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Corrosive poisoning and its implications on pediatric airway

- Letter to the Editor -

The pharyngeal web is a rare anomaly seen after corrosive ingestion due to liquefaction necrosis (bases) or coagulation necrosis (acids). The mucosal lining heals by fibrosis causing upper airway stenosis, synechiae, band formation, and esophageal stricture as a sequela of corrosive ingestion. Corrosive poisoning presents a large burden on healthcare with a prevalence in India to be around 2% of the total cases of poisoning. Corrosive poisoning is associated with high morbidity and mortality with an estimated rate at 50% and 13%, respectively [1].

The anaesthetic challenge in these patients includes securing the airway due to distorted upper airway anatomy. Drooling and inability to swallow indicate severe posterior pharyngeal or upper oesophageal injury. The presence of hoarseness, stridor, nasal flaring, or rib retraction on inhalation suggests airway involvement [2]. These patients might require multiple endoscopic or open procedures to treat the complications. Airway management in such cases is complicated and should be given paramount importance. Here we have discussed the challenges faced to secure the airway in a paediatric patient with post-corrosive esophageal stricture posted for feeding jejunostomy and measures taken.

We are addressing a case of a 14-year-old female with a history of corrosive poisoning in May 2022 with esophageal stricture posted for feeding jejunostomy. She has undergone upper GI endoscopy and esophageal dilatation for 6 times. Preoperative airway examination revealed mouth opening of 3 fingers, Mallampatti score of II, vitals were stable and all routine investigations were within normal limits. The patient was shifted to OT standard monitors attached, anticipating a difficult airway cart including a fibre optic bronchoscope was kept ready, the cricothyroid membrane was

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marked by using the laryngeal handshake technique. Preoxygenation was started with 100% oxygen using a closed circuit, I.V Inj. Fentanyl 2 μg/kg, Inj. Propofol 2mg/kg was given for induction and I-GEL size 2.5 was introduced, which had a significant leak thus a size 3 I-GEL was introduced which also had a leak, as the mask ventilation was possible, tracheal intubation using succinylcholine 1.5 mg/kg was decided. On direct laryngoscopy distorted airway could be seen, multiple webs and openings were visible, however epiglottic tip was identified with great difficulty as it was embedded in the scar tissue. As we were unsure regarding the location of the trachea, a fibre optic bronchoscope was used to identify. The trachea was confirmed by direct visualisation of the tracheal rings and the carina and the endotracheal tube was railroaded over the flexible bronchoscope. Position of the tube was confirmed with a bronchoscope and EtCO₂. Patient was given Inj. Dexamethasone 8 mg i.v and Inj. Hydrocortisone 100 mg i.v. Inj. vecuronium 0.1 mg/kg i.v given after effect of succinylcholine subsided. Anaesthesia was maintained with 50% oxygen and 2 litre total flow with sevoflurane at 1 MAC. Once the surgical procedure was completed ENT team was called for endoscopy and ablation of the synchiae, after that patient was reversed with 100% oxygen, Inj Neostigmine 0.04mg/kg body weight + inj Glycopyrrolate 0.01 mg/kg body weight. Patient was extubated when fully awake. Patient was shifted to PACU for observation.

Although airway examination was normal in preoperative evaluation, a difficult airway should be anticipated in these patients and make arrangements accordingly. Usage of laryngeal mask airway is limited to normal anatomy of the upper airway and seldom can be used in distorted airway conditions. The hallmark of management in these cases includes preservation of spontaneous ventilation until confidence is achieved following check laryngoscopy. Intubation must be done under vision to avoid passage into a false track [3]. Airway mismanagement remains an important cause of mortality and morbidity in anaesthetic practice. Conventional rigid direct laryngoscopy aids tracheal intubation in 98.1% of the cases. Thus, alternative equipment and techniques must be readily available for rest of
the 1.9% cases. These patients can also have tracheal stenosis thus a preoperative Neck X-ray (AP, lateral view), or CT has to be advised, smaller size ET tubes and a backup for front of neck access has to be arranged. Thus, we conclude that every case of post corrosive poisoning acute or chronic, requiring tracheal intubation should be considered as a case of difficult airway and appropriate arrangements has to be made manage according to guidelines to prevent airway mishaps.
References


Fig. 1. (A) Modified Mallampati Grade 2, (B) Pharyngeal web seen on fibreoptic scope, (C) ETT passing through vocal cords.