Bronchoscopy examination of a patient with tracheobronchial injury having intractable cough: Role of sevoflurane sedation and paraoxygenation

To the Editor,

Anesthesia or sedation for intervention or examination of the tracheobronchial tree is a challenging task. Presence of an intractable cough during the procedure is distressing for the patient as well as the examiner. To achieve an adequate level of conscious sedation without obtunding the airway reflexes is the key to success in procedures where positive pressure ventilation may be hazardous.[1,2] Obtaining sedation in such patients is challenging as the options are limited.[2,3]

A 22-year-old, well-built, non-smoker, without any known comorbidity, presented to emergency with increasing breathing difficulty and interactable coughs for 2 days following a road traffic accident. He was asymptomatic on the day of the accident except for a small abrasion over the right scapular region; he did not attend any trauma or medical centre. Examination revealed pulse-rate 110 per min, blood pressure 110/76 mmHg, respiratory rate 24 per min, and room air saturation 96%. Emphysema over the anterior part of the neck and chest up to the nipple line, including the axillary area on both side (more on the right) was noted. These features suggested a possible mild pneumothorax, but, emergency X-ray and point of care ultrasound could not rule out pneumothorax due to subcutaneous air. The patient underwent an emergency

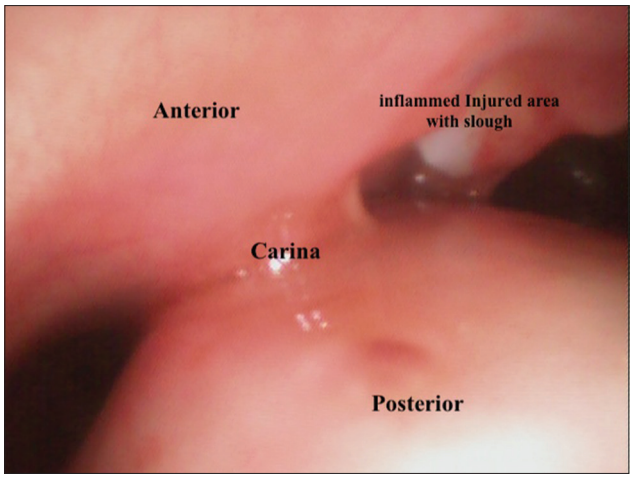

Figure 1: Fibreoptic bronchoscopic view of right tracheobronchial junction injury

tracheobronchial examination under anesthesia/sedation; emergency tracheostomy was planned in case of airway compromise.

Intravenous Glycopyrrolate 0.2 mg, 3 ml of 2% xylocaine nebulization, and intravenous paracetamol 1 gm were administered. With standard American Society of Anesthesiologists' monitoring, a 7.5 mm ID nasopharyngeal airway inserted and connected to the closed-circuit system of Mindray A7 workstation through endotracheal tube adapter, and 100% O_2 was delivered. The patient was asked to breathe with the mouth closed, and the anesthesiologist manually closed the other nostril to prevent leak. Sevoflurane concentration increased from 1 to 5% over 2 min, and MAC-age 0.6–0.8 maintained. The fibreoptic bronchoscope was inserted through the other nostril and revealed injury at the junction of the trachea and primary bronchus on the right side [Figure 1].

Tracheobronchial tree injury in blunt trauma can be caused by multiple mechanisms and the injury noted near the carina is explained by the shearing force theory.[4] It is associated with inflamed airway, vigorous coughing, and air leak in surrounding tissue, which may cause pneumothorax and subcutaneous emphysema, and breathing difficulty.[5] Bronchoscopy in this situation is often difficult due to the need for a calm and cooperative patient with obtunded cough and still keeping airway reflexes intact. Moreover, positive pressure ventilation in this situation, if required, may further aggravate the air-leak increasing breathing difficulty. The sedation should be aimed at maintaining spontaneous breath and obtundation of coughing. Controlled sevoflurane administration at a MAC_{age} 0.6–0.8 suppressed cough, ensured control over the airway and kept airway reflexes intact while maintaining sedation and amnesia. Additionally, sevoflurane is a bronchodilator, non-irritant, and does not cause apnoea when used in an escalating dose.[6] Furthermore, it helps to avoid the untoward effect of opioids and benzodiazepine. Miakami *et al.* studied dexmedetomidine in Guinea pig for awake sedation and reported that it has a favourable effect on airway smooth muscle and cough suppression,[7] but human data is not available. Dexmedetomidine-based conscious sedation can also be used in such patients, but, sevoflurane offers easy manoeuvrability of depth of sedation with intact airway reflexes.

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Conflicts of interest
There are no conflicts of interest.

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