

**ROLES OF ANESTHESIA TEAM IN RETROPHARYNGEAL ABSCESES EARLY
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Abstract:

The anaesthesiologist faces a significant problem when treating retropharyngeal abscess due to the disease's restricted airway. In this report, we provide a case of a child's retropharyngeal abscess that was successfully drained under general anesthesia without problems. The current research contains the most comprehensive series of pediatric retropharyngeal abscesses in modern medical literature. Changes in the illness process and management from the first half of the century to now

are reviewed, and recommendations for optimal management are offered, with a focus on the role of the anesthesia team in patient airway management, which is particularly difficult. Increased anxiety can aggravate early upper airway blockage, potentially leading to respiratory decompensation, particularly in younger children. It is critical to get both aerobic and anaerobic blood cultures. In 91% of retropharyngeal abscess cases, white blood cell counts exceed 12,000/ μ L. Lateral neck radiographs are the ideal imaging modality for diagnosing suspected retropharyngeal abscesses, especially in young children. This decision is based on their reduced radiation exposure and improved patient tolerance, particularly for patients exhibiting signs of airway impairment. Airway treatment in retropharyngeal abscess presents an anesthetic challenge due to airway architecture distortion and the likelihood of spontaneous abscess rupture, which might result in aspiration or stridor due to laryngeal edema.

Introduction:

Retropharyngeal abscess (RPA) in children are potentially life-threatening events generally resulting from purulent spreading into the retropharyngeal space after an upper airway infection. Surgical drainage may be difficult especially in the case of upper deep locations [1]. Retropharyngeal abscesses in children are not frequent but potentially life-threatening events, and according to some studies, they are the most common site of deep neck space infection in children. They generally result from purulent spreading into the retropharyngeal space after the breakdown of a suppurated lymphadenopathy following an acute upper airway infection such as adenoiditis, rhinosinusitis, and tonsillitis. Given that retropharyngeal lymph nodes generally regress by the age of six, this condition mainly affects preschoolers, as it has been reported that more than 95% of retropharyngeal abscesses occur in children younger than six [2,3].

The retropharyngeal space is a potential space extending from the skull base to the mediastinum at the level of T1 or T2, which is delimited anteriorly by the dorsal portion of the visceral layer and posteriorly by the alar division of the deep layer of the cervical fascia. The dangerous nature of retropharyngeal abscesses is related to the possible risk of airway obstruction and inhalation of purulent material, due to both spontaneous and induced abscess fistulization into the airways (mainly during orotracheal intubation or palpation of the posterior pharynx during clinical examination). Septic sequelae including toxic syndrome, abscess extending to other deep neck compartments, and mediastinitis are other severe complications. The latter results from gravitational descent of purulent fluid into the posterior mediastinum from the so-called danger space: an anatomic recess within the deep retropharyngeal region placed directly in front of the vertebral space that has no inferior anatomic boundaries, rather it directly joints the posterior mediastinum caudally. For all these reasons, retropharyngeal abscesses require a prompt diagnosis and early treatment under an urgent or emergent regimen [4,5]. Children appear extremely ill, with great discomfort with neck extension. Clinical presentations include dysphagia and odynophagia, neck stiffness and torticollis, drooling, hot potato voice, trismus (in case of parapharyngeal

involvement), neck swelling (in case of extension to other deep neck compartments), chest pain (in case of mediastinal involvement), respiratory distress, and toxic appearance [6]. A small amount of edema in the airway can cause significant airway obstruction in infants. Intubation is very difficult in patients who present with airway obstruction secondary to deep neck space infection. Direct laryngoscopy and multiple unsuccessful attempts can puncture the abscess and cause aspiration of pus, which can lead to pneumonitis, tracheitis, and bronchitis. Patient with suspected RPA presenting with signs of airway obstruction, such as tripod or sniffing position, cyanosis, unable to speak, and tachypnea with grunting, should involve an anesthesiologist and otolaryngologist in promptly securing airway in a controlled setting, as in our case [6].

Review:

A retropharyngeal abscess is a purulent accumulation in the retropharyngeal space, extending from the base of the skull superiorly to the mediastinum inferiorly, reaching the T1 vertebral level. It is anteriorly delineated by the posterior pharyngeal wall and posteriorly by the alar fascia. It is laterally contiguous with the parapharyngeal space. It predominantly manifests during childhood. Fifty percent of patients are under three years old, and seventy percent are under six years old. The male to female ratio is 2:1. This arises from the suppuration of retropharyngeal lymph nodes subsequent to an upper respiratory infection in pediatric patients. It may also result from foreign body or endoscopic trauma to the posterior pharyngeal wall. In adults, it is typically a consequence of cervical spine caries [8].

The clinical features are delineated as follows. It commences insidiously with an upper respiratory or ear infection. It is typically linked to constitutional symptoms. Neck rigidity, trismus, and minor torticollis may also be observed. Infants and children swiftly have airway obstruction and stridor. The majority of abscesses are polymicrobial, with *Staphylococcus aureus* and group A *Streptococcus* being the primary pathogens.

The preferred treatment is the drainage of the abscess accompanied by broad-spectrum antibiotics. Intraoral drainage is favored when the abscess is localized above the hyoid bone level. If it descends below the level, it must be evacuated outside [7,10].

