AIRWAY WITHIN AIRWAY: A Case Report

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SUMMARY
We present the case of a 4 year old female child, who presented to our hospital with a history of road traffic accident. The patient was in an unconscious state and showed signs of respiratory distress. Laryngoscopy revealed a laryngeal foreign body as the cause of this distress. The foreign body was extracted and was found to be an oropharyngeal airway inappropriately sized for the patient. The consequences of using an oropharyngeal airway of a wrong size are discussed.

Keywords: Laryngoscopy, Oropharyngeal airway.

Introduction
The maximum incidence of foreign body inhalation occurs between the age of 1 and 3 years varying from 74 to 77% in various studies and children under 4 years old constitute 55% of the cases.1

In most cases of inhaled foreign body, there is a definite history of choking followed by paroxysmal coughing, which could then subside leading to an asymptomatic period. The diagnostic triad consists of wheezing, coughing and decreased breath sounds 2 which may be absent in a patient with neurological impairment as exemplified in our case.

Case report
A 4 year old female child approximately 12 kg in weight, a case of road traffic accident, was received in emergency ward with a GCS of 6/15. The anaesthesiology resident was called for, resuscitation.

The patient was in respiratory distress with a respiratory rate of around 60 min⁻¹, suprasternal retraction and use of accessory muscles of respiration. There was inspiratory stridor and O₂ was administered immediately with Ambu bag and mask, and the patients assessment continued simultaneously. The pulse rate was 170 min⁻¹ and feeble and the chest expansion was bilaterally equal.

Auscultation revealed bilateral equal air entry with harsh breath sounds and rhonchi. It was planned to intubate the patient. Keeping the emergency drugs and equipment ready, an appropriately sized laryngoscope blade was used for laryngoscopy. The child was found to have mildly suppressed airway reflexes on response to laryngoscopy. A weak cough reflex was present.

The vocal cords could not be visualized. Instead, a dark colored object was seen in the oropharyngeal cavity corresponding to the anatomical location of the laryngeal inlet. The patient was ventilated using Ambu bag. Meanwhile, no history of foreign body intake could be elicited from the relatives. Repeat laryngoscopy was attempted. The object visualized was held with a Magill’s forceps and extracted after 3 attempts. The object removed from the larynx was found to be an oropharyngeal airway of size 00 PORTEX, 5 cm in length, which on examination was found to be small for the patient. After removal of the oropharyngeal airway the stridor was relieved. Decision to intubate was taken on the basis of poor GCS. The laryngeal inlet could now be visualized. Laryngeal edema was observed and the child was intubated with size 4.5 uncuffed orotracheal tube and put on mechanical ventilation. Thereafter ABG of the patient was done and was found normal. Cardiovascular and respiratory monitoring was carried out and further management was carried only the neurosurgical unit.

The retrograde history which could be elicited from the relatives of the patient was of a road traffic accident following which the child had been hospitalized in a private nursing home. In this hospital, the patient underwent investigations for head injury including a CT scan of the head. She also received treatment including inj. diazepam and inj. phenytoin. The oropharyngeal airway had been inserted in the private nursing home but was not removed on discharge of the patient.

Discussion
Acute respiratory distress is fortunately an uncommon but most alarming presentation of an inhaled foreign body. After the initial paroxysm of coughing, the tracheobronchial mucosa becomes tolerant to foreign body and the coughing ceases.
The examination in case of foreign body aspiration into the larynx can reveal change in cry with the cry becoming hoarse or stridulous. There could be other features of respiratory distress like suprasternal retraction and use of accessory muscles of respiration. There can also be a catastrophic asphyxiation leading to cyanosis and cardiac arrest.

Chest x-ray may reveal site of foreign body, if radio opaque. It could be normal or there could be secondary changes like obstructive emphysema, atelectasis, collapse or consolidation if a radiolucent foreign body migrates to the periphery.1,3

An earlier study concerning aerodigestive foreign body in neurologically impaired patients revealed that compared with non-impaired children, these patients were at a greater risk due to suppressed airway reflexes, were older, diagnosed later due to non specific presentations, hence were hospitalized later and had a higher incidence of complications.4

The case being reported is that of an iatrogenic foreign body aspiration in a patient with low GCS and classical diagnostic triad was thus absent. Since the foreign body was an oropharyngeal airway, ventilation was still possible. Nevertheless the narrow diameter of the aperture of the oropharyngeal airway increased the resistance to breathing and led to features of respiratory distress.

Selection of the correct size of airway is important: Too small an airway may cause the tongue to kink and force a part of it against the roof of the pharynx. Too large an airway may cause obstruction by displacing the epiglottis posteriorly and may traumatize the larynx. The best criterion for proper size and position of the airway is unobstructed gas passage.5

The airway used for this patient was of size 00, which was found to be small for the patient. Its outer diameter corresponds to that of a 6-6.5 mm tube, which is large for the child's glottis. Hence the oropharyngeal airway was probably lying in the laryngopharynx. During a forceful inspiration it could have been inhaled causing a part of it to impinge on the vocal cord leading to edema of the glottis, which was later observed. This could be the reason why difficulty was encountered in removing the oropharyngeal airway. Alternatively a Fogarty catheter or Foley's catheter could have been threaded through the tubular channel to remove the airway6 as was experimented by Ulliot and Norman who used a fogarty balloon catheter as an adjunct to bronchoscopic removal of foreign bodies from the airway.

Two cases of aspiration of the oropharyngeal airway have been reported in the past. Both occurred in patients with obtunded airway reflexes.7,8

Thus not only is it important to use an oropharyngeal airway of the appropriate size but also to secure it. We also recommend to the manufacturers that a radio-opaque marker should be incorporated in all oropharyngeal airways.

References

FAMILY BENEFIT SCHEME

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