



## Protection barrier in colonoscopy to prevent transmission through feces in times of COVID-19

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COVID-19 was declared a pandemic by the World Health Organization in March 2020. To date, SARS-CoV-2 has affected over 9.9 million people worldwide, resulting in over 500,000 reported deaths.<sup>1</sup>

Evidence indicates that human-to-human transmission occurs via droplets and contact, but there is evidence that airborne spread is possible during aerosol-generating procedures.<sup>2,3</sup> Given the high risk of emission of large quantities of droplets, aerosol-generating procedures require greater precaution by healthcare workers.<sup>2,3</sup> Digestive endoscopy procedures pose a risk of infection for healthcare workers because of potential exposure to the transmission of microbial agents from patients; therefore, it is important to carry out measures that help reduce the risk.

The respiratory mode of transmission is well known and is probably the main means of transmission of this disease; therefore, protective barriers have already been described for upper endoscopic procedures.<sup>4,5</sup> However, SARS-CoV-2 can be detected in the feces of pa-

tients, leading to the distinct possibility of transmission by the fecal-oral route.<sup>6,7</sup>

Shorts that allow colonoscopy to be carried out comfortably while reducing the risk of aerosol spread were designed in our unit. The clothing (Fig. 1) is made of polyester with a 90% antifluid capacity to reduce the ecological impact because polyester is a reusable material. Cleaning can be performed just as with surgical scrubs.

The upper edge and lower edges of the shorts are adjusted with the help of an elastic cord tailored to the patient and offer the additional advantage of adjusting to different sizes (Fig. 2). A pocket in the back of the shorts was designed with the same manufacturing material; the pocket measures 80 × 50 mm with a central hole of 15 × 15 mm (Fig. 3). A disposable diaphragm was designed using nitrile rubber and an acetate sheet (Fig. 4).

The center hole was designed to allow the colonoscope to pass through a diaphragm made of nitrile rubber with an

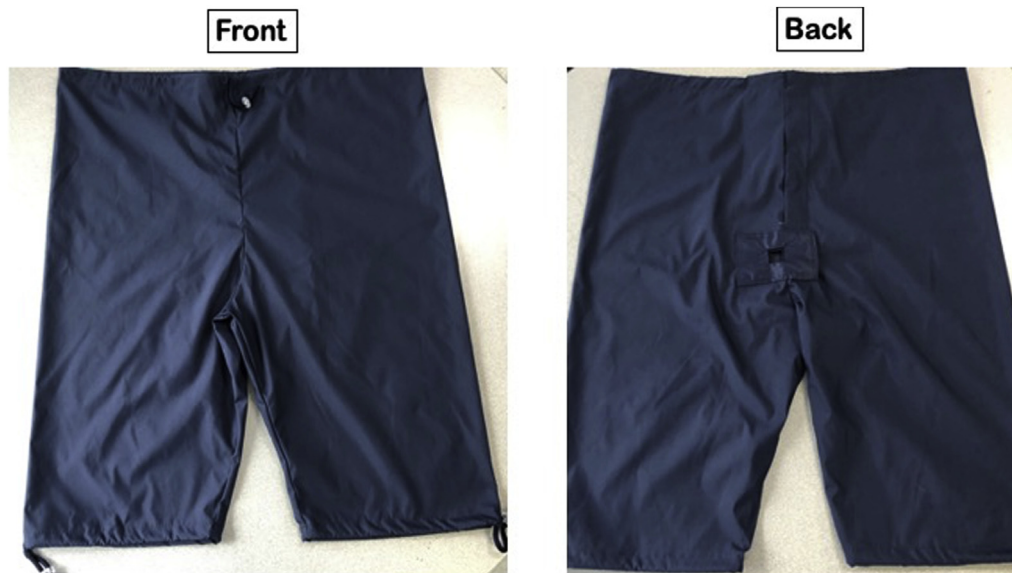


Figure 1. Shorts, front and back view.



