality & obstructive sleep apnea [1].

Airway management in these patients is difficult and often leads to can't intubate, can't ventilate situations. Tumor enlargement often causes obstruction and hinderance to the intubation procedure, thus posing challenges for anesthetist in securing a patent airway. Through these case reports, we would like to share our experience while dealing with such enlarged airway masses and the role of video laryngoscopes in overcoming such situation.

Case Report

CASE 1

A 8yrs old male child weighing 15kg and height 142cm came with the c/o right sided cheek swelling, which was gradual in onset and progressive over time and later was associated with difficulty opening mouth and decreased appetite. Child had no remarkable medical or surgical history. Mouth opening was one and half finger with Mallampati grade 4, with no restriction in neck mobility (Figure 1a & 1b). CT scan showed enhancing mass lesion (5x4x5cm) in nasopharyngeal region extending into pterygoid fossa and medially extending along right nasopharyngeal wall superiorly abutting middle cranial fossa leading to complete obliteration of parapharyngeal space (Figure 2). Vascular invasion was ruled out from normal MRA neck. Routine blood investigations were within normal limits. Child was planned for excision of tumor under general anesthesia. Mouth opening of child was one and half finger with Mallampati grade 4, with no restriction in neck mobility.

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After assessing the general condition and adequate NBM status, the child was taken up for surgery. Routine monitors were attached and vitals were recorded. Child was premedicated with inj. Glycopyrrolate (150mcg), inj. Fentanyl (30 mcg) and induced with sevoflurane (4%). After preoxygenation, trial for normal laryngoscopy with Macintosh blade No.2 was attempted but visualization was not adequate due to extension of growth. Inj. Lidocaine (21.4mg), inj. Propofol (30mg) and inj. Succinylcholine (30mg) were given i/v before another attempt with Infinium clearVue video laryngoscope and this time successful intubation with 5.5mm cuffed ET tube was done. Anesthesia was maintained with nitrous, oxygen, sevoflurane and atracurium. Intraoperative course was uneventful, complete excision of mass was done. Child recovered from anesthesia uneventfully and was extubated. He was later shifted to ward, kept for observation and was discharged after 3 days.

A **B**

Figure 1- Showing reduced mouth opening in child

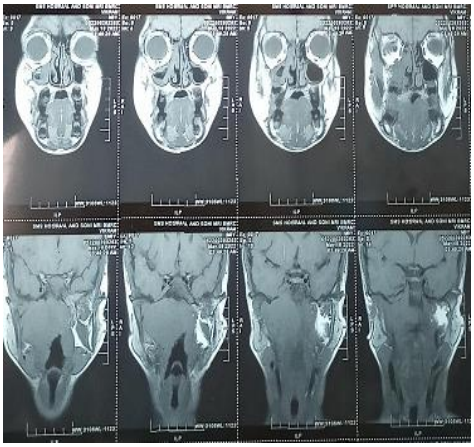

Figure 2- CT scan image showing the extent of tumor

CASE 2

17yrs old male weighing 40kg and height 166cm was came with c/o difficulty swallowing solid food due to growth around posterior wall of pharynx. He has been operated for same growth 3 years back. He had no other significant medical or family history. MRI neck was done, which showed large well defined lobulated mass measuring 54x82x84mm in left parapharyngeal wall extending from base of skull upto C5 level, posteriorly till prevertebral space causing mass affect over adjacent soft tissue leading to anterior displacement of carotid artery, IJV and pharyngolaryngeal column? schwannoma (Figure 3a). Routine investigations were within normal limits. On pre operative evaluation, the mouth opening was less than 2 fingers with MPG-4 with uvula deviated towards right side.

Patient was taken up for surgery with adequate NBM status. Routine monitors were attached. Premedication was done with inj. Glycopyrrolate (200mcg), inj. Midazolam (0.4mg), inj. Fentanyl (80mcg). Preoxygenation was done with 100% oxygen for 3 minutes. Meanwhile induction was done with inj. Propofol (80mg), inj. Succinylcholine (60mg). Laryngoscopy was attempted with Infinium clearVue video laryngoscope (Conventional laryngoscopy was not performed owing to the large deviation caused by the mass) and successful intubation with 7mm cuffed ET tube was performed. Complete surgical excision of mass was done (Figure 3b). Intraoperative course was uneventful and patient was extubated and shifted toward under stable vitals.

A **B**

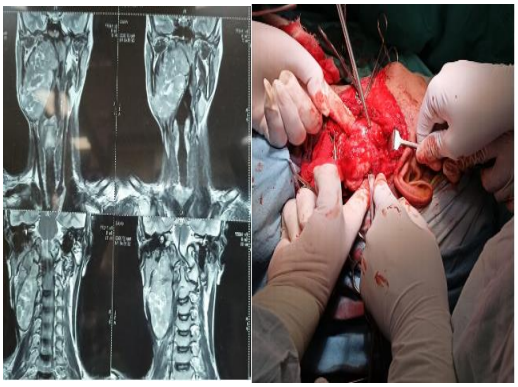

Figure 3- (a) Showing extension of mass along on MRI; (b) Intraoperative image while excision.

