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DEN Video Article

Protection against aerosol droplets from the mouth using the mask plus vinyl bag method during esophagogastroduodenoscopy in the coronavirus disease-19 pandemic

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BRIEF EXPLANATION

CURRENTLY, THE WORLD is dealing with the Coronavirus disease 2019 (COVID-19) pandemic.[1] Esophagogastroduodenoscopy (EGD) is an examination that involves a high risk of exposure to the SARS-CoV-2 virus (SCV2).[2] As a result, endoscopy staff are likely to be infected with the SCV2 during EGD through discharge of aerosol droplets. The main source of aerosol droplets containing SCV2 during EGD is the mouth, and some countermeasures have been reported.[3–5] We developed a novel method using a mask plus vinyl bag (two-stage blocking system; Fig. 1) as a measure to block the spread of aerosol droplets more effectively. Thereafter, we have practiced the method daily during the procedure. The methods (arrangement time, 3 min) of construction and usage are shown in Video S1. In an experimental simulated EGD using a mannequin with a mouthpiece, the distribution of aerosol droplets discharged through a simulated cough during EGD was compared using the following three

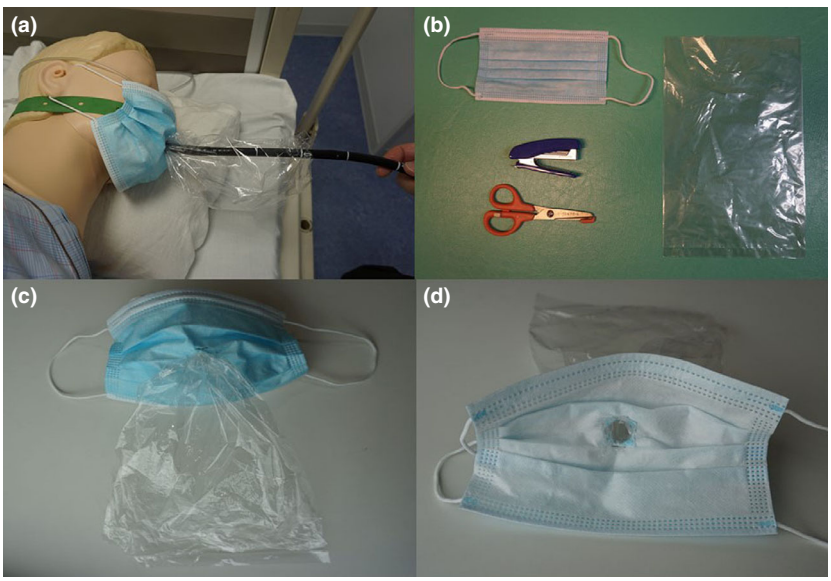

Figure 1 (a) Overview photograph of mask plus vinyl bag method. (b) Required materials, comprising a surgical mask, stapler, scissors, and a transparent vinyl bag (27 cm × 18 cm). (c) External view of the mask plus vinyl bag equipment. (d) Internal view of the mask plus vinyl bag equipment.

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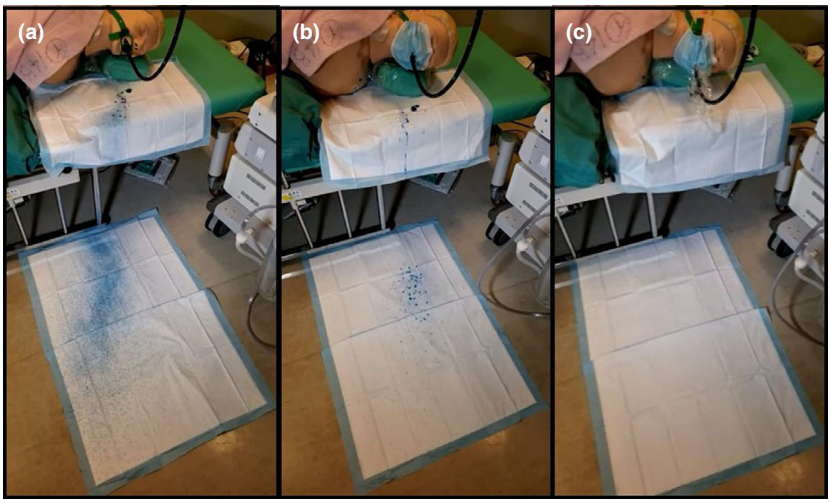

Figure 2 Comparison of the capability to block aerosol droplets by three different methods. (a) Conventional method, (b) Mask with a small insertion hole method, (c) Mask plus vinyl bag method.

methods: conventional fashion, mask with a small hole, and the mask plus vinyl bag (Video S2). Cough was simulated using a sprayer containing 10 mL of indigo carmine dye solution. The capability of each method to block aerosol droplets was estimated by measuring the area of a white sheet placed on the floor in front of the mannequin that was stained with the dye. Although the white sheet was contaminated with the indigo carmine solution in both the conventional and the mask with a small insertion hole methods, no contamination was observed in the mask plus vinyl bag method (Fig. 2). Thus, the mask plus vinyl bag method is an effective countermeasure to prevent contaminating the endoscopy room and infecting the endoscopy staff by the droplets and aerosols discharged from the mouth during EGD. This novel method is low-cost, simple, and effective and can be practiced in endoscopy rooms around the world.

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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 Protection against aerosol droplets from the mouth using the mask plus vinyl bag method during esophagogastroduodenoscopy (Part I: Construction and usage).

Video S2 Protection against aerosol droplets from the mouth using the mask plus vinyl bag method during esophagogastroduodenoscopy (Part II: Confirmation of protection against the escape of aerosol droplets).