Title:
Ligation-assisted endoscopic mucosal resection for duodenal neuroendocrine tumor

Authors:
Yang Wu, WenLi Xu, Chaowu Chen, Haina Chai, Chao Sun, Jun Liu

DOI: 10.17235/reed.2023.9985/2023
Link: PubMed (Epub ahead of print)

Please cite this article as:

This is a PDF file of an unedited manuscript that has been accepted for publication. As a service to our customers we are providing this early version of the manuscript. The manuscript will undergo copyediting, typesetting, and review of the resulting proof before it is published in its final form. Please note that during the production process errors may be discovered which could affect the content, and all legal disclaimers that apply to the journal pertain.
Ligation-assisted endoscopic mucosal resection for duodenal neuroendocrine tumor

Yang Wu¹, WenLi Xu¹, ChaoWu Chen², Haina Chai², Chao Sun², Jun Liu²

¹Dalian Medical University. Dalian, China. ²Endoscopy Center. Department of Gastroenterology. Northern Jiangsu People’s Hospital Affiliated to Yangzhou University. Yangzhou, China

Correspondence: Jun Liu
e-mail: sbyy_liujun@163.com

Author contributions: design of the study, ChaoWu Chen and Chao Sun; collection of the information of the patient, WenLi Xu; administration of treatment, Jun Liu and Haina Chai; writing and review of the article, Yang Wu and Jun Liu.

Conflict of interest: the authors declare no conflict of interest.

Informed consent statement: informed consent was obtained from the patient.

Keywords: Neuroendocrine tumor. Duodenum. Ligation-assisted endoscopic mucosal resection. Endoscopic mucosal resection. Ligation device.

Dear editor,
A 72-year-old female was admitted to the hospital on 2023-02-05 due to endoscopic duodenal mass. Gastroscopy in our outpatient department indicated that a 1.0 cm hemispherical bulge was on the anterior wall of duodenal bulb (Fig. 1). Endoscopic ultrasonography showed a hypoechoic mass originating from the submucosa about 1.2*0.8 cm (Fig. 2). CT of the upper abdomen was examined (Fig. 3). In order to resect the lesion completely without positive margins, we applied ligation-assisted endoscopic mucosal resection (EMR-L) technique (Fig. 4A-G). The lesion was sucked
into the ligator completely. A band was released successively below the lesion. Normal saline was injected into the base of the lesion to lift the lesion, and then the snare was deployed under the band for resection with high-frequency current (Intensity of 45 W mixed type). The surgical wound was clean and closed by 3 titanium clips. Histological examination revealed a neuroendocrine tumor (NET, G1) (Fig. 5). The tumor was located in the submucosa immediately adjacent to the basal margin and about 10 μm away from the basal margin. No positive residue was found on both vertical and horizontal margins.

Discussion
Duodenal neuroendocrine tumors (d-NETs) originate from the deep enterochromaffin cells (Kulchitsky) of the Lieberkkuhn crypt of the duodenal mucosa (1). Endoscopic treatment has become the preferred method for d-NETs (<20 mm) limited to the submucosal layer. It includes electrocoagulation and electroresection; endoscopic mucosal resection alone or with cap, with a ligation device; underwater endoscopic mucosal resection; over-the-scope clip-assisted (OTSC-assisted) endoscopic resection and endoscopic submucosal dissection. Each technique has a risk of hemorrhage and perforation, and has a high incidence of residual positive margins. OSTC-assisted endoscopic resection is a safest method in preventing perforation (2,3). EMR-L is an effective technique that ensures complete resection without residual positive margins. It can also have a complete pathological assessment of the lesion while avoiding damage to the muscularis propria (4). Therefore, EMR-L may be successfully applied to treat d-NETs.

References

Fig. 1. Gastroscopy showed a 1.0 cm hemispherical bulge was on the anterior wall of duodenal bulb with smooth surface and ulcer formation.

Fig. 2. Endoscopic ultrasonography showed a hypoechoic mass with a round shape, clear border, uniform internal echogenicity, protruding into the lumen, originating from the submucosa, with a cross-sectional size of about 1.2*0.8 cm.

Fig. 3. CT of the upper abdomen indicated slight thickening of the wall of the gastric sinus and thickening of the intestinal wall of the horizontal segment of the duodenum with mild enhancement.

Fig. 4. A-G. Ligation-assisted endoscopic mucosal resection (EMR-L).

Fig. 5. HE showed tumor cells in the intestinal mucosa, arranged in nests, with abundant blood sinuses in the interstitium, and more lymphocytes, plasma cells and other inflammatory cells infiltrated, with hemorrhage and inflammatory exudation on the surface of the focal area. Immunohistochemical staining showed tumor cells CKpan(+), Syn(+), CgA(+), CD56(+) in small focal areas), Ki67(about 1%).