

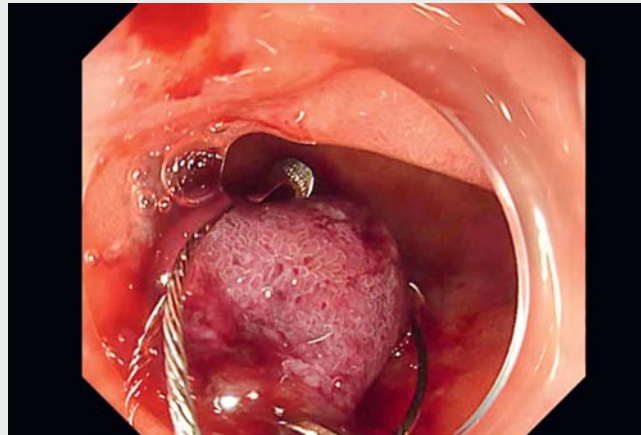
En bloc resection by polypectomy with over-the-scope clip for a neuroendocrine tumor located in a duodenal bulb pocket

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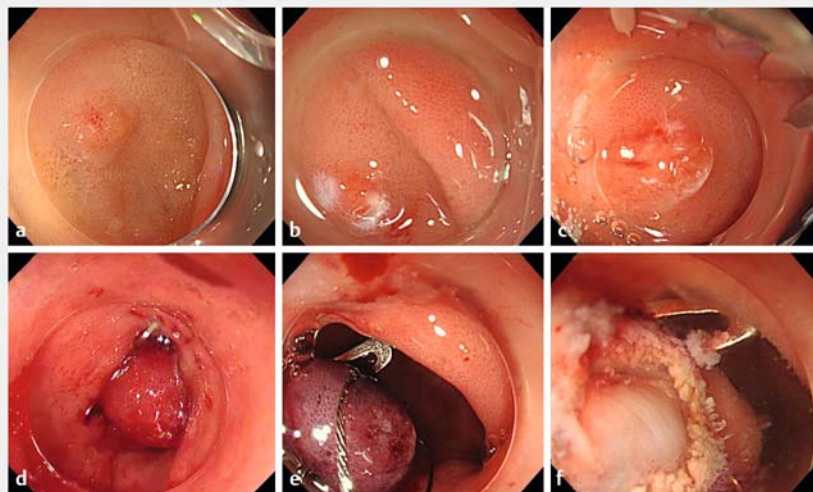
Neuroendocrine tumors (NETs) are located primarily in the submucosal layer and require careful resection. Conventional endoscopic mucosal resection (EMR) has a risk of positive deep resection margins. En bloc resection is more feasible in endoscopic submucosal dissection (ESD); however, in the duodenum, there is a heightened risk of intraoperative or delayed perforation owing to the thin duodenal wall and effects of inflowing bile and pancreatic juices [1]. The use of an over-the-scope (OTS) clip during polypectomy can greatly reduce the perforation risk [2] and is reportedly safe for duodenal NETs [3]. However, its use during polypectomy to resect NETs located in the pocket of a duodenal ulcer scar has not been reported. We report the use of this method for the safe, rapid, en bloc resection of such tumors located in the anterior wall of the duodenal bulb (► Fig. 1, ► Fig. 2, ► Video 1).

In the duodenal mucosa and submucosa, even a tiny biopsy causes severe submucosal fibrosis, which may render snaring unfeasible [4]. The lesion in our patient had previously been biopsied and was located in a pocket created by duodenal ulcer scarring. Given the fibrotic interference and operative difficulty, regular EMR or ESD was considered unfeasible. As the lesion measured only 3 mm, an OTS clip could be used and could be positioned to just avoid the pyloric ring. OTS clip use during polypectomy involves a high cost, restrictions on lesion size, and the possibility of stenosis, depending on the location. However, it has the major advantages of greatly decreasing the perforation risk, shortening the operating time, and enabling the resection of the deep submucosal layer [3]. We thus considered OTS clip extremely useful for duodenal NETs that are in a position that makes their conventional endoscopic resection difficult.

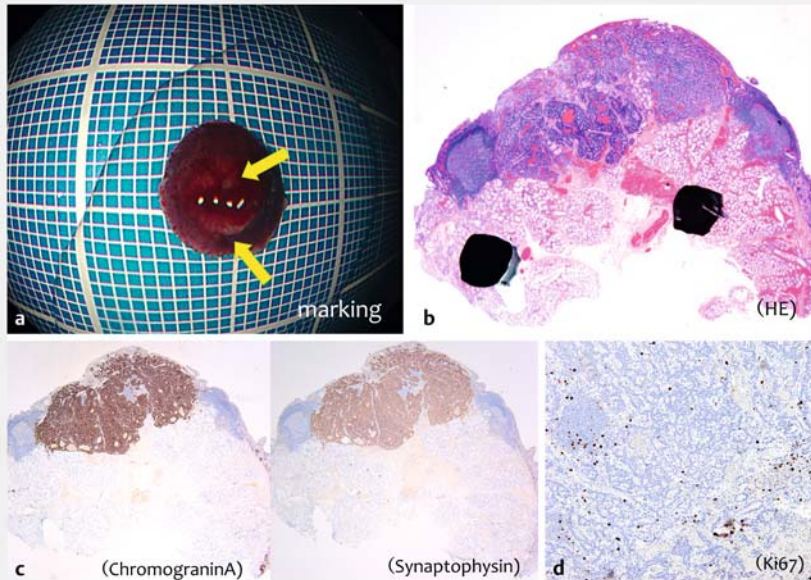
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► **Video 1** En bloc resection by polypectomy with over-the-scope clip for a neuroendocrine tumor located within a pocket created by duodenal ulcer scarring.



► **Fig. 1** Polypectomy and the over-the-scope (OTS) clip system. **a** The lesion was a 3-mm neuroendocrine tumor (NET) inside a pocket formed by duodenal ulcer scarring in the anterior wall of the duodenal bulb. **b** The top of the lesion was marked with a snare tip and, after application of suction, the lesion was confirmed to have been drawn inside the hood. **c** The OTS clip was positioned. **d** Suction was applied to the lesion, and the entire lesion was confirmed to have been drawn inside the hood. The OTS clip was applied. An elevated pseudo-polyp was created immediately above the OTS clip. **e** The lesion was resected with a snare immediately above the OTS clip. **f** There was no evident perforation on the resected surface, and the treatment was completed without incident.



► **Fig. 2** The resected sample and histopathology. **a** The resected sample measured 8 × 7 mm. The lesion is marked with yellow arrows. **b** In the pathology specimens, no cellular atypia was evident in the epithelium, but tumor cells with eosinophilic cell bodies and a high nuclear/cytoplasm ratio were seen proliferating in a trabecular pattern. **c** The results of specific staining were positive for synaptophysin and chromogranin, and negative for neural cell adhesion molecule. **d** Ki67 positivity was less than 1 % in the resected tissue, and the final diagnosis was a neuroendocrine tumor, G1, ly0, v0, surgical margin (-), making this a curative resection. HE, hematoxylin and eosin.

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Competing interests

The authors declare that they have no conflict of interest.

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