Downfolding of the epiglottis during laryngoscopic tracheal intubation

Sir,

Epiglottis downfolding into the laryngeal inlet is believed to be a rare complication. We describe two cases of epiglottis downfolding that occurred with conventional laryngoscopic intubation and were detected incidentally.

Case 1

A 32-year-old female was scheduled for post-burn contracture release. Anesthesia was induced with propofol 100 mg, fentanyl 85 μg, and intubation with cuffed tracheal tube size 7 was facilitated with vecuronium 4 mg. The supervising anesthetist performed laryngoscopy for oropharyngeal packing. The epiglottis was not seen. The intraoral portion of tracheal tube was depressed posteriorly with the index finger, and the downfolded epiglottis emerged from the laryngeal inlet. There was no epiglottic edema.

Case 2

A 44-year-old female was scheduled for laparoscopic cholecystectomy. Anesthesia was induced with propofol 100 mg, fentanyl 100 μg, and intubation with 7.5 size cuffed polyvinylchloride (PVC) tracheal tube was facilitated with vecuronium. Intraoperatively, hemoglobin saturation (SpO₂) decreased to 92%. On auscultation, air entry was decreased over left lung. Direct laryngoscopy was performed to rule out endobronchial intubation. The epiglottis was not seen. On questioning, the intubating resident anesthetist informed that the epiglottis was large and overhanging. After cuff deflation, the tracheal tube was withdrawn 2 cm, when the epiglottis (mildly congested and swollen) emerged from the laryngeal inlet. Air entry improved and SpO₂ was 99%. Postoperatively the patient had mild sore throat.

A large floppy epiglottis is more likely to be tucked into the larynx. Literature search revealed one report of downfolded epiglottis with conventional laryngoscopic intubation in a patient undergoing laryngeal microsurgery that was noted by the otolaryngologist and corrected by 0.5 cm withdrawal of tracheal tube. Epiglottis malposition is unlikely to occur during intubation techniques in which the epiglottis is elevated directly.

Epiglottis inversion into the laryngeal inlet during intubation with nonconventional methods is more common. Epiglottis malposition during blind intubation via the intubating laryngeal mask resulting in epiglottis edema has been reported. In another case, the epiglottis was tucked into the laryngeal inlet by tracheal tube advancement during fiberoptic intubation. Suzuki et al. reported epiglottis malposition during intubation with the Pentax Airway scope. Epiglottis downfolding induced by lighted stylet tracheal intubation and discovered during endoscopy has been reported. Immediate extubation failed to return the entrapped epiglottis to normal, and the larynx remained obstructed. The epiglottis was restored to its normal position with endoscopic forceps.

An epiglottis that is inverted into the laryngeal inlet for a prolonged period may result in edema, congestion, impaired blood supply, and postoperative airway obstruction. Fortunately this complication was recognized in time in both our cases. The epiglottis was restored to its normal position by posterior displacement (Case 1) and withdrawal (Case 2) of the tracheal tube.

It is important to note that both instances were “chance” discoveries. The actual incidence maybe much higher than is realized, because of missed detection. We suggest that a conscious effort be made by the laryngoscopist at the time of advancement of the tracheal tube under vision to see that the epiglottis is not being tucked into the laryngeal inlet, particularly if the epiglottis is large and overhanging.

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References

1. Suzuki A, Katsumi N, Honda T, Sasakawa T, Kunisawa T, Henderson JJ, et al. Displacement of the epiglottis during intubation with the Pentax-AWS Airway Scope J Anesth 2010;24:124-7.
2. Ikegami N, Kikuchi A, Tamai S. Epiglottic prolapse induced by lighted stylet tracheal intubation. J Anesth 2011;25:294-7.
3. Lin TS, Chen CH, Yang MW. Folding of the epiglottis - an unusual complication to be recognized after laryngoscopic endotracheal intubation. J Clin Anesth 2004;16:469-71.
4. Takenaka I, Aoyama K, Nagaoka E, Seto A, Niijima K, Kadoya T. Malposition of the epiglottis after tracheal intubation via the intubating laryngeal mask. Br J Anaesth 1999;83:962-3.
5. Takenaka I, Aoyama K, Abe Y, Iwagaki T, Takenaka Y, Kadoya T. Malposition of the epiglottis associated with fiberoptic intubation. J Clin Anesth 2009;21:61-3.

Sir,

Supra-glottic airway device, i-gel™, is available in different sizes and has been used as a conduit for endotracheal intubation with or without fiberoptic assistance.[1] After tracheal intubation through i-gel™, safe removal of device will ensure proper fixation of endotracheal tube. Though conventional Intubating LMA is supplied with a silicone pusher to remove the device, no such aid is available with this airway. Sharma et al. described difficulty in removing the i-gel after endotracheal intubation.[2] Gabbot et al. suggested use of silicone pusher from the ILMA set to remove i-gel.[3] Other authors have described use of esophageal dilator and 'Tube within the tube Assembly' to remove the device.[4,5]

We propose that Nasopharyngeal airway (NP A) serves as a useful aid to remove i-gel [Figure 1]. The clinical utility of NP A as a device to remove i-gel was evaluated in 20 ASA I-II adults (12 females/8 males) with normal airways where we electively used the i-gel to intubate the trachea in anesthetized and paralyzed patients. In 17 patients (85%), the device could be successfully inserted in the first attempt and in the remaining three patients, a second attempt was required. Correct placement of the device was confirmed by monitoring EtCO₂ tracing and by bilateral auscultation of chest. Endotracheal intubation through the i-gel airway was successful in 13 patients (65%) in the first attempt. In another three patients (15%), ETT could be successfully placed in the second attempt. In the remaining four (20%) patients, after two unsuccessful attempts, ETT was inserted using direct larygoscopy. The hemodynamic parameters like heart rate, systolic blood pressure, and diastolic blood pressure were well maintained perioperatively. In all 16 patients with successful intubation through the i-gel, size six NP A was used to remove the device. There were no complications like gagging, laryngospasm, bronchospasm or obstruction during insertion or removal of i-gel. These observations are comparable to the results of a study conducted by Halwagi et al., where first attempt success rate was 69% for i-gel group and 74% for ILMA group, and the overall success rate was 73% for i-gel group and 91% for ILMA group.

To summarize, ILMA is specifically designed for endotracheal intubation, and silicone pusher facilitates safe removal of device after intubation. But, it is expensive, supplied in adult sizes only, and may not be available in emergency suites. On the contrary, i-gel™ is a cost-effective, single-use, disposable supraglottic airway device, which is available in different sizes in the difficult airway cart. It’s favorable alignment with the glottic inlet permits endotracheal intubation through the device, though the success rate is variable in the limited published data available.[6,7]

Further trials are needed to find out the methods of improving endotracheal intubation success rate through the device and to validate the proposed technique of using NP A for safe removal of device after successful intubation.

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Figure 1: Nasopharyngeal airway used as a conduit for removal of i-gel™ after successful endotracheal intubation.