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LETTER TO THE EDITOR

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How to avoid nosocomial spread during tracheostomy for COVID-19 patients

To the editor,

As the novel coronavirus (COVID-19) globally spreads, the COVID-19 pandemic is straining health-care workers worldwide. In hospitalized patients with severe COVID-19 infection, endotracheal intubation is one of the most common and indispensable life-saving interventions. For patients in need of long-term endotracheal intubation, tracheostomy may be considered. Some patients with unfavorable neck anatomy, such as short neck, enlarged thyroid, and neck cicatricial contracture, are not suitable for percutaneous tracheostomy, a minimally invasive method.[1] In these circumstances, conventional open tracheostomy is the primary option for surgeons. However, it is one of the most hazardous procedures, because the direct airway opening and the coughing of patients causes aerosolization of the virus, potentially exposing health-care workers.[2] To prevent health-care-associated infections, we are willing to share our modified tracheostomy procedures with other surgeons worldwide.

Detailed optimized procedures are illustrated in Figure 1. There are three distinct steps to protect health-care workers from the virus spreading in the surgical environment during tracheostomy. First, all procedures should be performed under general anesthesia, with deprivation of spontaneous respiration and application of muscle relaxants (Figure 1A), regardless of whether

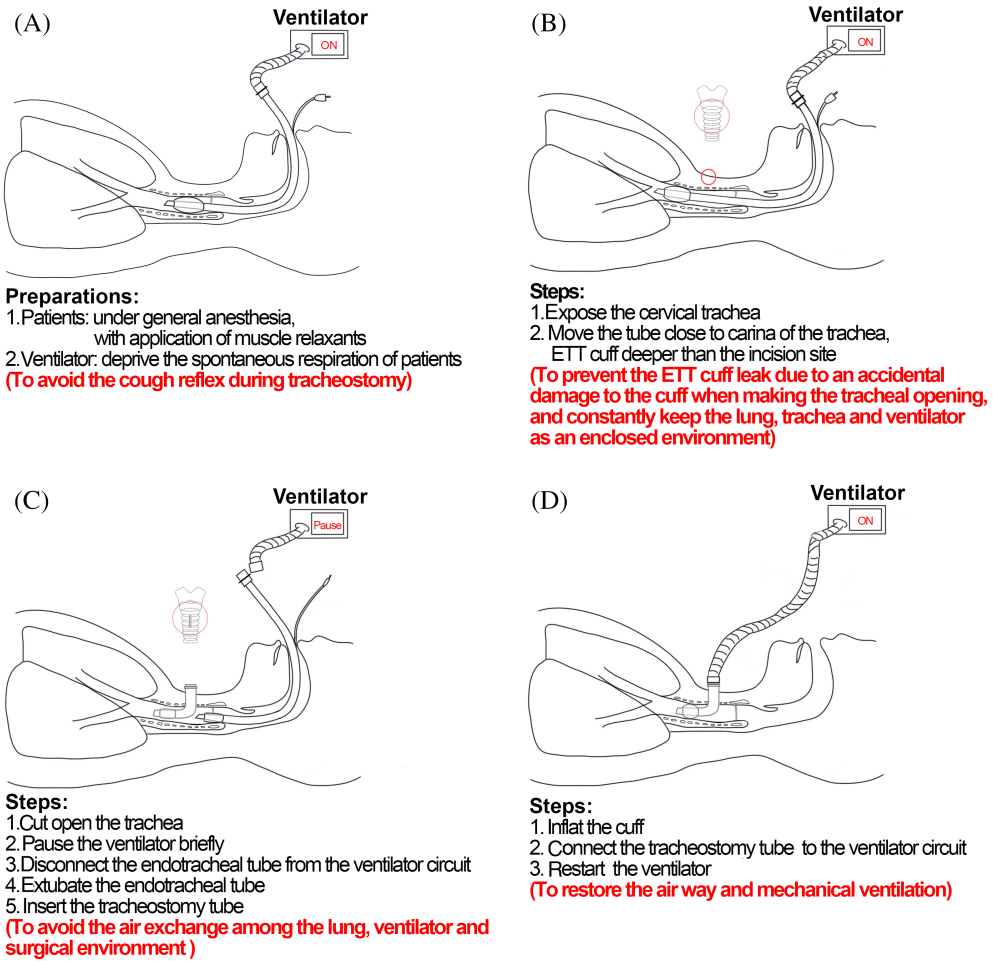

FIGURE 1 The optimized procedures of tracheostomy step by step for COVID-19 patients. Each tracheostomy was evaluated by intensive care physicians and otolaryngologists before operations. The patients have been confirmed SARS-CoV-2 infection, and accepted an orotracheal intubation for more than 2 weeks, and not suitable for percutaneous tracheostomy. Their condition is basically stable, and the blood oxygen saturation is maintained above 90% [Color figure can be viewed at wileyonlinelibrary.com]

patients had spontaneous breathing or not. This step is to restrain the cough reflex caused by tracheal stimulation. Second, after the cervical trachea is exposed and immediately before an incision is made in the trachea, the endotracheal tube (ETT) is inserted deeper, positioned with the tip close to carina of the trachea (Figure 1B). This step would prevent the ETT cuff leak due to an accidental damage to the cuff when making the tracheal opening. Third, when the opening is complete, brief interruption of the ventilator is essential. Then the ETT is pulled out, and subsequently the tracheostomy tube quickly inserted into the opening (Figure 1C). Almost simultaneously, the tracheostomy tube cuff is inflated and the tube rapidly connected to the ventilator, with immediate resumption of the ventilator (Figure 1D). Suspension of ventilation support was usually not more than 15 seconds, with satisfactory oxygen saturation.

This report describes the optimized procedures in tracheostomy for COVID-19 patients. The three major modifications can avoid the aerosolization of secretions and protect health-care workers. Thus, we strongly recommend the modified procedures to be a choice for all surgeons when tracheostomy is considered for COVID-19 patients. It is important to protect health-care workers from coronavirus during the intraoperative period for their own health and for preservation of the health-care workforce.

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