

## CORRESPONDENCE

## AIRWAY MANAGEMENT

# Successful airway management in a patient with left parapharyngeal and retropharyngeal abscess with mediastinal extension during COVID-19 pandemic

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Acute airway compromise caused by a deep neck space abscess significantly contributes to the morbidity and mortality, and it requires quick identification and rapid treatment.<sup>1</sup> Parapharyngeal and retropharyngeal abscesses affect 2.64 persons out of 100,000 population. The incidence in males and females is 3.34 and 1.94 per 100,000 people, respectively.<sup>2</sup> Of note, the abscess might increase the patient's susceptibility to COVID-19 infection. In order to limit COVID-19 transmission in such patients, an advanced treatment plan is required.<sup>3</sup> We share the anesthetic airway management of a high-risk airway case during the current COVID-19 pandemic.

A 66-year-old female presented with a four days history of an increasing size of neck swelling, blood-stained sputum, hoarseness of voice, and odynophagia (painful swallowing). She had a generalized swelling on the right side of her neck, extending to the right submandibular area. As part of airway assessment, flexible scope revealed a posterior pharyngeal wall bulge over the right side, bilateral arytenoids and the epiglottis were edematous, while the right pyriform fossa was obliterated. High-dose contrast-enhanced computed tomography (CECT) of the neck depicted the presence of peripherally enhancing lesion at the left retropharyngeal region. A similar lesion was present at the superior margin of the oropharynx (corresponding to C1 vertebral level), extending inferiorly into the anterior mediastinum behind the upper border of the manubrium sterni

(corresponding to T3 vertebral level). The size of the lesion was approximately 2.3 cm x 7.8 cm x 7.1 cm. Visualized thorax showed apical fibrosis, small pleural thickening at the apical segment of the right upper lobe and multiple small lymph nodes at stations 1, 2R, 2L, and bilateral axillary area. Correlating with her history, these features were of retropharyngeal abscess with extension to the anterior mediastinum. Of note, Rapid Test Kit (RTK-Ag) for COVID-19 was negative.

The patient was posted for emergency incision and drainage (I&D) of the neck abscess by otorhinolaryngology team and of the anterior mediastinum abscess via left lung video-assisted thoracoscopy (VAT) approach by cardiothoracic surgery team. The anesthetic preparation included a fully-equipped difficult airway trolley and invasive monitoring. We managed to intubate the patient with a 35 mm double-lumen endotracheal tube (DLT) using the size 4 Macintosh laryngoscope blade. A flexible fiberoptic bronchoscope was used to confirm the tube location. Five minutes after the induction, she eventually developed acute bronchospasm, which resolved with administration of 1600 µg metered dose of salbutamol inhaler and propofol infusion @ 120 mg/h for about 10 min. The surgery proceeded with the left lung VAT procedure first, during which we used one-lung ventilation technique. Once it was completed, the DLT was changed to a 7 mm reinforced cuffed oral ETT to

ease the subsequent I&D of the neck abscess. This was achieved with the aid of a C-MAC® video laryngoscope (Karl Storz, Tuttlingen, Germany). Using the same aid, the ETT was again changed to the same size common polyvinyl chloride cuffed oral ETT at the completion of the entire surgery, prior to transfer to the intensive care unit (ICU).

In the ICU, she was gradually weaned from the mechanical ventilation. The microbiological culture of the aspirated abscess grew *Klebsiella pneumoniae*. After completing three doses of in. dexamethasone 8 mg IV and ensuring a positive cuff leak test, she was successfully extubated on the second post-operative day. She was discharged home well after staying in the general surgical ward for four days. One month later on a follow-up visit, a repeat CECT of her neck showed complete resolution of the abscess.

Airway management in deep-seated neck abscess can be complicated for several reasons. In our case, there was deep space disease and edema from soft tissue inflammation, which caused a medial bulging of the pharyngeal wall that distorted the airway anatomy, modified tissue planes, reduced tissue mobility, and compromised visibility and localization of the glottis. Secondly, the presence of trismus with a narrowing of the interdental gap and constriction of the oropharyngeal isthmus impeded intubation accessibility. Thereafter, the delivery of general anesthesia may cause airway closure and preclude intubation. Finally, rupture of the parapharyngeal abscess during intubation may result in aspiration, intra-oral bleeding, as well as laryngospasm.<sup>4</sup> Endotracheal intubation is one of the aerosol-generating procedures that needs to be carefully performed during the COVID-19 pandemic. Orser (2020) recommends avoiding awake fiber-optic intubation in COVID-19, unless it is specifically indicated, and stated that atomized local anesthetic might aerosolize the virus.<sup>5</sup>

This case illustrates effective airway control, which is of relevance in the COVID-19 pandemic era.

In conclusion, patients with deep-seated neck abscess require advanced anesthetic airway planning, and anesthesiologists need to swiftly manage any associated intraoperative complications during the COVID-19 pandemic.

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### Authors' contribution

All authors contributed in the case management and drafting of this manuscript.

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