

Management of Submandibular Abscess with Limited Resources

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Abstract

Though incidence of submandibular abscess is decreasing, from an anaesthesiologist point of view, it is invaluable to understand the disease process as the greatest impact is on the airway and failure of management can lead to catastrophic outcome. Successful management of submandibular abscess requires an accurate diagnosis, understanding the anatomy and spread of infection in the head and neck, airway control, appropriate antibiotic therapy and surgical drainage whenever needed. As an anaesthesiologist to be challenged with a submandibular abscess may not be infrequent particularly in a developing country like India, where dental and oropharyngeal hygiene can be of grave concern. The standardised approach of successful anaesthetic management of submandibular abscess usually involves an awake nasal intubation. But this may not be possible in some situations like an uncooperative patient, an acute emergency with limited resources where fibre optic bronchoscope is unavailable. We describe the successful management of one such case.

Keywords: Submandibular abscess, apneic oxygenation, 'tailor made' nasopharyngeal airway

INTRODUCTION

Karl Friedrich Wilhelm Von Ludwig provided a clear description of submandibular abscess, in 1836. He described it as a rapidly progressive gangrenous cellulitis that began in the vicinity of submandibular gland and spreads by contiguous rather than through the lymphatic system.^[1-4] The mortality was greater than 50% in the pre-antibiotic era.^[5] Death could occur suddenly, and it was attributed to sepsis until the role respiratory obstruction was appreciated in the early 1900.^[2,3]

The etiology of submandibular abscess is primarily due to gingival or dental abscess. In the modern era, fashion trends such as tongue piercing and lip piercing can lead to infection and subsequent development of submandibular abscess. Other causes include peri-tonsillar and para-pharyngeal abscesses, oral malignancy, and mandibular fractures.^[6]

CASE REPORT

A 9-year-old girl child presented to the emergency department with chief complaints of inability to open mouth and pain and swelling in the lower jaw and neck for 2 days. She had a history of dental pain since the last 7 days. On physical examination,

she had respiratory distress and was toxic in appearance. Temperature recorded 101.8°F with a pulse rate of 118/min, blood pressure 136/86 mmHg, and respiratory rate was 33/min. Mouth opening of one finger (interincisor distance 1.5 cm) was noted along with a swollen tongue that was protruding slightly. She had labored breathing with difficulty in managing oral secretions. Extraoral swelling was indurated, nonfluctuant with unilateral involvement of submandibular gland of the right side [Figure 1]. Diagnosis of submandibular abscess was made and the patient was transferred to the operation theatre for emergency surgical decompression of the gland.

The management plan was discussed with the surgical and anesthetic team. No routine investigations were available as the case was immediately transferred to the operation theatre after drawing blood samples for routine investigation while securing the intravenous line. Help of a senior anaesthesiologist was sought in view of difficult airway.

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Initial assessment suggested a difficult mask ventilation and laryngoscopy due to soft tissue swelling of the neck and oral cavity [Figures 2 and 3]. ENT surgical team was informed about the need for emergency tracheostomy at any point during the management of the patient. Awake fiberoptic intubation did not seem a practical option in an uncooperative child with respiratory distress.

It was decided, to maintain the patency of the airway, a nasopharyngeal airway be inserted in the awake state. This would help to provide apneic oxygenation and buy time during laryngoscopy and intubation. Appropriate size pediatric nasopharyngeal airway was unavailable so a small size endotracheal tube (size 5.5 mm ID) was chosen. It was dipped in hot water to soften and cut short according to the size of the nasopharyngeal cavity of the child.

The “tailor made” nasopharyngeal airway was inserted in the awake child and inhalational induction was attempted with gentle mask ventilation. In case of failure of nasal insufflation technique, plan B was to adequately preoxygenate via face mask before attempting laryngoscopy. Anesthesia was deepened with halothane and intravenous propofol. Patency of airway, and hence, ventilation was maintained despite severe soft tissue swelling due to the nasopharyngeal airway. After achieving adequate depth of anesthesia, check laryngoscopy was done, mouth opening had increased, and glottic opening was almost visible (Cormack Lehane 2b). Patient was ventilated again and an appropriate dosage of succinylcholine (1.5 mg/kg) was given. One minute following this gentle and careful laryngoscopy and intubation with 6 mm ID endotracheal tube was done, correct placement of endotracheal tube was confirmed by auscultation and capnography. Following this inj. fentanyl 1 µg/kg was given.

