

Outcomes of endoscopic resection for superficial duodenal epithelial neoplasia

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Background and Aims: Pancreaticoduodenectomy is an invasive procedure, and endoscopic resection (ER) is an alternative therapy. However, details regarding the outcomes of ER are unknown, especially for superficial duodenal epithelial neoplasia (SDET). The aim of this study was to elucidate the outcomes of ER for SDET and to compare EMR with endoscopic submucosal dissection (ESD).

Methods: This was a retrospective observational study. From June 2010 to June 2017, 320 cases of endoscopically resected SDET (146 EMR-treated cases and 174 ESD-treated cases) were included in this study. We analyzed the proportions of en bloc resection, R0 resection, perforation, and bleeding as outcomes of ER and compared outcomes between the EMR and ESD groups. Next, we collected data on the features and clinical course of cases with adverse events.

Results: The proportions of en bloc resection and R0 resection among all cases were 96.6% and 83.4%, respectively. In over 95% of cases, ESD achieved en bloc resection, regardless of lesion size. The incidences of perforation and bleeding were 8.8% and 3.4%, respectively, and the former was largely successfully managed by conservative treatment. The mortality rate was 0%, and all patients were discharged with a median hospital stay of 8.5 days (range, 4–52 days). Evaluation of the hospital stay duration according to lesion circumference revealed a significantly longer duration for lesions present on the medial wall than for other lesions (median 41 vs 7 days, $P = .0331$).

Conclusion: The present study revealed that ER achieved secure en bloc resection, with the treatment type (ESD or EMR) selected according to the lesion size. A lesion located on the medial wall was associated with worse outcomes, such as prolonged hospital stay after perforation. (*Gastrointest Endosc* 2018;■:1-7.)

INTRODUCTION

Superficial duodenal epithelial neoplasia (SDET) was once considered a rare disease,¹⁻⁴ with estimated prevalence rates of 0.02% to 0.5% being reported in autopsy

Abbreviations: ER, endoscopic resection; ESD, endoscopic submucosal dissection; POD, postoperative day; SDA, superior duodenal angle; SDET, superficial duodenal epithelial neoplasia.

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series.⁵⁻⁷ However, SDET detection is increasing with recent advances in endoscopic technology.⁸

Pancreaticoduodenectomy (PD) is the standard treatment for duodenal cancer. However, the substantial morbidity and mortality of PD ranges from 30% to 40% and from 1% to 4%, respectively,⁹⁻¹² and PD is considered too invasive for SDET.¹³ Endoscopic resection (ER) is an alternative treatment for SDET that can preserve organs and thus maintain a patient's postoperative quality of life.

There are 2 types of ER: EMR and endoscopic submucosal dissection (ESD). Although EMR is a simple procedure, it sometimes fails regarding piecemeal resection. In addition, a precise pathologic diagnosis is difficult in cases of piecemeal resection; moreover, it has been reported that 20% to 30% of patients develop local recurrence after piecemeal EMR.¹⁴⁻¹⁶ Alternatively, ESD is widely accepted as a minimally invasive therapy for superficial neoplasia of the GI tract because it achieves en bloc resection more often than EMR.¹⁷⁻²⁰ However, previous

studies on duodenal ESD have reported that ESD is associated with more adverse events such as perforation and bleeding.²¹⁻²⁸

To date, detailed outcomes for SDET, including those according to procedure type (EMR or ESD), remain unknown due to the rarity of SDET. Therefore, we conducted a large-scale analysis of case series to understand ER outcomes in SDET.

PATIENTS AND METHODS

Study design

This was a retrospective observational study performed in accordance with the 2008 revision of the Helsinki Declaration. The study protocol was approved by our hospital's Institutional Review Board (20150221 and 20160267).

Eligible patients

From June 2010 to June 2017, 358 consecutive duodenal lesions were resected by ER at our institute. Among them, 24 lesions without epithelial neoplasia and 14 lesions treated with biopsy forceps resection or cold snare polypectomy and only partially resected for diagnostic purposes were excluded. Ultimately, we analyzed 320 cases of endoscopically resected SDET, with 146 lesions treated by EMR and 174 lesions treated by ESD (Fig. 1).

