

## Anaesthetic Management of Retropharyngeal Abscess in A Child

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### Abstract

Retropharyngeal abscess occurs most commonly in children following acute upper respiratory tract and ear infection. Airway management in retropharyngeal abscess is an anesthetic challenge due to distortion of airway anatomy and the possibility of spontaneous rupture of abscess leading to aspiration or stridor due to laryngeal edema.<sup>1</sup> In this report we present a case of retropharyngeal abscess in a child, which was drained under general anaesthesia successfully without any complications.

**Keywords:** Retropharyngeal abscess, difficult airway.

### INTRODUCTION

Retropharyngeal abscess is infection of one of the deep spaces of the neck. These abscesses are frequent in children because of the abundance of lymph nodes in retropharyngeal areas.<sup>2</sup> These abscess poses a great challenge to the anaesthesiologist due to the involvement of upper airway which can lead to airway obstruction.<sup>3</sup> Securing the airway in these patients is always a difficult task and may land up in life threatening complications.

### CASE REPORT

A one-year-old boy weighing 7 kg was admitted with a history of a foreign body insertion in throat 6 days back, followed by bleeding after withdrawal of foreign body by the mother. Thereafter, patient had fever, neck swelling and difficulty in swallowing for 3 days.

Diagnosis of retropharyngeal abscess was made using neck X-ray and computed tomography (CT) scan. The X-ray showed widened prevertebral soft tissue shadow at C1-C7 level. CT scan revealed large peripherally enhancing hypodense collection in the retropharyngeal and bilateral parapharyngeal region measuring approx 17 × 46 × 54 mm extending from C1 to C7 vertebral level. Retropharyngeal abscess was abutting and displacing the trachea anteriorly however no significant luminal compromise seen. Centimeter, subcentimeter sized lymph nodes are seen in the bilateral level II, level III and level V. Laryngeal airways were normal. Trachea and main bronchi were normal. Heart and mediastinal vascular structures were normal. Lung fields were clear, and there was no pleural effusion.



**Figure 1 retropharyngeal abscess in a child causing a visible swelling on the right side of neck**



**Figure 2 X ray neck lateral view showing increased prevertebral soft tissue shadow**



**Figure 3 CT scan showing hypodense collection in the retropharyngeal region**

All investigations were within normal limits except for raised erythrocyte sedimentation rate (ESR) and leucocytosis. The patient was put on IV amoxicillin 250mg thrice daily, IV Metronidazole 25 ml thrice daily. The patient was taken up for intraoral drainage on emergency basis. He was febrile. There was a neck swelling on the right side. His pulse was 130 beats/minute, and the SpO<sub>2</sub> was 98% with room air. His mouth opening was adequate. Cervical spine was normal. Auscultation of respiratory system, air entry was found to be equal bilaterally and occasional rhonchi were present. Rest of the examination was unremarkable. In view of the anticipated difficult mask ventilation and intubation, all equipments for difficult airway management were kept ready, including that for emergency tracheostomy and the required consent was taken. In the operation theatre, IV line was secured with 24-Gauge cannula. Heart rate, oxygen saturation, respiratory rate and electrocardiogram (ECG) were monitored. Patient was kept in Head low position to prevent aspiration of abscess contents. In view of the anticipated difficult mask ventilation and intubation, an inhalational

induction was planned. Preoxygenation was done for 3 minutes, and anaesthesia was induced with incremental doses of sevoflurane in a mixture of 50% oxygen and 50% nitrous oxide. Under deep inhalational anaesthesia, check laryngoscopy was done with direct laryngoscope with lignocaine jelly on its blade to visualise the vocal cords. Cormack-Lehane grade was found to be 1, suggesting an easy intubation. Then patient was given Inj. Fentanyl 1mg/kg. Neuromuscular blockade done by Inj. Succinylcholine 2mg/kg and patient was intubated with a 3.5 mm cuffed endotracheal tube in a single attempt without any difficulty. The tube was fixed after confirming bilateral air entry. Anaesthesia was maintained with sevoflurane in oxygen and nitrous oxide. Inj. atracurium 0.5 mg/kg was given. Intraoral incision was made at the most bulging part of the posterior pharyngeal wall, and about 40 ml of pus drained out and sent for culture. Patient was given 2mg/kg of hydrocortisone and 0.15 mg/kg of dexamethasone intra operatively. Nasogastric tube was inserted. After the patient's adequate breathing efforts were confirmed, he was reversed using 0.05 mg/kg



