Endoscopic treatment of a duodenal invagination

Fig. 1 Duodenal invagination in a 47-year-old man. Computed tomography showed a partial invagination at the junction between the bulb and the second duodenal portion (red arrows), with no vascular abnormalities: **a** axial view; **b** sagittal view.

Fig. 2 Endoscopic treatment of duodenal invagination: first step. **a** Endoscopic view of the invagination. **b, c** Over-the-scope clips were deployed. **d** Clipping of the fully covered metallic stent.

A 47-year-old man was referred to North Hospital with a 2-month history of recurrent occlusive syndrome. Findings on computed tomography scan (► **Fig. 1**) and endoscopy led to a diagnosis of duodenal invagination and partial duodenal atresia. Endoscopic therapy was performed (► **Video 1**).

In the first endoscopic step (► **Fig. 2**), two 12/6 t over-the-scope clips (OTSC; Ovesco

AG, Tübingen, Germany) were deployed within the invagination in order to induce necrosis of the mucosa and fibrosis of the submucosa. A fully covered metallic stent 12×2 cm (TaeWoong, Gyeonggi-do, South Korea) was placed from the bulb to the third duodenal portion, and fixed with two clips (Instinct; Cook, Bloomington, USA).

Video 1

Endoscopic management of a duodenal invagination. Step 1: over-the-scope clip placement; enteric stent deployment and fixation. Step 2: endoscopic mucosal resection of duodenal mucosa; new stent deployment. Step 3: new endoscopic mucosal resection of the remaining invaginated mucosa; duodenal lumen patency.

In the second step 6 weeks later, the stent was retrieved, and migration of the OTSCs was confirmed. Necrosis of the duodenal folds was also apparent. A mucosal protrusion remained, affecting one-third of the duodenal circumference. Thus, an endoscopic mucosectomy was performed (the mucosa was found to be histopathologically normal) (► **Fig. 3**). A new similar metallic stent was inserted and fixed in place with clips.

In the third and final procedure 8 weeks after the previous step, the stent was removed and an inflammatory area was dilated using an 18–20 mm controlled radial expansion balloon (CRE; Boston Scientific, Marlborough, USA). A mucosectomy of an invaginated growth involving one-quarter of the circumference of the second duodenal portion completed the procedure (► **Fig. 4**), resulting in complete patency of the duodenal lumen.

At 3-month follow-up, symptom remission had been achieved: the patient had not suffered new occlusive episodes, had not required emergency department admission, and had no abdominal distension.

Endoscopy_UCTN_Code_TTT_1AT_2AC

Competing interests: None

Fig. 3 Second step of endoscopic treatment, 6 weeks after the procedure shown in [Fig. 2](#). Endoscopic mucosal resection of a mucosal protrusion affecting one-third of the duodenal circumference.

Fig. 4 Third and final step of endoscopic treatment, 8 weeks after the procedure shown in [Fig. 3](#). Endoscopic mucosal resection of an invaginated growth involving one-quarter of the circumference of the second duodenal portion, and complete patency of the duodenal lumen at the end of treatment.

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Bibliography

DOI <http://dx.doi.org/10.1055/s-0034-1392654>
Endoscopy 2015; 47: E442–E443
© Georg Thieme Verlag KG
Stuttgart · New York
ISSN 0013-726X

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