A novel endoscopic shield: a barrier device to minimize virus transmission during endoscopy

In this era, where medical staff are at risk of contracting an emerging infectious disease from patients, such as with the current COVID-19 pandemic situation, it has been strongly recommended that effective infection prevention measures are established within an endoscopy unit to protect both patients and medical staff [1]. However, only a few barrier devices have been reported and determining which device is effective remains a notable issue [2-5].

Here, we describe a novel endoscopic shield that we have devised (Endosafe; 808 Co. Ltd., Japan), which is an acrylic plate cube with a length, width, and height of 42 cm each, to be used in patients undergoing esophagogastroduodenoscopy (EGD) (Fig. 1). The materials and blueprint of the endoscopic shield and accompanying plastic hood with re-
gards to endoscope maneuverability are shown in ▶ Fig. 1 and ▶ Video 1. Simulated endoscopies using a simulated patient model (SPM) with a sneeze generator were performed where the SPM was: (a) wearing no protective equipment (▶ Fig. 2a); (b) wearing a commercially available mask for endoscopy (Endomask: TOP Corporation, Tokyo, Japan) (▶ Fig. 2b); (c) wearing a surgical mask with a hole of 15 mm in diameter (▶ Fig. 2c); or (d) lying in the left lateral position with the endoscopic shield placed over the SPM’s head (▶ Fig. 2d). The diffusion of aerosol droplets from the sneeze generator in the SPM was recorded by a video recorder with a particle visualization system (Particle Viewer PV2 series; Kato Koken Co. Ltd., Japan). The degree of diffusion of aerosol droplets at the hand position of the endoscopist produced by the SPM with the sneeze generator decreased in the following order: a > b > c > d (▶ Fig. 2; ▶ Video 1).

In summary, the endoscopic shield is expected to capture aerosol droplets from patients undergoing EGD and to reduce the diffusion of aerosol droplets compared with other devices.

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Competing interests

The authors declare that they have no conflict of interest.

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