The anesthetic implications are as follows. The patient frequently experiences dehydration, leading to electrolyte imbalances and metabolic disturbances due to inadequate oral intake. The patient may be experiencing septicemia. A delay in presentation may result in further complications such as empyema or mediastinitis. Challenges in airway management are the primary problem. Tracheal intubation is complicated by deformed airway architecture, edema, and restricted mouth opening. In the initial phases, the induction of general anesthesia mitigates trismus; but, in subsequent phases, it may trigger a cannot ventilate, cannot intubate scenario [11]. The vocal cords may be challenging to visualize due to pharyngeal wall edema, airway swelling, and laryngeal displacement. Another issue is the rupture of an abscess and the aspiration of its contents during

laryngoscopy and intubation, which should be performed gently to avert this complication. Comprehensive throat packing is necessary when use an uncuffed tube [12].

The administration of muscle relaxants during general anesthesia may result in total airway blockage, complicating ventilation or intubation. Therefore, inhalational induction in spontaneously breathing patients and gentle laryngoscopy by skilled practitioners is advised. The necessity for an emergency surgical airway at any point during the perioperative phase must be acknowledged. Immediate postoperative extubation is typically performed; however, the necessity for elective breathing must be assessed based on preoperative airway impairment and the potential for postoperative edema in each instance. In one instance, the onset of post-extubation laryngospasm, accompanied by a highly edematous laryngopharynx, resulted in a life-threatening scenario characterized by insufficient mask ventilation, rapid desaturation, and hypoxia during the tracheostomy procedure. The compression effect of laterally positioned tape gauzes at the bilateral drainage site in the neck was another possibility; they were removed immediately to enhance the laryngoscopic vision, but reintubation was unsuccessful [13].

In addition to tracheostomy, alternate procedures for managing a difficult airway include subcuticoid puncture for jet ventilation, transtracheal retrograde intubation, and supraglottic airway devices such as laryngeal mask airways (LMAs); however, their efficacy is limited in the presence of intraoral disease. Rapid desaturation precluded the attempt of flexible fiberoptic intubation, necessitating a definitive tracheostomy to sustain oxygenation for an extended duration amid suspected laryngeal edema or laryngospasm [13]. Airway care in children is complex and potentially life-threatening when intraoral or cervical diseases are present. We encountered challenging mask breathing and unsuccessful reintubation in a case of retro/parapharyngeal abscesses, necessitating an emergency tracheostomy that ultimately rescued the infant [13]. Anesthesiologists must be proficient in invasive airway management techniques in emergencies, as these can be lifesaving in instances of challenging airway situations.

A delay in diagnosing a retropharyngeal abscess might lead to life-threatening complications. This review emphasizes the critical need for the swift identification of a compromised airway and the care of retropharyngeal abscesses by emergency physicians. In cases when an emergency physician detects retropharyngeal abscess (RPA) accompanied by airway obstructions, the airway must be promptly secured in a controlled environment by an otolaryngologist and an anesthesiologist [14]. Postponement in the identification of retropharyngeal abscess may result in severe, life-threatening consequences. The management of RPA is interdisciplinary, encompassing several teams such as intensivists, otolaryngologists, anesthesiologists, and infectious disease specialists. If an emergency physician suspects retropharyngeal abscess with airway obstruction, the airway must be quickly secured by an otolaryngologist and anesthesiologist in a controlled setting [14].

Conclusion:

Retropharyngeal abscesses are infrequent yet potentially fatal diseases that predominantly impact children aged 5 and under, and infrequently adults. A viral upper respiratory infection usually precedes abscess formation; however, retropharyngeal infection may also result from oropharyngeal trauma or dental pathology. Retropharyngeal abscesses are purulent accumulations situated within the retropharyngeal space, positioned between the buccopharyngeal fascia anteriorly and the alar fascia posteriorly. An enlarging retropharyngeal abscess may cause upper airway obstruction and potentially result in asphyxiation. The management of retropharyngeal abscess entails the use of broad-spectrum intravenous antibiotics, with or without surgical incision and drainage. Untreated retropharyngeal abscesses may lead to upper airway blockage and respiratory discomfort. Patients diagnosed with retropharyngeal infection may necessitate hospitalization and otolaryngology consultation. After the clearance of infection, certain patients may necessitate prolonged hospitalization, tracheostomy, and/or nasogastric tube feeding owing to sustained inflammation in the upper aerodigestive tract. This activity offers a comprehensive overview of the assessment and treatment of retropharyngeal abscesses, highlighting the essential role of the anesthesia team in managing the condition to enhance patient outcomes, particularly regarding intubation by the most skilled team in the hospital, predominantly in the operating room. Tracheal intubation is complicated by altered airway anatomy, edema, and restricted mouth opening. In the initial phases, the induction of general anesthesia mitigates trismus; but, in subsequent phases, it may trigger a cannot ventilate, cannot intubate scenario. The vocal cords may be challenging to visualize due to pharyngeal wall edema, airway swelling, and laryngeal displacement. Another issue is the rupture of an abscess and the aspiration of its contents during laryngoscopy and intubation, which should be performed gently to avert this complication. Comprehensive throat packing is necessary when use an uncuffed tube.

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