A 66-year-old man was diagnosed with early duodenal cancer in the third portion of the duodenum (Fig. 1a, b). Surgical removal of the tumor was performed. The patient was placed in a left semi-lateral position and the tumor location was confirmed by both endoscopy and laparoscopy. First, the tissues surrounding the tumor were incised to the submucosal layer with an insulation-tipped electrosurgical knife, maintaining a 10-mm surgical margin. After full-thickness dissection of three-quarters of the circumference of the tumor from the duodenal lumen (Fig. 2), the tumor was everted toward the abdominal cavity. An assistant elevated the nonresected part of the tumor with forceps while tension was applied to the duodenum with an endoscope. The nonresected portion was dissected using laparoscopic bipolar scissors (Fig. 3a). The incision was closed laparoscopically, with maintenance of adequate lumen diameter (Fig. 3b). Duodenal tumors are occasionally removed surgically to avoid perforating the duodenal wall by endoscopic mucosal resection, or when the tumor is not elevated by saline injection of the submucosal layer. However, when the tumor is removed surgically from the exterior of the duodenum, identifying the resection range is difficult and there is the risk of duodenal stenosis resulting from excessive resection. The laparoscopic and endoscopic cooperative surgery (LECS) technique, which was designed to dissect gastric submucosal tumors from the gastric lumen, was first reported by Hiki et al. [1]. When the LECS technique is applied for duodenal tumors, an exact cut line is achieved. Moreover, applying appropriate tension to the duodenum with an endoscope facilitates laparoscopic suturing. In conclusion, LECS is a useful method for full-thickness duodenal tumor resection.

Competing interests: None

Fumitoshi Hirokawa1, Michihiro Hayashib, Yoshiharu Miyamoto1, Mitsuhiro Asakuma1, Tetsunosuke Shimizu1, Koji Komeda1, Yoshihiro Inoue1, Eiji Umegaki2, Kazuhisa Uchiyama1
1 Department of General and Gastroenterological Surgery, Osaka Medical College, Osaka, Japan
2 Department of 2nd Internal Medicine, Osaka Medical College, Osaka, Japan

Fig. 1 Tumor location. a Barium image shows the third portion of the duodenum. b The tumor was confirmed by intraluminal endoscopy.

Fig. 2 Endoscopic submucosal dissection around the tumor. Three-quarters of the marked area was cut circumferentially using an insulation-tipped diathermic electrosurgical knife.

Fig. 3 Laparoscopic seromuscular dissection and suturing of duodenal defect. a The portion of duodenum that was everted into the abdominal cavity was dissected using laparoscopic bipolar scissors while tension was applied to the duodenum with an endoscope. b The duodenal incision was closed laparoscopically, with appropriate tension provided by the endoscope.
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DOI http://dx.doi.org/10.1055/s-0033-1358929
Endoscopy 2014; 46: E26–E27
© Georg Thieme Verlag KG
Stuttgart · New York
ISSN 0013-726X

Corresponding author
Fumitoshi Hirokawa, MD
Department of General and Gastroenterological Surgery
Osaka Medical College
2-7 Daigaku-machi, Takatsuki
Osaka 569-8686
Japan
Fax: +81-72-6852057
sur122@poh.osaka-med.ac.jp