

Endoscopic removal of a pedunculated early duodenal cancer : diagnostic value of endoscopic ultrasound

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Abstract

A 79-year-old Japanese woman was admitted to our hospital for evaluation of a polypoid lesion in the second portion of the duodenum. Radiographic and endoscopic examinations of the upper gastrointestinal tract indicated that this mass was pedunculated and had a nodular surface. Endoscopic ultrasonography demonstrated a hypoechoic tumor limited to the mucosa without lymph node involvement. Endoscopic polypectomy was performed. Histologic examination showed a tubular adenocarcinoma arising in an adenoma with invasion limited to the mucosa. Findings were consistent with complete endoscopic resection. Follow-up over a 12-month period has disclosed no evidence of tumor recurrence. Endoscopic polypectomy using information from endoscopic ultrasonography would appear to be a safe and effective method for diagnosis and treatment of pedunculated early duodenal cancers. (*Acta gastroenterol. belg.*, 2002, 65, 52-54)

Key words : early duodenal cancer, endoscopic polypectomy, endoscopic ultrasonography.

Introduction

Primary duodenal cancer is rare, and is often detected in an advanced stage (1,2). However, with advances in endoscopy and imaging of the second portion of the duodenum, early lesions have been detected more frequently (3-9). We report an early duodenal cancer that was removed completely by endoscopic polypectomy. Information obtained by an endoscopically guided ultrasonic probe was useful for assessing the lesion and planning treatment.

Case report

A 79-year-old Japanese woman who was periodically reevaluated because of chronic hepatitis C infection, underwent upper gastrointestinal endoscopy to evaluate esophageal varices. Endoscopy disclosed a pedunculated polypoid mass in the second portion of the duodenum. The patient was admitted to our hospital for further evaluation and treatment.

On admission, the patient had no specific complaints. Physical examination was unremarkable. No abdominal mass could be palpated, and no abdominal tenderness was evident. A complete blood count and serum chemistry screening results were within normal limits. The serum carcinoembryonic antigen (CEA) concentration was normal. A test for occult fecal blood was negative.

Hypotonic duodenography revealed a well-defined pedunculated, lobulated polypoid lesion (diameter, 15 mm) in the second portion of the duodenum. Gastro-duodenoscopy again showed a pedunculated polypoid lesion with a stalk in the second portion of the duodenum (Fig. 1). The tumor had a whitish, lobulated surface with no erosions or ulcerations. An endoscopic biopsy of the tumor yielded a specimen with the histologic appearance of tubular adenoma. We inserted a flexible ultrasonic probe through the biopsy channel of the gastrointestinal endoscope during direct visualization of the lesion to perform endoscopic ultrasonography (EUS). An ultrathin mechanical radial scanning probe (SP-701, Fujinon sonoprobe system, Fuji Photo Optical, Omiya, Japan) was used at a frequency of 15 MHz. A hypoechoic tumor limited to the mucosa without involvement

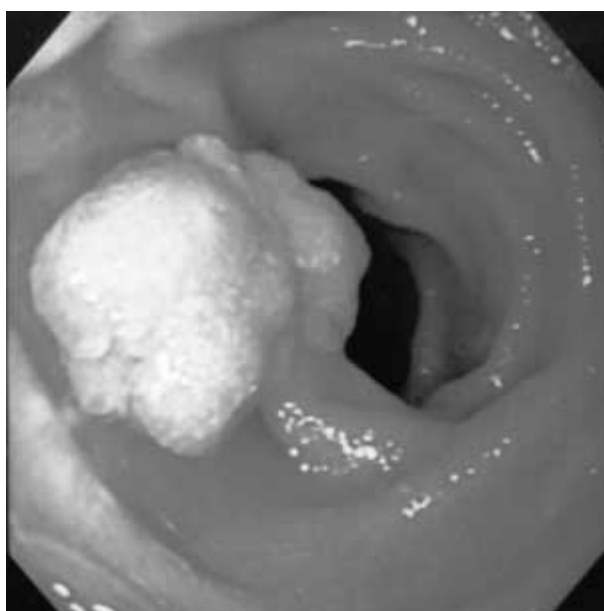


Fig. 1. — Endoscopy demonstrates a slightly yellowish pedunculated polypoid lesion in the second portion of the duodenum.