Figure 2. Edge closure device.

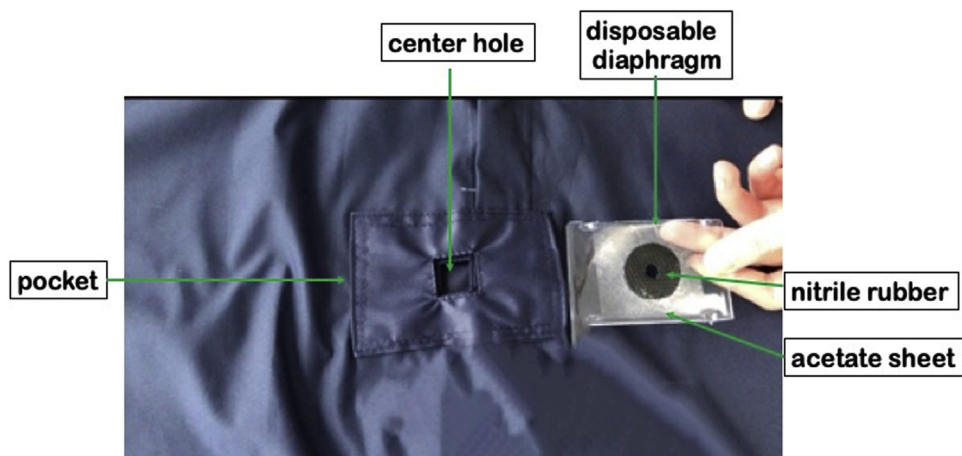
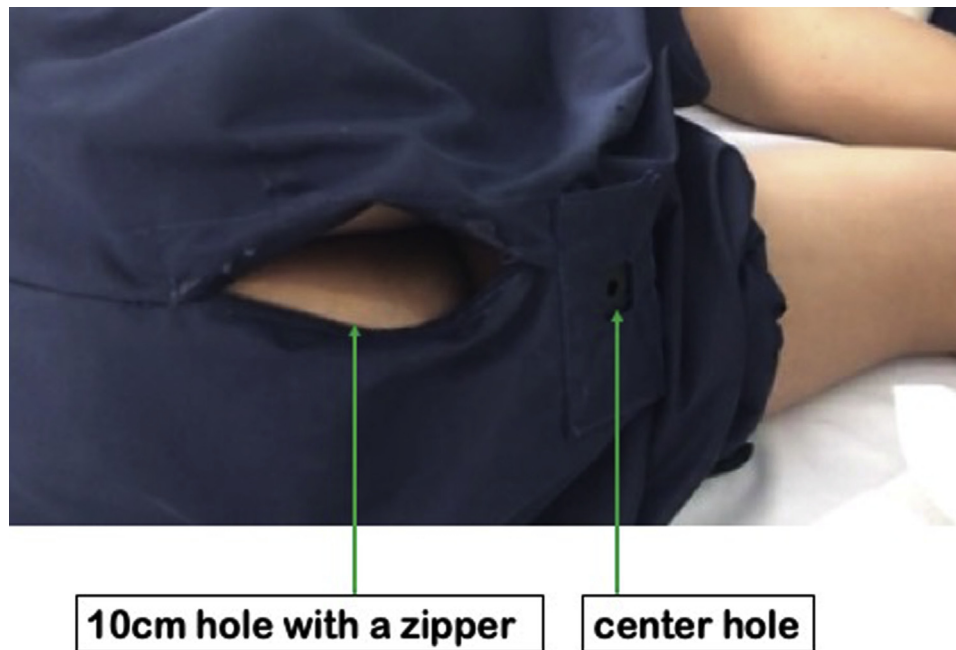


