Oral Oncology

Letter to the editor

Management of tracheostomy during COVID-19 outbreak: Heat and moisture exchanger filter and closed suctioning system

Dear Editor,

We carefully read and appreciate the recent published editorial by Pichi et al. [1] highlighting the risks of infection during tracheostomy for the healthcare professionals that represent more than 10% of the total infected population in Italy, according to the latest report from the Italian Superior Institute of Health [2]. The paper proposes a step-by-step method for a safer tracheostomy for those patients affected by COVID-19 requiring a mechanical ventilation. The CORONA procedure proposed in the above mentioned work should be followed, in our opinion, not only for those patients affected by COVID-19 but for all the patients needing a temporary or permanent tracheostomy also in future.

The guidelines of the Italian Society of Otolaryngology for the surgical management of ENT procedures during the COVID-19 outbreak (www.sioechcf.it) include the execution of two swabs for the SARS-CoV-2 testing (4 days and 48 h before surgery) for all patients. If the test cannot be performed, the patient has to be considered as positive.

Given the possibility to have false SARS-CoV-2 negative results attributable to the low viral load especially in asymptomatic or mildly symptomatic patients [3], since the beginning of the COVID-19 pandemic our policy has been to act like every patient was positive, in order to avoid any unrecognized infection. Moreover, tracheostomy may be necessary as life treating procedure for upper respiratory airway dyspnea giving not the time for testing the patient.

Since the beginning of march 2020 we performed in our Unit, that is not in a COVID-19 dedicated Hospital, 15 procedures requiring tracheostomy (including 2 total laryngectomy, 3 OPHL, 1 transoral laser pharyngectomy, 6 advanced stage tumors excision requiring a free flap reconstruction and 3 emergency tracheostomy), none of these patients was positive for SARS-CoV-2 at nasopharyngeal swab, but 3 of them cannot be tested preoperatively and were tested only after surgery.

For a safer postoperative management of these tracheostomized patients, with the aim to reduce the possible risk of contamination for both healthcare professionals and patients, we applied the systematic use of two devices: the heat and moisture exchangers in combination with a bacterial and viral filter (HMEF), and the closed endotracheal suctioning system.

The standard HME, also known as artificial nose, usually positioned on the cannula after tracheostomy for the humidification of the inhaled air do not have any viral filter. On the contrary the HMEFs can filter bacterial and viral particles. HMEFs are widely used in anesthesia circuits. The moisture exchange component passively humidifies the inspired air by returning a percentage of the patient's expired moisture. The filter component of the HMEF reduces the risk of viral and bacterial cross-contamination between patients. Several bacterial/viral filters are available in the market coupled or not with HME. These filters have high viral filtration efficiency (up to 99.99%), are bidirectional, protecting both the patients and the healthcare professionals; the pleated hydrophobic membrane filters have a superior filtration performance compared with electrostatic filters [4].

The closed endotracheal suctioning systems are recommended for the prevention of the ventilator associated pneumonia, but its role is debated [5], despite that it is a fact that these systems allow the aspiration of endotracheal secretion without risk of spread the aerosol in the room.

The two systems in our patients were connected to the cannula with a T-connector in order to have a closed circuit that allows the aspiration of endotracheal secretions and the safe breathing with the HMFE (Fig. 1).

The use of these two devices is recommended for all patients underwent permanent or temporary tracheostomy during the time of hospitalization or at least until two negative swabs were obtained. For a correct management of the HMFE the continuous measurement of arterial oxygen saturation using pulse oximetry (SpO2) and the filter change after 24 h are recommended for reduce the risk of filter obstruction by condensation [6].

In this period no one is aware of the duration of this epidemic, but several experts warn of another outbreak in the autumn 2020. Furthermore, we do not know if and how this event will change the management standards of operating rooms and hospital wards in the future. In our opinion, a prudent attitude should be used for all patients; the CORONA tracheostomy procedure [1] together with the use of HMEF and Closed Suctioning System could be useful to reduce the risks of intra-hospital spread of viral infections preserving the patients and healthcare professionals after tracheostomy.

Declaration of Competing Interest

The authors declare that they have no known competing financial interests or personal relationships that could have appeared to influence the work reported in this paper.

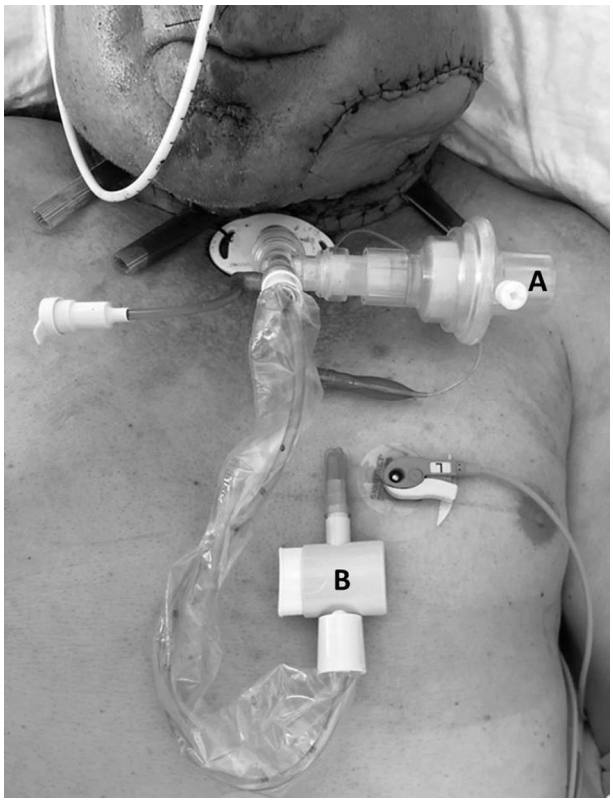

Fig. 1. Patient at postoperative day 2 after a left mandibular resection, bilateral neck dissection and fibula free flap reconstruction. The bacterial/viral filter is provided with the heat and moisture exchanger (HMEF6/I, Deaflux, DEAS, Italy) (A), and the closed endotracheal suctioning system (Closed Suction System for Adults, Halyard Health, UK) (B) allows the aspiration of endotracheal secretions without the exposition of the tracheal lumen.

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Daniele De Seta*, Filippo Carta, Roberto Puxeddu
Unit of Otorhinolaryngology, Department of Surgery, Azienda Ospedaliero-Universitaria di Cagliari, University of Cagliari, Italy
E-mail address: daniele.deseta@unica.it (D. De Seta).

* Corresponding author at: Unit of Otolaryngology, Department of Surgery University of Cagliari, Policlinico "D. Casula" - Monserrato, Cagliari, Italy.