CASE 3

A 13yr old child weighing 34kg presented with the c/o swelling around the left cheek which was followed by severe pain in left upper and lower jaw (Figure 4a). The swelling started 15 days before and gradually the size increased to an extent, the child started to face difficulty swallowing. Routine blood investigations including chest x ray and ECG were done and were within normal limits. CECT neck (Figure 4b) was done which showed ill-defined heterogeneously enhancing 70x46x63mm soft tissue mass in left nasopharynx, infratemporal fossa, maxillofacial region with bony erosion of ramus of left mandible and parapharyngeal extension suggestive of malignant mass (? Lymphoma). Histopathology of specimen revealed high grade NHL (DLBCL). Plan for removal of mass under general anesthesia was made.

On examination the patient's mouth opening was hardly 2 fingers with MPG -3. Patient After taking the patient on OT table and attaching routine monitors, vitals were recorded. Patient was premedicated with inj.

Glycopyrrolate (200mcg), inj. Fentanyl(60mcg). Preoxygenation was done with 100% oxygen for 3 minutes. Once adequacy with bag and mask ventilation was ensured, induction was done with inj. Propofol(70mg), inj. Succinylcholine (50mg). Laryngoscopy was done with Infinium clearVue video laryngoscope and successful intubation was done with 6.5mm cuffed ET Tube. Surgery was allowed to proceed and I/O course went uneventful. Patient was extubated and was shifted to ward with stable vitals.

A **B**

Figure 4- (a) Showing mouth opening; (b) CECT image showing extension of mass.

Two more children (Figure 5 & 6) with similar complaints were being assessed for airway anatomy before taking an attempt for intubation. In both the cases, premedication was given after recording the baseline vital parameters. After ensuring adequate mask ventilation, inhalational induction was being performed using 5% sevoflurane in both the cases. Extent of airway distortion was assessed using Infinium clearVue video laryngoscope. Under direct vision, minimal attempts were taken at the securing airway with appropriate sized endotracheal tubes ensuring least damage to the nearby structures. Intraoperative course was uneventful in both the cases and extubation was performed before shifting the patients from OT.

Figure 5- Enlarged left neck mass

Figure 6- Right parapharyngeal mass

Discussion

The above case scenarios presented with reduced mouth opening and enlarged intraoral growths, thus posing a major hindrance in securing a patent airway with conventional Mcintosh blades. Repeated attempts for tracheal intubation with conventional laryngoscopes were avoided because of fear of causing more trauma to upper airway which would even culminate into difficult bag and mask ventilation. We avoided giving sedation and preferred using inhalational induction before attempting for tracheal intubation. Although fiberoptic bronchoscopes are considered as the most reliable tool in such situations, but appropriate skills and knowledge along with the availability in every setup also puts up a big challenge to the anesthetist. According to American Society of Anesthesiologists (ASA) Difficult Airway Management guidelines suggests awake fiberoptic intubation is successful in 88% of difficult airway management cases [2].

Awake nasal intubation was not attempted as the cases were young children and were not cooperative enough. Also, the growth in first case was extending from nasopharynx so, fear of soiling the airway with blood in attempts to secure nasal route was anticipated. According to a survey on Canadian anesthesiologists, video laryngoscope (McGrath) was selected by them as their first choice in cases of difficult intubation [3]. We preferred using video laryngoscope instead of conventional one, in order to get a wider field view and also reduce the number of attempts. Aziz et al [4] & Fiadjoe et al [5] reported in their studies that video laryngoscopes increase the intubation time significantly. Prolonged apnea time can lead to hypoxia in patients with reduced oxygen stores, such as obesity, pregnancy (which in our case was not there). Study by Hofstetter et al [6] concluded that the glottic view is improved by one grade (Cormack & lehane classification) with the use of video laryngoscope. Overall success rate of first attempt tracheal intubation with video laryngoscope was also

found to be significantly higher than the conventional laryngoscope [4]. In our case scenarios, we kept fiberoptic bronchoscopes and also the surgery team ready for the emergency tracheostomy. Although the surgical team should always be kept ready as a backup plan, another way to be given a try is retrograde intubation as it is less invasive and can be done in awake/sedated/obtunded patients in whom all other methods have failed [7-8].

Conclusion

In conclusion, parapharyngeal tumors can create severe distortion of airway & thus difficulty in intubation and mask ventilation. Role of video laryngoscope as a first option should always be considered as it provides wider field of vision, reduces number of attempts and also improves the laryngeal view. Clear image of distorted airway anatomy in such cases before attempting for intubation helps us to plan an appropriate technique accordingly. Various other methods such as retrograde intubation, awake fiberoptic guided intubation and tracheostomy should also be kept ready as a backup plan in order to deal with such daunting situations.

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