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Journal

ACG Case Reports Journal, 11(2)

ISSN

2326-3253

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Publication Date

2024-02-01

DOI

10.14309/crj.0000000000001284

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ACG CASE REPORTS JOURNAL

CASE REPORT | ESOPHAGUS

Curative Resection of T1a Inlet Patch Adenocarcinoma With Traction-Assisted Endoscopic Submucosal Dissection

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ABSTRACT

Esophageal inlet patch (EIP) adenocarcinoma is extremely rare. We present a case of a 58-year-old man who underwent a diagnostic esophagogastroduodenoscopy for dysphagia and found to have a 2 cm polypoid mass arising from an EIP. Biopsies and staging were consistent with T1aN0M0 EIP adenocarcinoma. While surgical resection was the main method of treatment of these lesions, very few case reports have shown that endoscopic resection can successfully remove these lesions. After multidisciplinary discussion, the patient underwent curative traction-assisted endoscopic submucosal dissection—which is the first known case report to highlight the success of this technique.

KEYWORDS: inlet patch; esophageal adenocarcinoma; endoscopic submucosal dissection

INTRODUCTION

Adenocarcinoma arising from an esophageal inlet patch (EIP), an ectopic gastric mucosa, is extremely rare.[1] Surgical resection was the main method of treatment before the development of therapeutic endoscopy. Recently, a few case reports in the literature have highlighted the feasibility of curative endoscopic resection with endoscopic mucosal resection (EMR) and traditional endoscopic submucosal dissection (ESD) for early EIP adenocarcinoma.[1–7] In this report, we describe the first known case of T1a EIP adenocarcinoma that was curatively resected using traction-assisted ESD and the first successful endoscopic resection in the United States.

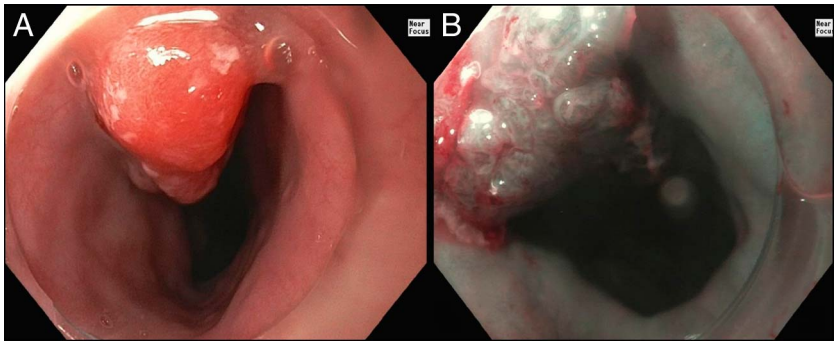

Figure 1. Upper endoscopy demonstrated a 2 cm polypoid exudative mass arising from a proximal esophageal inlet patch under high-definition white light endoscopy (A) and narrow-band imaging (B).

ACG Case Rep J 2024;11:e01284. doi:10.14309/crj.0000000000001284. Published online: February 16, 2024

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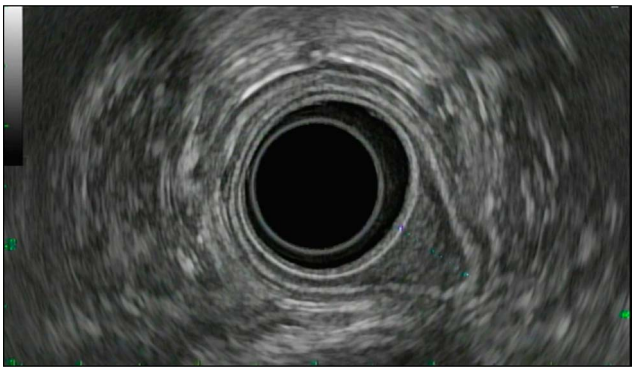

Figure 2. Endosonographic examination revealed the tumor confined to the first 2 mucosal layers with an intact submucosal layer consistent with T1a adenocarcinoma.

