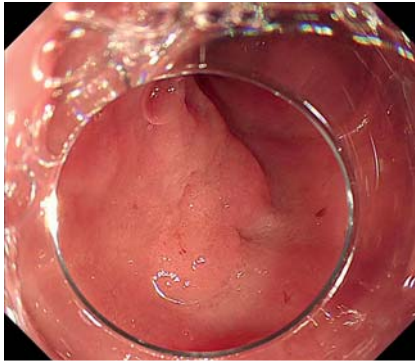
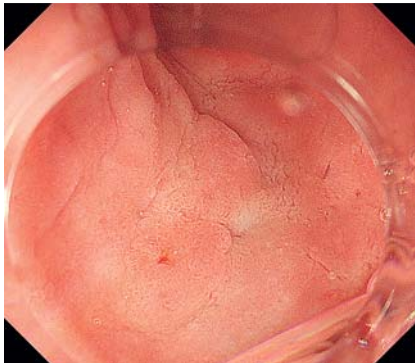


Endoscopic mucosal resection under gel immersion for superficial nonampullary duodenal epithelial neoplasms



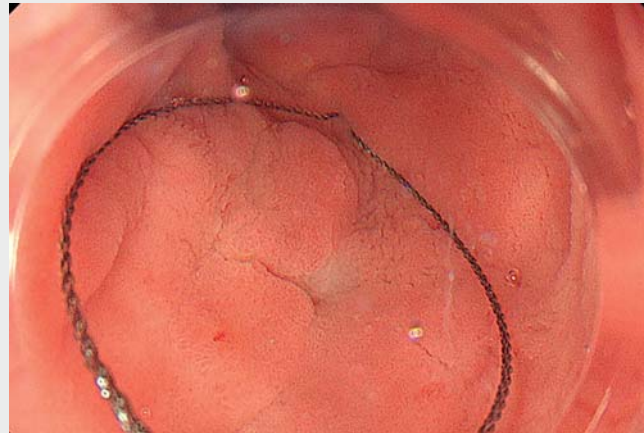
► **Fig. 1** The lesion was located on the lower surface of the descending duodenum; the macroscopic type was 0-IIa, and the size was 12 mm.



► **Fig. 2** Gel immersion permitted clear visualization, and the lumen could be filled with gel.



► **Fig. 3** The lesion was successfully and safely captured with an electrocautery snare.



► **Video 1** Novel method of under-gel endoscopic mucosal resection with gel immersion for superficial nonampullary duodenal epithelial neoplasms.

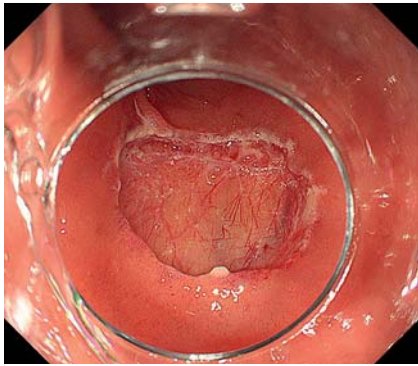
Underwater endoscopic mucosal resection (UEMR) has been recently reported to be effective against superficial nonampullary duodenal epithelial neoplasms (SNADENs) [1]. Superficial lesions float up as protruding lesions under water. This facilitates snaring without submucosal injection and may reduce procedure-associated complications [2,3]. However, there are some disadvantages to performing UEMR for SNADENs, including difficulty in maintaining a sufficient volume of water owing to anatomical features and gravity.

To overcome these disadvantages, we successfully applied the gel immersion technique, a novel method for securing the endoscopic visual field using gel of an appropriate viscosity (Viscoclear; Otsuka Pharmaceutical Factory, Inc., Tokushima, Japan) [4]. Viscoclear can easily remain in the target region into which it is injected compared with water. We performed successful resection of SNADENs using the gel immersion technique (► **Video 1**).

A 60-year-old man had a 12-mm SNADEN (macroscopic type 0-IIa) on the

lower surface of the descending duodenum, which we considered an indication for UEMR (► **Fig. 1**). However, the lumen could not be filled conventionally with water using a waterjet function (OFP-2; Olympus, Tokyo, Japan). Therefore, we chose the gel immersion technique. First, intraluminal air was removed, and an auxiliary injection cap (BioShield irrigator; US Endoscopy, Ohio, USA) was used for the operative channel. Viscoclear (80 mL) was injected from an irrigation tube using a 50-mL syringe before EMR. Gel immersion permitted clear visualization, enabling quick filling of the lumen (► **Fig. 2**). Then, the lesion was successfully and safely captured with an electrocautery snare (► **Fig. 3**). En bloc resection was performed without perforation (► **Fig. 4**), and the mucosal defect was completely closed using hemoclips (► **Fig. 5**). The resected specimen was an adenoma and complete resection was confirmed.

EMR under gel immersion may be effective for SNADENs that are difficult to infiltrate conventionally with water.



► **Fig. 4** En bloc resection was performed with a standard snare using a high frequency blended electric cutting current without bleeding and perforation.



► **Fig. 5** The mucosal defect was completely closed using hemoclips.

Endoscopy_UCTN_Code_TTT_1AO_2AG

Competing interests

The authors declare that they have no conflict of interest.

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Endoscopy 2022; 54: E435–E436
DOI 10.1055/a-1544-7810
ISSN 0013-726X
published online 8.9.2021
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Georg Thieme Verlag KG, Rüdigerstraße 14,
70469 Stuttgart, Germany

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