Case Report

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Retrograde Intubation of a Thyroglossal Cyst in a Child Presenting with Difficult Airway

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Abstract

This is an interesting case report of anesthetic management of a case of rare thyroglossal cyst on posterior part of tongue in a eight year old child who was posted for cyst removal under general anaesthesia. This case highlights the technique of railroading also called retrograde intubation which was done under sedation ultimately resulted in successful intubation of the patient. This technique is used for the first time in this age group with successful intubation.

Keywords: Retrograde Intubation; Thyroglossal Cyst.

Case Report

An eight-year-old boy presented with complaints of breathlessness, difficulty in swallowing and an intraoral swelling since six months. His weight was 20 kg. His systemic examination was within normal limits. Airway examination revealed a 2x3x3 cm intraoral cystic swelling on posterior part of tongue. Radiological examination did not show significant narrowing of the airways.

Relatives were counselled about the difficulty in intubation for general anaesthesia, available options, need for railroading technique including chances of failure. Informed consent for retrograde intubation and tracheostomy was also obtained.

Preparation of operation theatre included trolley for difficult intubation accessories and emergency drugs. Kit for retrograde intubation included J shaped guidewire from CVP set 70 cm in length and 0.6-0.8 mm in diameter, a 16 G Gelco with guard. Sets for emergency cricothyroidotomy and tracheostomy were kept ready. Monitors like pulse oximeter, $ETCO_2$, ECG and NIBP were attached.

The approximate anteroposterior depth of trachea was estimated according to the age. This depth was marked from tip of the needle with tape, which would act as a guard and can prevent injury to posterior wall of trachea.

Patient was given premedication with injection glycopyrrolate 10 mcg/kg, ondensetron 50 mcg/kg, midazolam 0.03 mg/kg. Titrated doses of sedation were given as injection ketamine 0.5 mg/kg and infusion of dexmedetomidine 0.5 mcg/kg/min. Xylometazoline nasal drops were used to decrease the incidence of epistaxis. Preparation of nasal passage for intubation was done with lubricating the passage with 2% lignocaine jelly and by putting patties soaked with 2% lignocaine 1 in 2 lakh with adrenaline.

Airway blocks were given as superior laryngeal block by palpating greater cornu of hyoid bone on either side. Two ml of 2% lignocaine without

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adrenaline was infiltrated after negative aspiration and 'pop off' was felt as needle pierces thyrohyoid ligament on either side. Transtracheal block was performed with 16 G Gelco by piercing cricothyroid membrane, not beyond the mark on the needle to avoid trauma to posterior tracheal wall.

The entry into trachea was confirmed by aspirating air and 2 ml 2% lignocaine was injected through it. The J tip of guidewire was introduced through 16 G needle and slowly advanced till it was retrieved through one of the nostrils. As there was a swelling in oral cavity, guidewire came out through one of the nostrils along the path of least resistance which is along the curve of posterior pharyngeal wall. Nasal uncuffed endotracheal tube of 4.5 number was inserted and railroaded over the guidewire with bevelled end of tracheal tube facing posterior during mounting to facilitate entry through glottis.

Confirmation of position of endotracheal tube was done and then guidewire was removed. Induction of general anaesthesia was done with injection propofol 4 mg/kg and muscle relaxant vecuronium bromide 0.08 mg/kg. Anaesthesia was maintained with oxygen 50%, nitrous oxide 50% and isoflurane 0.2-0.6%.

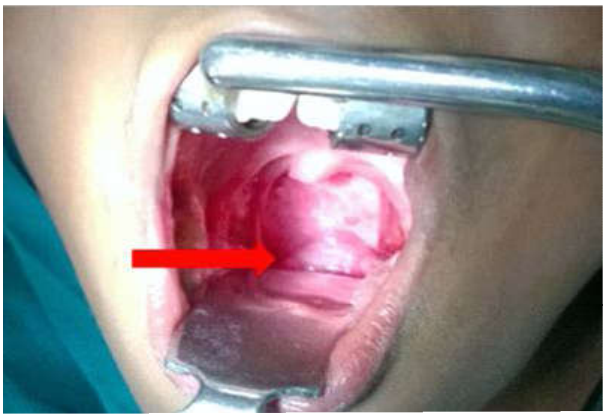

Fig. 1:

Fig. 2:

At the end reversal was done with neostigmine 0.04 mg/kg and glycopyrrolate 10 mcg/kg. Extubation was done after suctioning. Postoperative course of the patient was uneventful.

Discussion

Retrograde tracheal intubation is an alternative technique for difficult airway management [1]. It is indicated in various clinical situations [2] with variable success rate is variable [3]. It is simple and reliable method in experienced hands, but not used regularly as it can be uncomfortable and traumatic experience in an awake patient. The procedure needs a lot of understanding of airway anatomy and cooperation from patient which is not practical while dealing with pediatric cases. It is recommended in difficult airway algorithm of American society of anaesthesiologists [4].

Flexible fiberoptic intubation and blind nasal intubation are examples of other methods for coping with difficult airway [5]. Flexible pediatric fiberoptic scope needs lot of practice and skill. It may not be useful or available in every case [5,6].

There are numerous reports of variations to the basic technique to enhance reproducibility [7]. A thin guidewire such as epidural catheter or vascular guidewire is introduced from subglottic area and is used for guiding tracheal tube into the larynx. Waters reported this technique for successful nasotracheal intubations in older children with severely restricted mouth opening caused by cancrum oris [8]. The modified technique has used ventilating bougie [9], CVP guidewire [10] or a pharyngeal loop [11].

We have used J shaped CVP guidewire in this case. The J shaped guidewire negotiates the curved passage of larynx, pharynx, nasopharynx and nasal passage easily. The site of puncture was cricothyroid membrane. Injuries to vocal cords or trachea are possible because the depth of insertion is less <5 mm in children [12]. These potential complications were avoided by noticing anteroposterior depth of trachea on CT scan and by use of tracheal guard. Injury to thyroid gland was avoided by inserting the needle at a point where the skin is closest to cricoid cartilage [7].

The success of retrograde intubation depends on the traction on guidewire [7]. Keeping guidewire taught improves its stability as an introducer. The tension required is crucial and has to be gauged

carefully. The stretch on guidewire needs to be relaxed enough to allow advancement of tube into larynx.

Ideal sedation for success of this technique in this age group is not documented in literature. We will recommend combination of dexmedetomidine with ketamine over opioid and alpha 2 agonists to avoid hemodynamic and respiratory compromise. Dexmedetomidine attenuates cardiostimulatory effects and emergence delirium associated with ketamine [13].

There are very few case reports of retrograde intubation in pediatric age group [14,15]. Awake intubation as in our case is not documented anywhere in literature to our knowledge. This will be first case report of retrograde intubation in this age group under sedation without any complication.

The cyst was excised by diode laser and was found to be lingual thyroglossal cyst on histopathology.

Conclusion

Retrograde intubation technique is rarely practised due to unfamiliarity and perceived invasive nature of the procedure. We recommend training to postgraduate students to master the technique so that it will be used in such clinical scenarios even in pediatric age group where intubation with fiberoptic scope is not available or feasible. The training can be done by audiovisual aids, mannequin simulators and cadavers or on laryngectomy patients [7].

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