CASE REPORT

A 58-year-old White man with chronic gastroesophageal reflux disease, morbid obesity, and atrial fibrillation on rivaroxaban underwent esophagogastroduodenoscopy (EGD) for dysphagia to solid food and inability to belch. EGD showed a 2 cm polypoid, an ulcerated mass (Paris Isp, NICE 3) arising from a 4 cm EIP at 20 cm from the incisors (Figure 1). Biopsies of the mass revealed adenocarcinoma. Chest, abdominal, and pelvic CT showed proximal esophagus wall thickening without evidence of any metastases. Subsequent endosonographic examination suggested a T1aN0Mx EIP adenocarcinoma (Figure 2). After multidisciplinary discussion, the patient was referred for ESD, which was arranged under general anesthesia. The rivaroxaban was held for 48 hours before and after the procedure. Despite limited maneuverability in the esophageal introitus, ESD was performed in a standard fashion (marking with coagulation dots, submucosal lifting using methylene blue-tinted hetastarch solution, mucosal incision, and submucosal dissection). This was facilitated by dynamic traction using a clip and snare, resulting in en bloc resection (Figure 3). There was no bleeding or perforation, and total procedure duration was 101 minutes. The patient was discharged after the procedure. Final histopathological examination revealed moderately differentiated EIP adenocarcinoma invading into the muscularis mucosa (T1a) with negative resection margins and absent lymphovascular invasion consistent with curative resection (Figure 4). After ESD, the patient's dysphagia resolved. At 6 months, surveillance EGD revealed post-ESD scar with 2 diminutive nodules along with residual EIP (Figure 5). Surveillance endosonographic examination was negative for residual tumor, and no adenopathy was demonstrated. Biopsies of the post-resection scar and nodules revealed squamous mucosa with mild reactive changes and focal epidermoid metaplasia (Figure 6). There was no evidence of intestinal metaplasia, dysplasia, or malignancy (Figure 7). The residual EIP was treated with 3 rounds of cryoablation, 30 seconds each with at least a 1-minute interval to ensure good thawing. The patient is pending repeat surveillance endoscopy and further ablation of any residual EIP in around 4 months.

DISCUSSION

The prevalence of asymptomatic proximal EIP is estimated between 0.4% and 10%.[8,9] There are no current recommendations to biopsy or surveil asymptomatic benign-

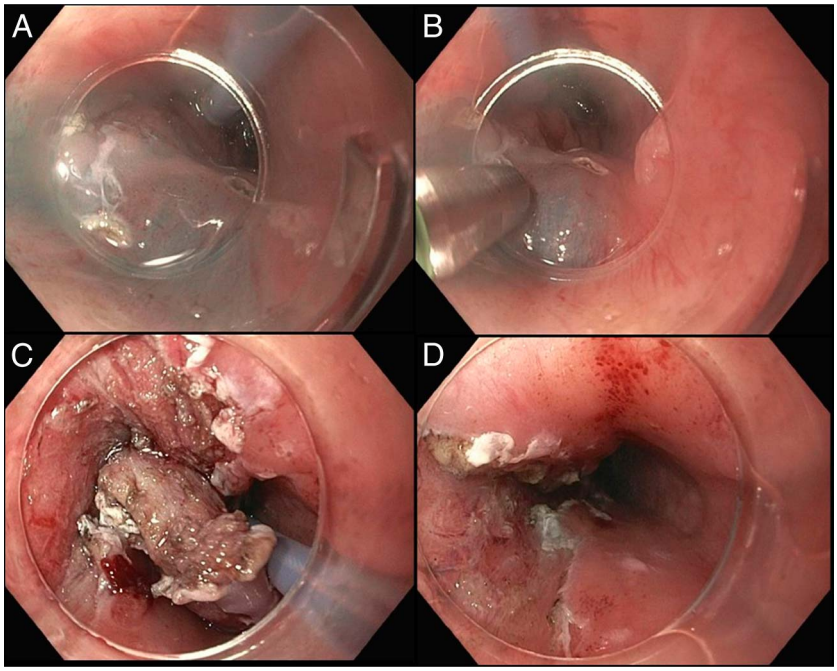

Figure 3. ESD of the lesion with traction assistance by a clip and snare: (A) partial circumferential marking and clip and snare application. (B) Submucosal injection using methylene blue-tinted hetastarch. (C) Submucosal dissection with distal lesion retraction. (D) Complete resection with postresection defect involving around one-third of the esophageal circumference. ESD, endoscopic submucosal dissection.

