

DEN Video Article

Simple barrier device to minimize facial exposure of endoscopists during COVID-19 pandemic

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BRIEF EXPLANATION

ENDOSCOPISTS FACE THE tremendous risk of severe acute respiratory syndrome coronavirus-2 (SARS-CoV-2) transmission during endoscopy^{1,2} because it may generate respiratory fluid³ (droplets; 10^1 – 10^2 μm , aerosol; $<<10^1$ μm).⁴ To minimize its transmission risk to the endoscopist, protecting their face from exposure of body fluid is important. We present a simple barrier device to protect an endoscopist's face from exposure during upper gastrointestinal endoscopy.

This device is constructed with book stands and transparent acrylic board (Fig. 1). First, two book stands are combined with tape. Next, a flat transparent acrylic board (54 × 32 cm) is stuck to one side of the book stands. The device is placed to cover the patient's face with the transparent board, resulting in the upper side of the space in front of patient's mouth being shielded (Fig. 2a). In our simulation of a forceful cough, 10 mL of 0.2% indigo carmine dye was spouted with ventilation bag through the

tubing inside the mannequin, splashed droplets were blocked from spreading upward (Fig. 2b,c). We then used the device in an emergency endoscopy. A 79-year-old man presented with massive melena. We routinely perform chest computer tomography (CT) before emergency endoscopy to screen for pneumonia due to SARS-CoV-2. The CT showed mild consolidation in the bilateral lung. As the diagnosis of SARS-CoV-2 infection was not ruled out, we used the barrier device in addition to full personal protective equipment including N95 mask, long sleeve waterproof gown, and double gloves. After the device was placed, esophagogastroduodenoscopy was performed, and it revealed gastric ulcers at a gastric angle. During the procedure, the patient's facial expression could be seen through the transparent board, and use of the device did not interfere with the procedure.

This simple barrier device could help to minimize endoscopist's facial exposure to body fluids during upper gastrointestinal endoscopy.

Authors declare no conflict of interests for this article.

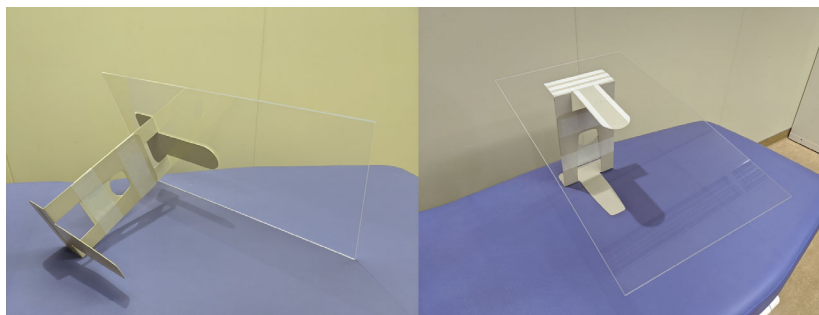


Figure 1 Overview image of the barrier device. Two book stands are combined with tape, and the transparent acrylic board (54 × 32 cm) is stuck to one side of the book stands.

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Figure 2 Image of a simulation to approximate a forceful cough generating droplets. (a) The device is placed to cover the patient's face and the space in front of the mouth. (b) Splashed droplets are blocked from spreading upward with the board. (c) The droplets adhere to the underside of the transparent board.

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SUPPORTING INFORMATION

ADDITIONAL SUPPORTING INFORMATION may be found in the online version of this article at the publisher's web site.

Video S1 Demonstration of the barrier device constructed with book stands and transparent acrylic board during a simulation of approximate a forceful cough during a case of emergency endoscopy.