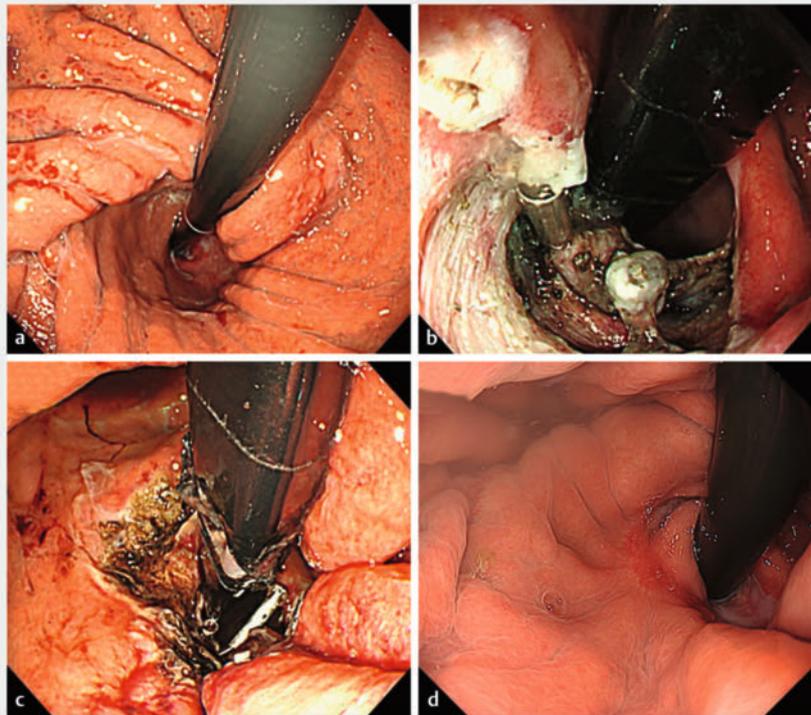


Antireflux mucosal intervention for refractory gastroesophageal reflux disease after multiple Nissen funduplications

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► **Fig. 1** Endoscopic images showing: **a** before ARMI, the loosened fundoplication; **b** the appearance after submucosal dissection and valve formation; **c** inspection following additional mucosal ablation; **d** 3 months post-treatment, improved morphology of the esophago-gastric junction.



► **Video 1** Antireflux mucosal intervention for gastroesophageal reflux disease after multiple funduplications using mucosal incision and ablation.

Fundoplication procedures are widely performed for refractory gastroesophageal reflux disease (GERD), but 10%–20% of patients experience persistent or recurrent symptoms postoperatively, posing a substantial challenge [1]. Revision surgery is an option but carries a higher risk of complications, and endoscopic therapy has emerged as a minimally invasive alternative. Here, we present a case in which antireflux mucosal intervention (ARMI) was successful for a patient with refractory GERD after multiple Nissen funduplications.

A 77-year-old man with a severe hiatal hernia underwent three Nissen funduplications over 10 years for potassium-competitive acid blocker (P-CAB)-resis-

tant GERD, but his symptoms persisted. Endoscopy revealed Barrett's esophagus and a loosened fundoplication (► **Fig. 1 a**). The acid exposure time was 0% on pH monitoring owing to continued P-CAB use, while an endoscopic pressure study integrated system (EPSIS) evaluation demonstrated a flat pattern [2]. Given the patient's preference for endoscopic treatment and the lack of alternative therapeutic options, ARMI was planned.

The procedure involved submucosal dissection just below the gastroesophageal junction, followed by inversion and fixation of the dissected mucosa with clips to create a valve structure (► **Fig. 1 b**; ► **Video 1**). Argon plasma coagulation

was applied to the surrounding mucosa (► **Fig. 1 c**). The postoperative course was uneventful, with no adverse events experienced.

At the 3-month follow-up, the GERD Health-Related Quality of Life score had improved from 17 to 2, and P-CAB therapy was no longer required. Endoscopy confirmed reinforcement of the gastroesophageal flap valve (► **Fig. 1 d**). Because of the improvement in symptoms, the patient refused post-treatment pH monitoring, but EPSIS re-evaluation revealed an uphill pattern [3].

Reoperative fundoplication for refractory GERD is often challenging. Treatment decisions are particularly difficult in patients where multiple surgeries have failed to achieve symptom relief. While the efficacy of ARMI in patients with a history of surgical antireflux procedures remains uncertain, this report highlights an important case suggesting that ARMI may serve as a viable alternative for such patients.

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Conflict of Interest

H. Inoue serves as an advisor for Olympus Corporation and Top Corporation, and has received educational grants from Olympus Corporation and Takeda Pharmaceutical Co. M. Saino, K. Ushikubo, K. Yamamoto, Y. Nishikawa, I. Tanaka, and M. Tanabe declare that they have no conflicts of interest.

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