Surgical decompression of submandibular abscess was done. The procedure lasted for 1 hour. With no intraoperative complications and maintenance of normal vital parameters extubation was planned. Patient was monitored for any signs of respiratory distress in the postoperative period in the intensive care unit for 2 days. Patient was discharged following appropriate antibiotic therapy for 7 days.

DISCUSSION

Airway management is of prime concern in dealing with patients of submandibular abscess.^[7] Usually patients present with elevation and protrusion of tongue due to submandibular edema. Stridor, difficulty in managing secretions, anxiety, and cyanosis represent late signs of impending airway obstruction and require immediate need of an artificial airway.

Findings such as trismus, nuchal rigidity, and supraglottic edema may affect mouth opening, neck mobility airway calibre, and can complicate management in an emergency scenario. Therefore, appropriate difficult airway equipment and experienced personnel should be available.

Surgical intervention under anesthesia without a secured airway (e.g., cuffed endotracheal tube) carries the risk of abscess rupture,



Figure 1: Side view of patient showing extraoral swelling on right side of face



Figure 2: Front view of the patient showing extensive swelling and an anticipation of difficult mask ventilation



Figure 3: Limited mouth opening anticipating difficult laryngoscopy and intubation

aspiration, and total airway collapse due to compromised calibre. Hence, it is of paramount importance to secure a definite airway before any surgical manipulation in these patients.

Management should involve a team approach which involves both anesthesia and surgical team. Tracheostomy as an option in an emergency case of heavy soft tissue edema can be lifesaving. Awake fiberoptic nasal intubation that bypasses the oral cavity can be attempted in the evidence of upper airway obstruction. This avoids the unnecessary manipulation of the fragile swollen oral mucosa that can lead to injury, abscess rupture, and airway collapse.

On the other hand, in an emergency situation in an uncooperative patient with respiratory distress, awake fiberoptic intubation may not always be a practically feasible option. Such situations demand a clear clinical analysis of the gravity of the situation and skilful management of the case using the limited available resources, ensuring that at no point the safety of the patient is jeopardized.

CONCLUSION

From initial assessment till postoperative recovery, submandibular abscess requires close association and collective effort of the anesthetic and surgical team. Maintenance of a patent airway during the course of the disease is of utmost importance. This can be guided by close clinical watch on the patient.

Standard protocol for anesthetic management of submandibular abscess involves the fiberoptic-guided nasal intubation which may not be always practical. In the setting of an acute emergency, limited availability of resources or an uncooperative patient it becomes essential to understand the disease process, spread of infection,

and skilful use of the available resources to successfully manage such patients.

Declaration of patient consent

The authors certify that they have obtained all appropriate patient consent forms. In the form the patient(s) has/have given his/her/their consent for his/her/their images and other clinical information to be reported in the journal. The patients understand that their names and initials will not be published and due efforts will be made to conceal their identity, but anonymity cannot be guaranteed.

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Conflicts of interest

There are no conflicts of interest.

REFERENCES

1. Saifeldeen K, Evans R. Ludwig's angina. *Emerg Med J.* 2004;21:242-3
2. Maple BF. Ludwig angina: a review of current airway management. *Arch Otolaryngol Head Neck Surg.* 1999;125:596-8.
3. Honrado CP, Lam SM, Karen M. Bilateral submandibular gland infection presenting as Ludwig's angina: first report case. *Ear Nose Throat J.* 2001;80:217-8, 222-3.
4. Murphy S. The person behind the eponym: Wilhelm Frederick von Ludwig, 1790-1865. *J Oral Pathol Med.* 1996;25:513-6.
5. Bansal A, Miskoff J, Lis RJ. Otolaryngologic critical care. *Crit Care Clin.* 2003;19:55-72.
6. Fischmann GE, Graham BS. Ludwig's angina resulting from the infection of an oral malignancy. *J Oral Maxillofac Surg.* 1985;43:795-6.
7. Moreland LW, Corey J, McKenzie R. Ludwig's angina. Report of a case and review of the literature. *Arch Intern Med.* 1988;148:461-6.