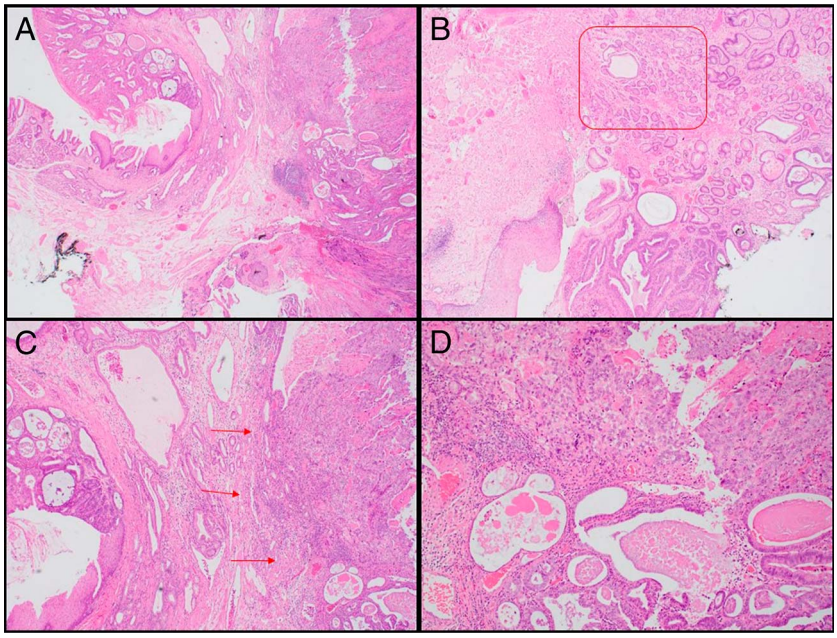

Figure 4. Histopathological examination of the ESD specimen: (A) a polypoid mass with a central stalk, with benign squamocolumnar mucosa at the left and adenocarcinoma at the right (H&E 20×). (B) Heterotopic gastric oxyntic glands (red box) at one edge of the mass, consistent with inlet patch origin (H&E 40×). (C) Near the base of the mass, invasive adenocarcinoma (at the right) encroaching on thin pink bands of muscularis mucosae (red arrows, H&E, 40×). (D) Adenocarcinoma, comprising fused poorly formed glands and solid areas (upper half), and dysplastic glandular epithelium (bottom half) (H&E 100×). ESD, endoscopic submucosal dissection; H&E, hematoxylin and eosin.

appearing patches because the incidence of EIP adenocarcinoma is extremely rare.[1] The pathophysiology of malignant transformation of EIP is unclear, although theories suggest a metaplasia-dysplasia-adenocarcinoma sequence.[2] While laryngopharyngeal reflux is the most common symptom of benign EIP, EIP adenocarcinoma predominantly presents with dysphagia.[2]

Historically, most of these cases underwent esophagectomy and/or chemoradiation until the first reported case of successful endoscopic resection in 2001 presenting a minimally invasive alternative approach with lower morbidity.[1,2] Since then, there have been only a few additional reports of EIP adenocarcinoma that were successfully resected with EMR or ESD.[3–7] Cap-assisted EMR was the predominantly used EMR technique.[1,3,4] Complete resection with conventional ESD for lesions ≥ 2 cm was described in 2 cases in Japan and 1 case in Germany.[5,6,10] Because there are no established guidelines specifically for EIP adenocarcinoma, the endoscopic resection guidelines for esophageal adenocarcinoma are commonly referenced to define curative resection.[11] Beside being the first reported US case to the best of our knowledge, we are the first to highlight the success of traction-assisted ESD for curative resection of EIP adenocarcinoma. Compared with the conventional ESD technique, traction-assisted ESD significantly decreases procedure duration by improving visualization of dissection plain which is crucial in the esophageal introitus where maneuverability is limited.[12]