ER procedure

ER procedures were performed principally using a therapeutic endoscope with a water jet function (GIF-Q260J, Olympus Medical Systems, Tokyo, Japan). In general, submucosal injection was performed with 10% glycerine solution (Glyceol Chugai Pharmaceutical Co, Tokyo, Japan) and epinephrine (dilution, 1:400,000). In difficult situations, 0.4% sodium hyaluronate (Mucoup, Boston Scientific Japan, Tokyo, Japan) was used.

The choice of either EMR or ESD was decided based on the lesion size. EMR was selected for SDETs smaller than 20 mm. ESD was attempted when en bloc resection was expected to be difficult by EMR; for example, it was used for SDETs larger than 20 mm or in cases of poor submucosal elevation due to severe fibrosis caused by previous endoscopic treatment or biopsy.

Most of the EMR procedures consisted of submucosal injection followed by mucosal resection using an electrocautery snare (SnareMaster 10 mm, Olympus Medical Systems, Tokyo, Japan). In 18 cases (5.6%), ER was performed using a modified procedure: 2 SDETs were resected by polypectomy without submucosal injection; 2 SDETs were resected by piecemeal EMR; and 13 lesions were resected by EMR after mucosal incision. All these procedures were considered as EMR in this study.

For ESD, mucosal incision or submucosal dissection was performed using a DualKnife or a DualKnife J with a length of 1.5 mm (Olympus Medical Systems, Tokyo, Japan) powered

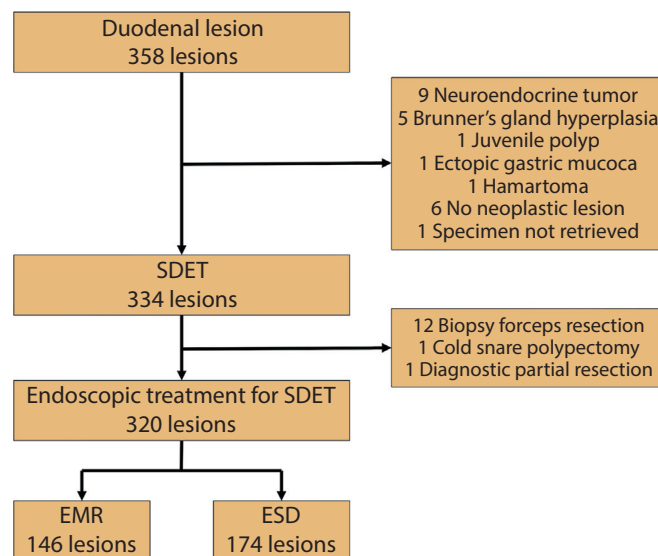


Figure 1. Flow diagram of the patients. ESD, Endoscopic submucosal dissection; SDET, superficial duodenal epithelial neoplasia.

by a high-frequency electrosurgical unit (VIO 300D, ERBE Elektromedizin, Tübingen, Germany). In cases with difficult conditions such as severe fibrosis or poor maneuverability, submucosal dissection was performed carefully using a Hook-knife (Olympus Medical Systems, Tokyo, Japan). Minor bleeding was treated by placing the tip of the device into the outer sheath; hemostatic forceps (Coagrasper, Olympus Medical Systems, Tokyo, Japan) were used in cases of spurting bleeding. In cases of perforation, the perforation was closed using clips (EZ Clip, Olympus Medical Systems, Tokyo, Japan). Regarding the cautery setting, we used dry cut mode (effect 3, 30 W) for a mucosal incision, the swift coagulation mode (effect 4, 30 W) for submucosal dissection, and soft coagulation mode (effect 5, 50 W) for hemostasis.

After resection, any visible vessels on the post-ESD ulcer were subjected to prophylactic coagulation. Next, post-ER artificial ulcers were closed by either simple closure using clips or by the string clip suturing technique²⁹ to prevent delayed bleeding or perforation. If the wound was difficult to close completely, it was covered with polyglycolic acid sheets and fibrin glue.³⁰

Post-ER management

Patients fasted for 2 days, including the day of the ER procedure, and received intravenous hydration. After confirmation that there were no adverse events, the patients were given a liquid diet on postoperative day (POD) 3 and were typically discharged on POD 5. We did not use antibiotics routinely. Patients were given proton pump inhibitors (rabeprazole 20 mg/day, lansoprazole 30 mg/day, or esomeprazole 20 mg/day) for 3 weeks after ESD. Regarding follow-up after ER, all patients underwent at least 1 esophagogastroduodenoscopy to confirm the cure of post-ESD ulcer. Patients with a non-negative

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