

Clinical outcomes of endoscopic submucosal dissection for superficial Barrett's adenocarcinoma

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Background: Advances in diagnostic techniques have allowed early stage detection of superficial Barrett's adenocarcinoma (SBA) as well as resection by endoscopic submucosal dissection (ESD). Few reports exist, however, on the safety and efficacy of ESD for SBA.

Objective: To analyze outcomes of ESD for SBA in relation to clinicopathological features of the lesions.

Design: Retrospective study.

Setting: University hospital.

Patients: Twenty-three patients (21 men, 2 women; mean age, 63 years) with 26 SBAs.

Intervention: ESD.

Main Outcome Measurements: We examined outcomes of ESD in relation to the clinicopathological features of SBAs. The main outcomes assessed were en bloc resection rate, operation time, adverse event rates, additional resection rate, and time between ESD and any recurrence.

Results: Twenty lesions (87%) derived from short-segment Barrett's esophagus, and 3 lesions (13%) derived from long-segment Barrett's esophagus. The majority of SBAs (54%) were located in the 0 to 3 o'clock circumferential quadrant. Median tumor size was 15 mm (range 5-60 mm). Macroscopic types were flat elevated (n = 13, 50%), depressed (n = 12, 46%), and protruded (n = 1, 4%). The SBAs appeared red (n = 23, 88%) or normally pale (n = 3, 12%). Under magnifying narrow-band imaging, all SBAs showed an irregular mucosal pattern and an irregular vascular pattern. The endoscopic en bloc resection rate was 100% (26/26), and the pathological en bloc resection rate was 85% (22/26). The median procedure time was 95 minutes (range, 30-210 minutes). Delayed bleeding occurred in 1 case, but there was no perforation. The SBAs were of the differentiated type (n = 25, 96%) or poorly differentiated type (n = 1, 4%). The tumor had invaded the superficial muscularis mucosa (n = 3, 12%), lamina propria mucosa (n = 5, 19%), deep muscularis mucosa (n = 9, 34%), SM1 (n = 3, 12%), and SM2 (n = 6, 23%). Additional surgical resection after ESD was performed in 9 cases, and there were no residual tumors, but 1 lymph node metastasis was found. There were no recurrent tumors; however, 1 metachronous adenocarcinoma was diagnosed 42 months after ESD.

Limitations: Single-center, retrospective study.

Conclusions: ESD appears to be a safe and effective treatment strategy for early stage SBA. (Gastrointest Endosc 2014;80:239-45.)

Abbreviations: BE, Barrett's esophagus; ESD, endoscopic submucosal dissection; LSBE, long-segment Barrett's esophagus; NBI, narrow-band imaging; RFA, radiofrequency ablation; SBA, superficial Barrett's adenocarcinoma; SSBE, short-segment Barrett's esophagus.

DISCLOSURE: All authors disclosed no financial relationships relevant to this publication.

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<http://dx.doi.org/10.1016/j.gie.2014.01.022>

Received September 20, 2013. Accepted January 9, 2014.

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The incidence of superficial Barrett's adenocarcinoma (SBA) has increased steadily in Western countries.¹ In Japan, most esophageal cancers are squamous cell carcinomas. SBAs are few, reportedly accounting for only 0.9% of all esophageal cancers in Japan.² However, the incidence of Barrett's esophagus (BE) and thus SBA is expected to increase in Japan because of a decrease in *Helicobacter pylori* infection rates and the westernization of the Japanese diet, both of which are thought to promote GERD.³⁻⁵ With advances in endoscopic technologies, it has become possible to detect SBA in the early stage² and then go on to treat these cases by endoscopic mucosal resection (EMR) or endoscopic submucosal dissection (ESD). However, few reports exist regarding ESD for SBA.^{6,7}

ESD has become a standard treatment in Japan for both early gastric cancer and superficial esophageal cancer.⁸⁻¹³ ESD involves circumferential mucosal incision and direct submucosal dissection, making it possible to safely resect even large tumors en bloc and obtain endoscopically clear margins.

