Since January 2020 Elsevier has created a COVID-19 resource centre with free information in English and Mandarin on the novel coronavirus COVID-19. The COVID-19 resource centre is hosted on Elsevier Connect, the company's public news and information website.

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Saliva ejector assisted laryngoscopy (SEAL) for protective intubation

To the Editor,

Unprotected endotracheal intubation in suspected or confirmed cases of SARS-CoV2 infection may put healthcare providers at risk of droplet or airborne infections [1,2]. We describe a potential method for reducing provider exposure during intubation using a saliva ejector suction system. This aerosol-reducing method has an easy-to-remember acronym: "SEAL" (saliva ejector assisted laryngoscopy).

A saliva ejector (Fig. 1A) is a tubular device providing suction to remove saliva and debris from the mouth of a dental patient in order to maintain a clear operative field. The ejector is usually curved into a J-shaped configuration before its use. It comprises an inlet (the shorter arm of the J) placed in the mouth cavity and an outlet (the stem of the J) connected to a vacuum source via a flexible hose (Fig. 1B).

In our simulation, airway droplets and aerosols were approximated with water vapor generated at 15 L/min using a conventional nebulizer connected to the airway of a mannequin. A disposable saliva ejector was placed over the left commissure of the mouth with its suction tip positioned in between the soft palate and the tongue. The outlet of the saliva ejector was connected to a wall-mounted vacuum suction regulator (Fig. 1B). When the vacuum source was turned off, vapor was visible from the mouth (Fig. 1C). Once the vacuum was turned on, the vapor was no longer visible (Fig. 1D, Video 1).

Our proposed SEAL technique has some limitations. Though routinely available at dental clinics, the saliva ejector may not be obtainable at some EDs. Normal suction devices are less suitable for similar purpose because they cannot be shaped into the J-configuration of the saliva ejector (to be properly hung over the mouth angle for aerosol suction). Although visible vapor can be reduced in a manikin model, the effectiveness of this technique in reducing COVID-19 exposure is unclear and further studies in the clinical environment are needed prior to its application in practice. The effect of this technique on positive-end expiratory pressure among COVID-19 patients is unclear. Providers should consider avoiding this technique in patients who are dependent on PEEP prior to the intubation.

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Authorship

1. Dr. LW Lin performed and filmed the simulation.
2. Dr. CF Chong designed the prototype and wrote the manuscript.

Informed consent

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Ethical approval

Not required according to the Institutional Review Board of ShinKong Wu Ho-Su Memorial Hospital.

Declaration of competing interest

All authors have no conflict of interest of any kind.

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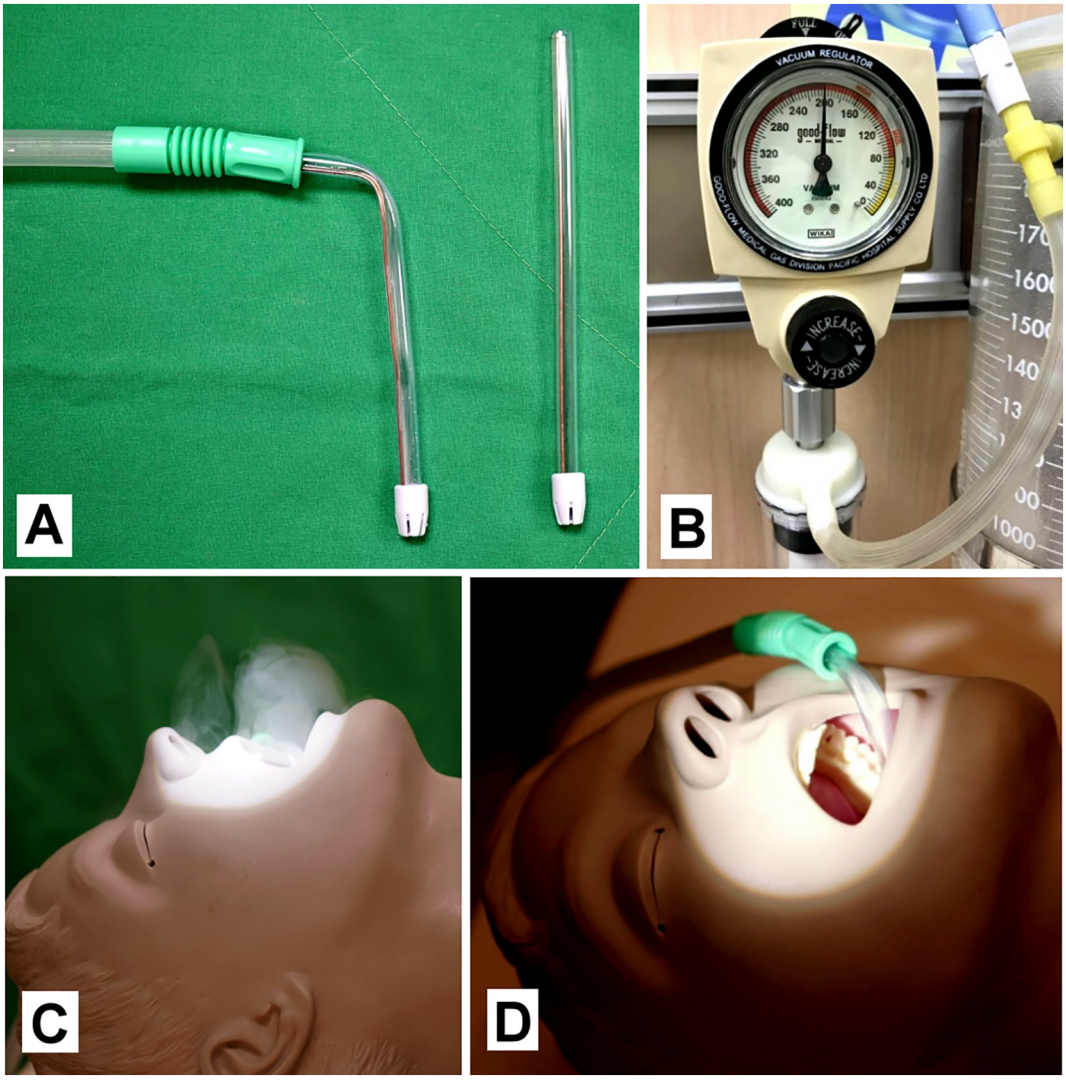

Fig. 1. (A) Disposable saliva ejector (Manufacturer: Asa Dental, Italy). (B) Wall-mounted vacuum suction regulator. (C) Water vapor generated with a nebulizer. (D) Vapor removed by the saliva ejector suction system.

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