Conventional laryngoscopy as a rescue for fiber-optic-assisted tracheal intubation in a patient with perilaryngeal edema after rigid bronchoscopy: A case report

Sir,

Rigid bronchoscopy is an important diagnostic and therapeutic procedure in interventional pulmonology. It may cause postprocedure periglottic and laryngeal edema mandating tracheal intubation and mechanical ventilation. The intervention may make the airway management difficult and may lead to failure of ensuring a definitive airway leading to disastrous outcomes, especially in a patient with lung disease. We report a patient with interstitial lung disease wherein the patient developed periglottic and glottic edema after rigid bronchoscopy which made a difficult airway to a more complex one and thus difficulty in securing the airway.

A 60-year-old male, weighing 70 kg with a body mass index of 27.3 kg/m^2, known case of interstitial lung disease was scheduled for rigid bronchoscopy and transbronchial lung biopsy (TBLB) using cryoprobe. On examination, his mouth opening was 2.5 finger breadth, Modified Mallampati Class II, receding mandible, upper lip bite test Grade 2, restricted extension of the neck, thyromental distance 5 cm and sternomental distance 11 cm, and neck circumference 37 cm. In the operating room, standard monitors were attached. The patient was premedicated with glycopyrrolate 200 µg, dexamethasone 8 mg, and fentanyl 100 µg. Intravenous dexmedetomidine bolus of 30 µg over 10 min followed by a continuous infusion at 0.5 µg/kg/min was started. After preoxygenation with 100% oxygen, anesthesia was induced with propofol 100 mg and atracurium 30 mg. Lungs were ventilated for 3 min, and then, rigid bronchoscope was placed only after multiple attempts using direct laryngoscopy to open the airway along with external laryngeal manipulation. Anesthesia was maintained with dexmedetomidine infusion. After the TBLB, pulmonologist removed the rigid bronchoscope. As the patient was still apneic, ventilation through Ambu laryngeal mask airway (LMA) was not optimal. A nasopharyngeal airway was inserted, and continuous oxygen insufflation at 15 L/min was continued. Direct laryngoscopy revealed grossly edematous epiglottis and protruding posteriorly along with gross airway edema in adjoining areas without improvement with optimal external laryngeal manipulation (OELM). The gum elastic bougie could not be placed. The flexible fiber-optic bronchoscope (5-mm diameter)-guided oral endotracheal intubation also failed as bronchoscope could not be negotiated toward the laryngeal aperture. Hence, direct laryngoscopy-guided fiber-optic bronchoscope placed was attempted orally but failed due to gross edema in the perilaryngeal structure. Reattempt was done through the nose with opening of airspace using direct laryngoscopy by Macintosh laryngoscope. With difficulty and with the help of laryngoscope and OELM, the fiber-optic bronchoscope (preloaded with endotracheal tube of size 7.5-mm ID) could be negotiated below the epiglottis, and the laryngeal aperture was visible [Figure 1]. The scope was advanced further, and with sustained lift of the laryngoscope and OELM, the endotracheal tube was negotiated in the trachea. Its correct placement was confirmed. However, in view of gross perilaryngeal edema, ventilation was continued for 24 h. Subsequently, the patient was weaned off the ventilator and trachea extubated over airway exchange catheter.

Airway management in a difficult airway is always challenging. The difficult airway may become more difficult after airway management and intervention as happened in our case. Our patient features of difficult airway including receding smaller mandible, short

Figure 1: Laryngoscope-assisted fiber-optic bronchoscopic nasotracheal intubation with optimal external laryngeal manipulation
thyromental distance and smaller submandibular space. In our case, rigid bronchoscope was placed with difficulty leading to more difficult airway after the intervention. The passage is clear in awake patients, whereas in anesthetized patients, the air space in the oropharynx is reduced; the soft palate, base of tongue and epiglottis may be applied to the posterior pharyngeal wall due to the reduction in muscle tone. These all difficulties in providing a secure airway become more of concern in a patient with lung disease like interstitial lung disease. In our case, initial difficulty in placement of rigid bronchoscope with preexisting difficult airway led to more difficult airway and hence failure of securing of airway using LMA (Ambu LMA and I-Gel). Due to gross periglottic edema, fiber-optic bronchoscopy which is considered gold standard of airway management in difficult airway failed, when it was used in a conventional technique.[1-5] We needed to modify the technique of fiber-optic bronchoscopy and was aided by direct laryngoscopy using Macintosh laryngoscope along with OELM. An initial attempt of fiber-optic bronchoscopy was failed due to reduced airspace by perilaryngeal edema, but later, airway was cleared by direct laryngoscopy and fiber-optic bronchoscope was placed. With direct laryngoscopy, the space available in the oral cavity to manipulate the scopes can be expanded, and the epiglottis can be elevated to secure the pathways of the scopes to the vocal cords.[2,5] Hence, combining rigid bronchoscope placement with direct laryngoscopy may improve the ease of successful tracheal intubation after airway interventions. Furthermore, passive oxygen insufflation during the apneic period may maintain the oxygen saturation and should be used regularly in management of difficult airway to avoid invasive surgical access.

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