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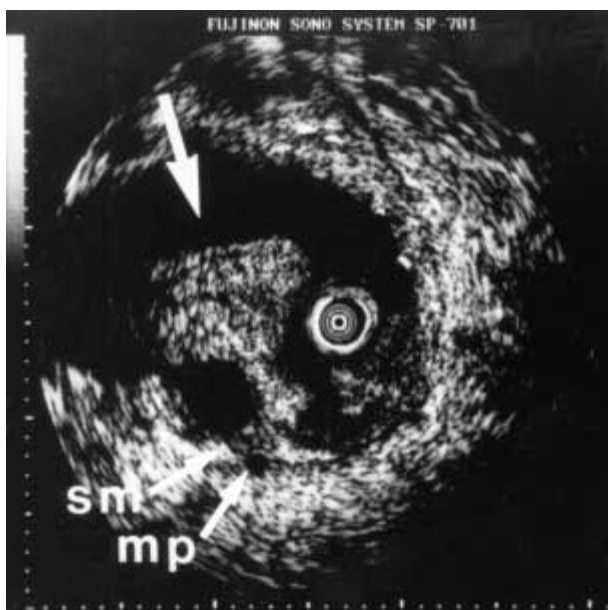


Fig. 2. — Endoscopic ultrasonography indicates a hypoechoic tumor limited to the mucosa without lymph node metastasis.

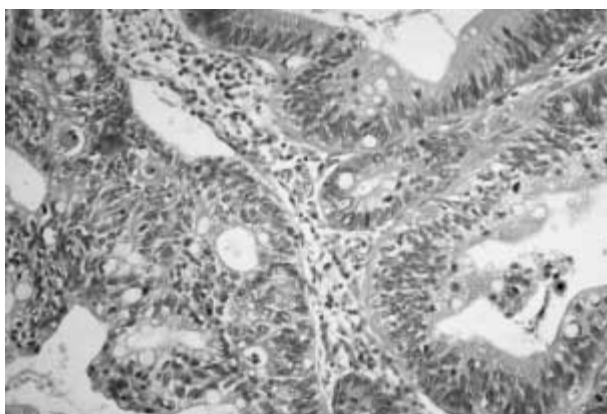


Fig. 3. — Histologic examination demonstrates cancer (arrow) occurring in an adenoma. The cancer was limited to the mucosal layer of the duodenum (hematoxylin and eosin, $\times 12$).

of the stalk or lymph node was demonstrated by EUS ; no abnormal submucosal vessel was observed in the stalk (Fig. 2). These findings were compatible with either a duodenal adenoma or a duodenal mucosal cancer and the lesion was judged to be safely resectable by endoscopic polypectomy.

Endoscopic polypectomy was performed. After loop snaring of the tumor, a mixture of cutting and electrocoagulation current (UES-10, Olympus, Tokyo) was applied for a few seconds. The tumor was transected and removed with a tripod snare. No bleeding or other complications occurred. The histologic diagnosis was adenocarcinoma arising in an adenoma without invasion beyond the mucosal layer (Fig. 3). No malignant tissue was seen at the margin of resection. Follow-up endoscopy 2 weeks and 12 months after resection

revealed no tumor. Specimens from multiple endoscopic biopsies of the lesion site also contained no demonstrable cancer. Transabdominal ultrasonography (12 months after resection) showed no metastatic lesions.

Discussion

Early duodenal cancer has been considered a rare disease (1). With widespread use of gastrointestinal endoscopy, especially examinations including careful evaluation of the second portion of the duodenum, several endoscopically diagnosed cases have been reported (3-9).

When present, clinical signs and symptoms of early duodenal cancer are variable and nonspecific (3-9). Our patient had no abdominal symptoms. In some cases abdominal pain or discomfort has been reported.

The diagnosis of early duodenal cancer usually has been made by histologic examination of completely resected lesions (6). Endoscopically, the features of early duodenal cancer are neither uniform nor diagnostically specific. According to Nakagoe *et al.* (8), percentages of each type of early duodenal carcinoma according to Yamada's classification (6) are as follows : type IV, 53% ; type III, 18% ; type II, 6% ; and unclassified, 23%. Lesions usually have a cauliflower-like appearance, with a lobular, nodular, or granular surface. In only 62.5% of their cases was a preoperative diagnosis of carcinoma made by examination of biopsy specimens (8) ; in our case the preresection specimen showed only duodenal adenoma. Therefore, short of complete resection with histologic examination, early duodenal cancer cannot be ruled out.

