

Less Costlier and Emergency Options for Intubation during Coronavirus Disease Times

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To the Editor,

Aerosol-generating procedures (AGPs) pose a high risk of infection to healthcare workers (HCWs), especially during the recent coronavirus disease-2019 (COVID-19) pandemic.¹ The risk of airborne spread is even higher with intubation in critically ill patients, as it involves close proximity to the airway.²⁻⁴ Various position statements from societies underline the necessary precautions required to minimize the infection to HCWs during intubation such as performing the procedure in a well-ventilated room (negative pressure isolation room with a minimum of 12 air changes per hour), with personal protective equipment geared in (goggles, face shield, water-resistant gown with hood, double layer of gloves, and N95 or its equivalent respirator).²⁻⁴ Apart from these, the guidelines suggest the use of video laryngoscopy and use of sedation and paralytics to facilitate intubation at a distance and avoid coughing during the procedure, respectively. The use of an intubation box can also be helpful but can hamper visualization of the airway (already impaired with goggles and face shield especially over the prescription glasses of the HCW) and dexterity due to limited movement of hands inside the box.⁵

Video laryngoscopes are expensive and difficult to procure in rural and semi-urban hospitals such as primary and community health centers in low-middle income countries, and trained personnel to handle these devices are in shortage. During emergency situations and prior to the availability of diagnostic reports of severe acute respiratory syndrome coronavirus 2 (SARS-CoV-2) infection, it may not sometimes be possible to follow intubation protocols as suggested in guidelines even at tertiary care and referral centers. In these situations, in addition to protective gear such as N95 respirator, face shields and gloves, and under sedation and paralytics, we suggest intubation using an endotracheal tube with a partly inflated cuff with blocked distal end (with a cap or adapter or vacutainer, which matches the universal size of 15 mm diameter) as shown in

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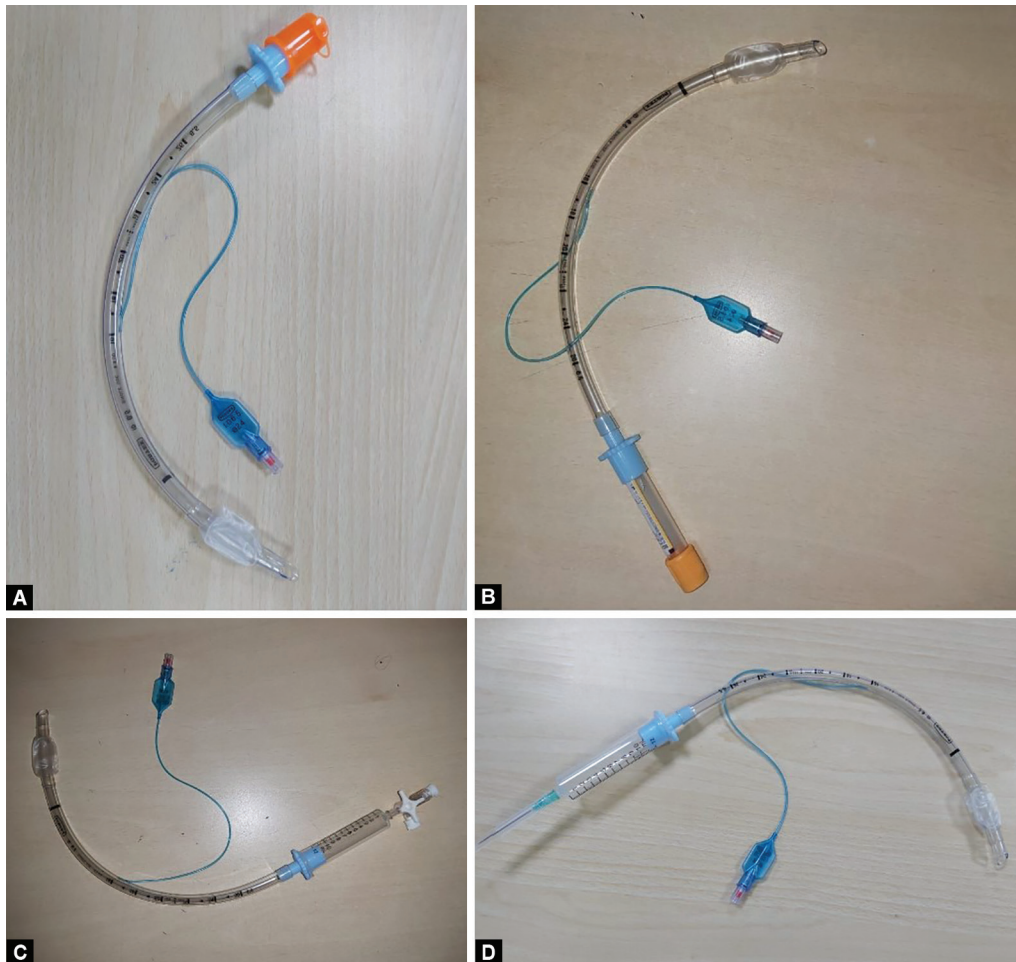
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Figures 1A to D. Blocking the distal end of the endotracheal tube will reduce chances of aerosol spill (blast of air) on the face of the intubator, especially with techniques like direct laryngoscopy, where the intubator is in close proximity to the airway. This is especially useful when there is no time for the muscle relaxant to act or failure of muscle relaxant to act while adding to additional safety of the HCW. Once the intubation is done under vision, the HCW can come to a safe distance, remove the cap or adapter, and connect the endotracheal tube to the ventilator with heat moisture exchange filters (HMEF) or bacterial-viral filters (BVF) at the end of endotracheal tube and at expiratory port of the ventilator. There might be difficulties in the removal of the blocker, which needs to be rehearsed earlier, especially if snugly fitting. Therefore, a surgical blade along with 15-mm connector of the same size or one size lesser endotracheal tube needs to be kept ready, so that the tube can be cut and new connector can be inserted. After usage, these blockers should be kept in high concentration of disinfectant solution like 1–2% sodium hypochlorite and disposed of for incineration.



Figs 1A to D: Various options to block the distal end of endotracheal tube. (A) With a cap; (B) With vacutainer; (C) 10-mL syringe plunger with a three way; (D) 10-mL syringe plunger

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