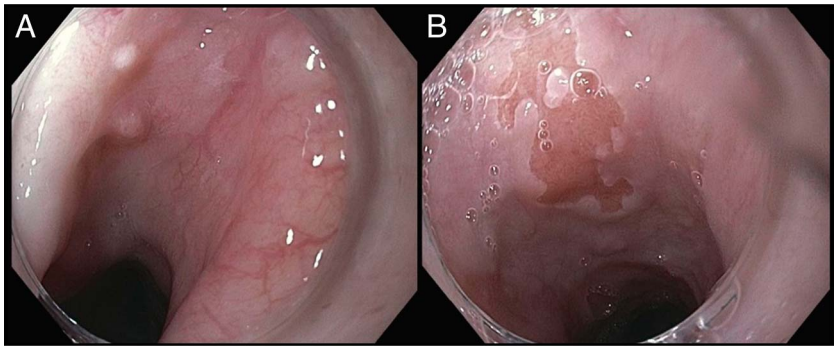

Figure 5. Surveillance upper endoscopy revealing post-ESD scar with 2 diminutive nodules (A) and the residual esophageal inlet patch (B). ESD, endoscopic submucosal dissection.

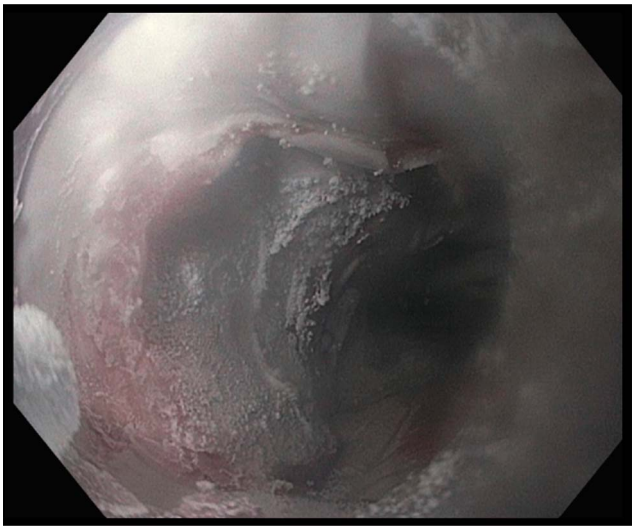

Figure 6. Treatment of the residual esophageal inlet patch with cryoablation.

Multidisciplinary evaluation and management is essential in this rare malignancy. Ablation of the surrounding EIP has been suggested to prevent local recurrence, which we performed in our case.[7] Endoscopic surveillance every 6 months after curative resection is pivotal to detect any local recurrence, which was described up to 21 and 40 months after curative resection of T1a EIP adenocarcinoma in another report.[10]

DISCLOSURES

Author contributions: Project design/conception: F. Bahdi, A. Sedarat. Data and figures chart extraction: F. Bahdi, DY Lu. Manuscript drafting: F. Bahdi, R. Tamai. Provide pathology slide images and interpretation: DY Lu. Critical revision of the manuscript: DD Eshtiaghpour, AM Thaker, and A. Sedarat. All authors were involved in care of the patient and approved the final draft submitted. A. Sedarat is the article guarantor.

Financial disclosure: None to report.

Informed consent was obtained for this case report.

Received November 2, 2023; Accepted January 15, 2024

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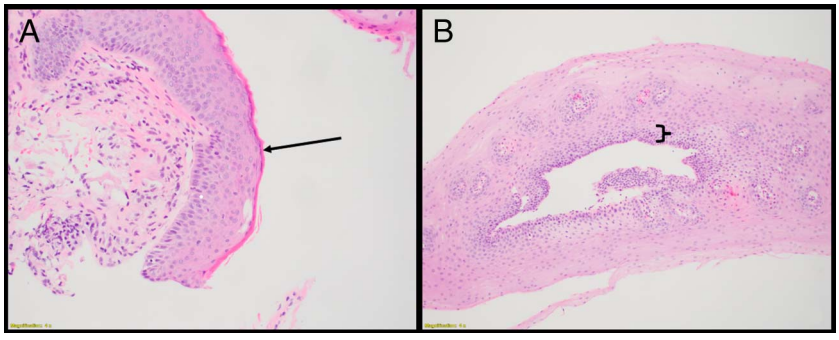

Figure 7. (A) Esophagus post-ESD nodule revealing squamous mucosa with orthokeratosis and a granular layer (arrow), consistent with epidermoid metaplasia (H&E, 200× magnification). (B) Esophagus post-ESD scar revealing squamous mucosa with mild reactive changes demonstrated by mild basal epithelial layer hyperplasia (bracket area) (H&E, 100× magnification). ESD, endoscopic submucosal dissection; H&E, hematoxylin and eosin.