Until recently, early duodenal cancer was treated by surgery. Increasingly, however, some early duodenal cancers are being removed by snare polypectomy (3-7). The risk of lymph node metastasis is known to be low in tumors in which invasion is limited to the mucosa (7). Satake *et al.* (10) reported that no lymph node metastasis was found in 14 patients with intramucosal carcinoma of the duodenum, and it was detected in one of 18 patients (5.6%) with submucosal cancers. Nagatani *et al.* (11) analyzed 128 lesions in 127 cases of early duodenal carcinoma in Japanese patients and reported that the incidence of lymph node metastasis is 0 % for intramucosal carcinomas and 5 % for submucosal ones. Endoscopic polypectomy is an effective treatment for duodenal cancer if the lesion is limited to the mucosa (3). Numerous studies have been published comparing EUS staging to the findings at surgical exploration (12-15). These studies document a high accuracy rate of EUS for depth of invasion and nodal involvement (12-15). In particular, the accuracy rate for elevated type intramucosal GI tract cancer is extremely high (91%) (12). Recently available endoscopically guided ultrasonography using an ultrasonic probe can be performed easily during conventional gastrointestinal endoscopy,

and is valuable in assessing the exact location and spread of cancer (12). Accordingly, EUS has become indispensable in planning their treatment (12-17).

Severe complications such as perforation or bleeding have been associated with endoscopic polypectomy (16-18,21,22). In particular, endoscopic surgery of the duodenum can be dangerous because of the thickness of the wall. Perforation and profuse bleeding are attributed to the ensnarement of the muscularis propria and large intramural vessels. It is impossible to predict the existence of such dangerous intramural situations by superficial observation with fiberoptic endoscopy. Previous reports including ours (18-20) proved that EUS can identify abnormal submucosal vessels. Furthermore EUS can evaluate the thickness of submucosal layer and intramural fibrosis (13,19,21). Such information, provided by EUS before resection, is very useful in avoiding complications (18,21). In this case, preoperative EUS revealed no abnormally large vessel in the stalk, and there were no complications. The decision to perform endoscopic polypectomy for a duodenal cancer should be made carefully, taking EUS results into account for safety.

We have reported the case of a 79-year-old woman who successfully underwent endoscopic polypectomy for early duodenal cancer. EUS was highly useful in diagnosis and treatment planning.