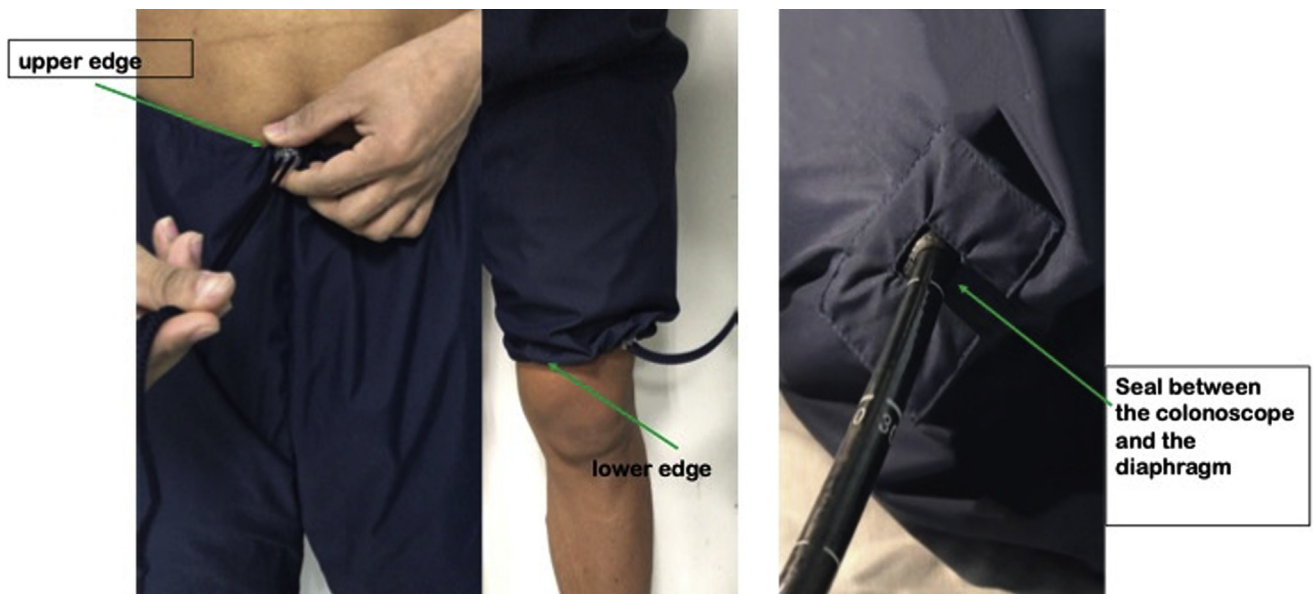
Figure 3. Diaphragm and pocket for diaphragm.



Figure 4. Pocket and central hole.



**Figure 5.** Central hole and greater orifice with zipper.



**Figure 6.** Ways to decrease aerosol spread.

8-mm perforation, creating more vacuum in the colonoscope. The disposable diaphragm is inserted in a pocket made from the same fabric as the shorts (Fig. 4). Above the center hole, a 10-cm hole allows inspection of the anus before the start of the procedure to be carried out comfortably. Once the inspection is completed and the colonoscope is inserted into the anus, garment closure is made by means of a zipper (Fig. 5). The 2 holes are

separated to reduce the possibility of aerosol spread and to be able to comfortably carry out the inspection.

During colonoscopy, a decrease in aerosol spray was observed in all 3 possible ways:

1. Through a hole through which the equipment enters with the help of the seal created between the colonoscope and the nitrile rubber (Fig. 6).
2. Closure of the waist.

3. Closure of the leg holes with the previously adjusted cords.

In conclusion, we find that the designed shorts are comfortable for the patient and for the gastroenterologist at the time of the procedure. They are made of reusable material, which has a positive ecologic impact, and can decrease the spray of aerosols by the fecal-oral route, thus creating an additional protective barrier between the patient and healthcare workers ([Video 1](#), available online at [www.VideoGIE.org](http://www.VideoGIE.org)).

## DISCLOSURE

*All authors disclosed no financial relationships.*

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