

Closed-suction System for Intubated COVID-19 Patients with the Use of an Ultrasound Probe Cover

To the Editor:

Endotracheal suctioning is an important component of tracheobronchial hygiene therapy in mechanically ventilated patients.¹ In the perioperative settings, the aspiration of pulmonary secretions from a patient with an artificial airway is carried out with a suction catheter using an open system.² Suctioning an intubated patient with coronavirus disease 2019 (COVID-19) is an aerosol-generating procedure and is therefore at high risk of spreading infection.^{2,3} Although the clinicians performing the suctioning of tracheal secretions are equipped with level III protection; a closed-suction system is desirable and likely adds extra protection.² However, a closed system for tracheal suction is often not provided in an operating room and its availability is extremely limited in the pandemic era.⁴ Therefore, we created a closed-suction system functionally comparable with that routinely used in the critical care unit (fig. 1A). Figure 1B illustrates its work principle. Readers are encouraged to watch the Supplemental Digital Content, video 1 (<http://links.lww.com/ALN/C419>) for a more comprehensive understanding of the closed suctioning system. We also tested it with smoke and found that the system works in the way expected (Supplemental Digital Content, video 2, <http://links.lww.com/ALN/C418>). The system can be used multiple times for a given patient and disposed of as a contaminated device at the end of use. We have used this suctioning system

in 12 patients. It functioned well without any safety issues. This set up is not a U. S. Food and Drug Administration (European Union agent)-approved device, but it can be used as an alternative if a closed-suction system is unavailable for the care team dealing with COVID-19 patients.

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Competing Interests

The authors declare no competing interests.

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The catheter mount is already connected with the endotracheal tube.

Step 1: Introduce the sterile suction catheter with its connection tube inside an ultrasound probe cover

Step 2: Kink the mount to expose its port for suctioning

Step 3: Insert the endotracheal tube connected with the kinked catheter mount inside the ultrasound cover probe

Step 4: Glue the adhesive strip of the ultrasound cover probe around the endotracheal tube – catheter mount complex

Step 5: Open the cap of the catheter mount and insert the suction catheter inside the endotracheal tube for pulmonary aspiration

Step 6: Close the cap of the mount at the end of suctioning. Remove the ultrasound cover probe with its contents (suction catheter and connecting tube).

Step 7: Close the ultrasound cover probe with its contents by the adhesive strip and dispose

Fig. 1. (A) Devices used to build a closed-suction system for intubated patients. (B) Step-step explanation to build a closed-suction system with an ultrasound probe cover.