Gastric endoscopic muscularis dissection using a partial intramuscular injection technique

Diagnostic techniques for a gastrointestinal stromal tumor (GIST) by endoscopic biopsy have recently improved, and endoscopic muscularis dissection (EMD) for smaller GISTs is widely performed [1, 2]. However, it is difficult to resect only the superficial layer of the muscularis propria without damaging the capsule of a GIST [3]. We introduce a technique to perform EMD by partially injecting a highly viscous solution into the superficial layer of the muscularis propria using an injection knife.

The injection knife (TechKnife T-type; Micro-Tech, Nanjing, China) has a tip with a luminal diameter of 0.15 mm. For submucosal injection, a 0.4% sodium hyaluronate solution (MucoUp; Seikagaku, Tokyo, Japan) with 0.004% indigo carmine was used (Fig. 1, Video 1).

A patient had a 15-mm subepithelial tumor in the lesser curvature of the upper gastric body. A boring biopsy revealed the mass to be a GIST, which was resected en bloc using EMD. A circumferential mucosal incision was made around the tumor, and the submucosa was dissected just above the muscularis propria from the oral side. The tumor was identified in the submucosa, and an adhesion between the muscularis propria and the mass was visualized. An injection knife was used to infuse sodium hyaluronate solution into the muscularis propria, resulting in a bulge in its superficial layers. Thus, the fibers of the muscularis propria were dissected. The superficial layer was effectively separated from the tumor in the muscularis propria. The tumor was completely resected without perforation, and the mucosa-muscularis propria defect was closed using the reopenable clip over the line method [4, 5]. The patient was discharged without any complications. Macroscopic specimens revealed thin fibers of muscle overlying the tumor capsule.

The injection knife allows partial injection of sodium hyaluronate solution into the superficial muscularis propria. The present case emphasizes its utility in isolating GISTs during EMD.

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Competing interests

The authors declare that they have no conflict of interest.

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Video 1 Gastric endoscopic muscularis dissection using partial intramuscular injection with an injection knife.

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