We conducted a retrospective analysis of the clinicopathological features and outcomes of SBA resected by ESD in our hospital.

PATIENTS AND METHODS

Patients

The study group comprised 23 patients with 26 SBAs resected by ESD at Hiroshima University Hospital between April 2006 and June 2013. All lesions had been detected by endoscopic screening for GI carcinoma or by endoscopic surveillance after treatment for GI disease. All 26 SBAs had been diagnosed endoscopically as intramucosal carcinoma by standard observation, magnifying observation, and EUS before ESD. During the same period, surgery for SBAs was performed in 10 cases because these lesions were clinically diagnosed as submucosal massive carcinoma. No SBA was treated by EMR during this period. All patients had been informed of the benefits and risks of ESD before providing written consent for the procedure. The patients were identified through a search of our hospital endoscopy records, and patients' records were accessed so that pertinent information could be obtained for the study. The ESD procedures and assessment of the study data are described in the following. The study was conducted with approval from the institutional review board of Hiroshima University.

Narrow-band imaging assessment and procedure

Narrow-band imaging (NBI) is a noninvasive optical technique that uses reflected light to visualize the superficial structure of the organ surface. It has been used to visualize morphologic changes in the structure of esophageal lesions because it allows detailed high-resolution and

Take-home Message

- All superficial Barrett's adenocarcinomas (SBAs) had irregular mucosal and vascular patterns under magnifying narrow-band imaging (NBI); thus, NBI is useful for diagnosing SBA. En bloc resection was achieved in all cases, and clear resection margins were pathologically confirmed in 85% of cases.
- Endoscopic submucosal dissection for early stage SBAs appears to be a safe and effective treatment strategy.

high-contrast imaging of the vascular and mucosal patterns within the BE segment. We use a simplified classification system to assess BE and SBAs.¹⁴ According to this system, NBI descriptors (mucosal and vascular patterns) are classified as regular for nondysplastic BE and irregular for dysplastic BE/early adenocarcinoma.¹⁴

All procedures were performed with the use of a magnifying endoscope (GIF-Q240Z or -Q260Z; Olympus Medical Systems, Tokyo, Japan) in combination with the NBI system.

ESD procedure

For ESD, each patient was placed in the left lateral position, and the operator and assistant stood on the left side of the examination table and in front of the patient. A single-channel endoscope (GIF-Q260J or -H260Z; Olympus or EG-450RD5 or EG-590WR; FUJIFILM, Tokyo, Japan) or 2-channel endoscope (GIF-2TQ260M; Olympus) was used for conventional endoscopic observation. The circumference of the lesion was marked with argon plasma coagulation. Local injection and incision were first performed from the distal side. The injection solution consisted of a 10% glycerin solution with 0.025% epinephrine and 0.005% indigo carmine. The solution was injected under the epithelium to produce a cushion of adequate elevation. The marks were checked, and the elevated area was incised with a Hook-knife (Olympus) in the VIO300D cut mode. Injection and incision were repeated from the proximal side, thus extending the incision circumferentially around the entire lesion. A soft, transparent hood was attached to the tip of the endoscope before incision so that adequate tension for dissection would be achieved. The HookKnife, ITknife nano (Olympus), and/or SB knife (Sumitomo Bakelite, Tokyo, Japan) was used to exfoliate the submucosa in the VIO300D cut or coagulation mode. Injection of 10% glycerin solution and sodium hyaluronate with 0.0025% epinephrine into the submucosa was performed as needed, and further resection was carried out to ensure total removal of the lesion.

Post-ESD bleeding was defined as bleeding after the procedure as manifested by a decrease in the hemoglobin level of 2 g/dL or greater below the most recent preoperative level, observation of any bleeding source, or massive melena. Perforation was diagnosed endoscopically just

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