neostigmine, 0.02 mg/kg atropine, and extubated. Postoperatively, the patient was conscious, alert, breathing adequately, maintaining saturation in room air and haemodynamically stable. The patient was shifted to postoperative room. A post-operative X ray

neck lateral view done on the next day which showed the disappearance of the prevertebral shadow. Next day he started having liquids and semisolids. Pus culture report came negative. Patient was discharged on 4<sup>th</sup> post-operative day.



**Figure 3** Post op x ray neck lateral view shows reduction in the prevertebral shadow post-surgery

## DISCUSSION

Retropharyngeal abscess is collection of pus in the retropharyngeal space which extends from base of the skull superiorly to the mediastinum inferiorly up to T1 level. Anteriorly it is bounded by the posterior pharyngeal wall and posteriorly by the alar fascia. Laterally it is continuous with the parapharyngeal space.<sup>4</sup> It occurs most commonly in childhood. Approximately 50% of patients are younger than 3 years and 70% are younger than 6 years of age. Male: female ratio is 2:1.<sup>5</sup> It occurs due to suppuration of retropharyngeal lymph nodes following an upper respiratory tract infection in children. It can also be caused secondary to foreign body or scope trauma to the posterior pharyngeal wall. In adults, it is usually secondary to caries of cervical spine.<sup>6</sup> It begins insidiously with upper respiratory tract or ear infection. It is usually associated with constitutional symptoms. In some cases, neck stiffness, trismus and mild torticollis may also be present. Infants and children may rapidly develop airway compromise and stridor.<sup>3</sup> Most of the abscesses are polymicrobial with predominant organisms being *Staphylococcus aureus* and group A *Streptococcus*.<sup>6,7</sup> Drainage of abscess and broad-spectrum antibiotics is the treatment of choice.<sup>4,7</sup> Intraoral drainage is preferred if the abscess is confined above the level of hyoid bone. If it extends below the level, it should be drained externally.<sup>4</sup> Anesthetic implications are as follows- the patient is often dehydrated, which results in electrolyte imbalance and metabolic derangements due to poor oral intake.<sup>8</sup> If the presentation is delayed, there may be other complications like empyema or mediastinitis.<sup>7</sup> Difficult airway is the major concern in these cases. Tracheal intubation is always challenging due to distorted airway anatomy, oedema and decreased mouth opening.

In our case, on check laryngoscopy, vocal cords could be visualized clearly and there was no laryngeal oedema resulting in successful and easy intubation in single attempt. Although in many cases, vocal cords may be difficult to visualise due to swollen pharyngeal wall, airway oedema and laryngeal displacement. Difficult mask ventilation may also be encountered in these cases. Moreover, children are more prone to develop airway related complications such as laryngospasm and bronchospasm. In pediatric patients maintenance of spontaneous ventilation is very important due to the rapid development of hypoxia.

Muscle relaxants can be put on hold till the airway is secured. Another major concern is rupture of abscess and aspiration of the contents during laryngoscopy and intubation, so there should be gentle laryngoscopy to prevent this complication. Patient should be kept in head low position to prevent the abscess to trickle into the airways if ruptured during intubation. Thorough throat packing should be done if uncuffed tube is used.

## CONCLUSION

Retropharyngeal abscess in children pose a great challenge to anaesthesiologist especially when planning to securing the airway. However, an out of box thinking can buy success for managing these cases. Meticulous preparation is the key for management of such cases. Anaesthesiologist must be well trained and prepared for managing difficult airway during the procedure and should be skilled for the invasive methods of securing airway in emergency which may prove to be lifesaving in these cases. Also, a multidisciplinary team approach with a good collaboration between otolaryngologist and anaesthesiologist is essential in preventing any morbidity or mortality from this life threatening acute upper airway disease.

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