References

- BURGERMAN A., BAGGENSTOSS A.H., CAIN J.C. Primary malignant neoplasms of the duodenum excluding the papilla of Vater. *Gastroenterology*, 1956, **30** : 421-31.
- BARKLEY T.H.C., KENT H.P. Primary carcinoma of the duodenum. *Gastroenterology*, 1956, **30** : 432-46.
- OBATA S., SUENAGA M., ARAKI K., FUJIOKA Y., KIMURA K., MAEDA K. *et al.* Use of strip biopsy in a case of early duodenal cancer. *Endoscopy*, 1992, **24** : 232-4.
- TAKESHITA K., WATANUKI S., GOSAKI N., OKABE S., SAITO N., ENDO M. An endoscopically resected case of early carcinoma of the duodenal bulb. *Dig. Endosc.*, 1992, **4** : 261-6.
- TRINGALI M., CROTTA S., BODRATO C., LOLLI R., CERRATO C., CERRATO G. Early primary duodenal carcinoma successfully treated by endoscopic polypectomy. *Endoscopy*, 1994, **26** : 709.
- TAKIUCHI H., ASHIDA K., HIRATA I., TANAKA M., OHSHIBA S. Polypectomized early cancer (Carcinoma in Adenoma) in the duodenal bulb, report of a case. *Stomach and Intestine*, 1993, **28** : 677-80 (in Japanese with English abstr).
- ISEKI M., ARAI K., TOMINAGA K., KOBAYASHI H., KOKUDAI K., TAMURA K. *et al.* A case of early duodenal cancer resected by endoscopic polypectomy. *Progress of Digestive Endoscopy*, 1993, **42** : 248-51 (in Japanese with English abstr).
- NAKAGOE T., KITAZATO S., NAGAMATSU S., MURATA I., SAWADA K., MATSUNAGA K. Primary early carcinoma of the duodenal bulb, report of case. *Stomach and Intestine*, 1983, **18** : 1119-25 (in Japanese with English abstr).
- KUME K., OKUBO Y., EJIRI Y., ABE S., HAKOZAKI H., MURATA I. *et al.* Early duodenal carcinoma successfully treated by endoscopic mucosal resection. *Dig. Endosc.*, 2000, **12** : 177-80.
- SATAKE H., NAOKI M., AMENOMORI M., FUJII H., YASUBA H., IKUTA T., YAGI S., OGAWA K., SHIMIZU I., MAEKAWA T., KAJITANI Y., KOGAWA K., KOIZUMI K., KUDOH S KANAI T. Primary early carcinoma of duodenum. Report of a case and clinico-pathological review of Japanese literature. *Gastroenterological Endoscopy*, 1986, **28** : 1610-18 (in Japanese with English abstr).
- NAGATANI K. TAKEKOSHI T., BABA Y., KAKU S., KOIZUMI K., FUJII A., OGATA E., OHTA H., NISHI M., KATO Y., YANAGISAWA A. Indications for endoscopic treatment of early duodenal cancer. based on cases reported in the literature, 1993, **5** : 969-76.
- AKAHOSHI K., CHIJIIWA Y., HAMADA S., KABEMURA T., YASUDA D., OKABE H., NAWATA H. Pretreatment staging of endoscopically early gastric cancer with a 15 MHz ultrasound catheter probe. *Gastrointest. Endosc.*, 1998, **48** : 470-6.
- AKAHOSHI K., CHIJIIWA Y., HAMADA S., SASAKI I., MARUOKA A., KABEMURA T. *et al.* Endoscopic ultrasonography : A promising method for assessing the prospects of endoscopic mucosal resection in early gastric cancer. *Endoscopy*, 1997, **29** : 614-9.
- MURATA Y., SUZUKI S., OHTA M., MITSUNAGA A., HAYASHI K., YOSHIDA K., IDE H. Small ultrasonic probes for determination of the depth of superficial esophageal cancer. *Gastrointest. Endosc.*, 1996, **44** : 23-8.
- SAITOH Y., OBARA T., EINAMI K., NOMURA M., TARUISHI M., AYABE T., ASHIDA T., SHIBATA Y., KOHGO Y. Efficacy of high-frequency ultrasound probes for the preoperative staging of invasion depth in flat and depressed colorectal tumors. *Gastrointest. Endosc.*, 1996, **44** : 23-8.
- IWAKIRI Y., AKAHOSHI K., HAMADA S., CHIJIIWA Y., NAWATA H., SASAKI I. Endoscopic removal of a lymphangioma of the colon : Case report of the diagnostic value of endoscopic ultrasound probe. *Endoscopy*, 1997, **29** : 32-3.
- OCHIAI T., AKAHOSHI K., HAMADA S., CHIJIIWA Y., NAWATA H., NAMOTO M. Endoscopic resection of colonic lipoma under endoscopic ultrasound guidance : Report of a case. *Endoscopy*, 1998, **30** : 65-6.
- TIO T.L., TYTGAT G.N. Endoscopic ultrasonography of an arteriovenous malformation in a gastric polyp. *Endoscopy*, 1986, **18** : 156-8.
- AKAHOSHI K., CHIJIIWA Y., MISAWA T., AYUKAWA K., NAKAMURA K., JIMI M. *et al.* Confirmation of Dieulafoy's vascular lesion by endoscopic ultrasonography in three cases. *Dig. Endosc.*, 1993, **5** : 383-90.
- ZIEGLER K., GREGOR M., ZEITZ M., ZIMMER T., HABERMANN F., RIECKEN E. O. Evaluation of endosonography in sclerotherapy of esophageal varices. *Endoscopy*, 1991, **23** : 247-50.
- AKAHOSHI K., CHIJIIWA Y., TANAKA M., HARADA N., NAWATA H. Endosonography probe-guided endoscopic mucosal resection of gastric neoplasms. *Gastrointest. Endosc.*, 1995, **42** : 248-52.
- MUHLDOERFER S.M., KEKOS G., HAHN E.G., ELL C. Complications of therapeutic gastrointestinal endoscopy. *Endoscopy*, 1992, **24** : 276-83.