A novel method of pre-extubation epinephrine nebulisation via suspension microlaryngoscope to prevent post-extubation stridor

Sir,

Post-extubation laryngeal oedema (PLE) and consequent post-extubation stridor (PES) are grave complications after laryngeal surgery. PLE varies in incidence from 5-54% while PES may occur in 1.5-26% of patients.[1] Risk factors include laryngeal surgery, laryngeal tumour, subglottic stenosis, angioedema, upper airway trauma and burns.[2,3] PES reflects 50% narrowing of the airway. Anticipation of upper airway oedema (UAE) and laryngeal oedema (LE) is the most important step in its prevention and management. Prophylactic steroids like intravenous methylprednisolone 20-40 mg or nebulised budesonide 1 mg are often used to prevent PES.[1] Nebulised epinephrine has also been used to treat PES after extubation.[4] However, if LE is strongly suspected, it is prudent to nebulise with epinephrine prior to extubation. Delivering nebulised epinephrine effectively is challenging in an intubated patient. Nebulising via an endotracheal tube in situ does not serve the purpose of depositing the drug on the upper airway. Connecting a nebuliser is hindered due to the presence of the tracheal tube, thus rendering nebulisation ineffective in a supine patient. Considering these hurdles, Ambasta et al.[5] described the use of an 8.0 mm tracheal tube inserted in the upper airway via video-laryngoscopy (VL). The tube is then used to deliver nebulised epinephrine to the upper airway. But this can be cumbersome since one individual needs to continuously hold the VL and tube in order to deliver the nebulisation under vision. We propose an innovative modification of this technique, which was used in our patient posted for direct laryngoscopy and biopsy of a vocal cord growth. The patient complained of hoarseness for 3 months. The computed tomography scan described the presence of an ill-defined lesion of size 1.1 × 1.4 × 2.4 cm involving the anterior commissure, rima glottis and bilateral paraglottic space. The growth extended 1.06 cm into the supraglottic region, 0.24 cm into the subglottic region below the inferior border of the thyroid cartilage, suggesting malignant aetiology. The vocal cords were not seen separately.

Awake fibreoptic intubation with spray as you go (SAYGO) technique was planned under dexmedetomidine sedation and the patient was intubated nasally with microlaryngeal endotracheal tube of internal diameter 6.0 mm. Oedema of true and false cords could be seen on fibreoptic intubation [Figure 1a (with an epidural catheter)]. Vocal cord mass excision was completed uneventfully.

Figure 1: (a) Soft tissue mass on left vocal cord. (b) Post excision of mass with tracheal tube in situ
and haemostasis was confirmed [Figure 1b]. Since UAE and LE were anticipated, the patient was given intravenous dexamethasone 6 mg at induction. After the procedure, nebulisation using 1 mg epinephrine in 5 ml saline was planned. Since the ENT surgeons’ suspension microlaryngoscope was already in situ, an 8 mm tracheal tube was inserted through it until the bevel rested just above the vocal cords. The position of the same was confirmed using a fibreoptic bronchoscope inserted through the endotracheal tube [Figure 2a]. The tracheal tube cuff was inflated. A gauze piece each was placed at the angles of the mouth bilaterally [Figure 2b]. This was done to prevent epinephrine vapours from escaping through the gaps thereby maximising the vapour deposition at the laryngeal and perilaryngeal structures [Figure 2b and c].

The main advantage of this technique is that it is easy to perform. Secondly, with the surgeons’ suspension microlaryngoscope already in situ, it is best to perform nebulisation through it. This saves time spent in removing the scope and repeating a direct or VL as well as avoids another VL. The suspension microlaryngoscope easily confirms the diagnosis of LE similar to a VL. It, therefore, comes to the rescue in institutions where a videolaryngoscope may be unavailable. It ensures an accurate deposition of nebulised epinephrine directly over the larynx, which may be missed otherwise. A disadvantage of this technique is a short delay in extubation and the need to maintain a deeper plane to facilitate satisfactory nebulisation.

We conclude by saying that this innovative method of pre-extubation epinephrine nebulisation in cases of anticipated laryngeal oedema promises to make extubation in this group of patients safer.

Financial support and sponsorship
Nil.

Conflicts of interest
There are no conflicts of interest.

Aditi Suri, Namita Arora, Nisha Kachru, Neha Gupta
Department of Anaesthesia, ABVIMS and Dr RML Hospital, New Delhi, India

Address for correspondence:
Dr. Aditi Suri,
ABVIMS and Dr RML Hospital, New Delhi, India.
E-mail: aditisuri19@gmail.com

Submitted: 28-Aug-2021
Revised: 26-Nov-2021
Accepted: 02-Mar-2022
Published: 24-Mar-2022

REFERENCES

1. Pluijms WA, van Mook WN, Wittekamp BH, Bergmans DC. Postextubation laryngeal edema and stridor resulting in respiratory failure in critically ill adult patients: Updated review. Crit Care 2015;19:295.
2. Patel AB, Aui C, Feeney C. Cuff leak test and laryngeal survey for predicting post-extubation stridor. Indian J Anaesth 2015;59:96-102.
3. Raveendra US, Gupta A, Biswas S, Gupta N. Coping with airway emergencies: Get, Set, Go! Indian J Anaesth 2020;64:S168-74.
4. Thakore S, Kundra P, Garg R. A descriptive survey of tracheal extubation practices among Indian anaesthesiologists. Indian J Anaesth 2021;65:210-5.
5. Ambasta S, Rudingwa P, Kundra P, Gnanasekar R. Treatment
of upper airway oedema prior to extubation. Indian J Anaesth 2016;60:777-8.

6. Newmark JL, Ahn YK, Adams MC, Bittner EA, Wilcox SR. Use of video laryngoscopy and camera phones to communicate progression of laryngeal edema in assessing for extubation: A case series. J Intensive Care Med 2013;28:67-71.

This is an open access journal, and articles are distributed under the terms of the Creative Commons Attribution-NonCommercial-ShareAlike 4.0 License, which allows others to remix, tweak, and build upon the work non-commercially, as long as appropriate credit is given and the new creations are licensed under the identical terms.

How to cite this article: Suri A, Arora N, Kachru N, Gupta N. A novel method of pre-extubation epinephrine nebulisation via suspension microlaryngoscope to prevent post-extubation stridor. Indian J Anaesth 2022;66:237-9.

© 2022 Indian Journal of Anaesthesia | Published by Wolters Kluwer - Medknow