Endoscopic incision with esophageal stent placement for the treatment of refractory benign esophageal strictures

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Most cases of esophageal stricture can be managed successfully with dilation.[1] However, it is difficult to manage a refractory stricture that does not respond to repeated dilations.[2,3] Affected patients often have recurrent dysphagia and vomiting, which severely impair quality of life and the consumption of an adequate amount of food. Surgical resection is indicated in cases of established refractory strictures, but extensive injury and postoperative stenosis often ensue.[1] Although intralesional steroid and/or mitomycin injection before dilation may reduce the risk of recurrent stricture in refractory strictures, the optimal injection technique, frequency of injection, and dosage of drugs remain to be established.[4-6] Esophageal stent placement, although it has a high migration rate, is an alternative method, but the long-term efficacy is still unsatisfactory.[7,8]

Endoscopic incision is a novel technique for treating refractory esophageal strictures and has shown exciting results.[9-12] However, the recurrence is noted in patients with strictures longer than 1.5 cm, which require the use of repeated incisions and/or preventive dilation.[9,10] We herein report our preliminary results of treatment of refractory esophageal strictures with endoscopic incision and esophageal stenting at our hospital.

PATIENTS AND METHODS

Patient information

This retrospective study was approved by the ethics committee of the Second XiangYa Hospital of Central South University, Changsha, China. The inclusion criteria for enrollment in the study included (1) esophageal stricture diagnosed on the basis of clinical symptoms, EGD, or barium meal. A malignant stricture was excluded based on the findings of a histologic examination and/or EUS (UM-2R, 12 MHz; UM-3R, 20 MHz; Olympus, Tokyo, Japan). (2) Refractory stricture was considered when the stricture could not be improved to a diameter $\geq$1.0 cm, or the symptoms of dysphagia were not relieved after $\geq$3 sessions of other treatment (ie, endoscopic balloon dilation, stent placement, and/or surgery). (3) The length of stricture was about 1.5 to 5 cm, or there was multi-segmental stenosis. Those with severe cardiopulmonary disease or blood coagulation disorders were excluded from the study.

Seven consecutive patients were enrolled between April 2013 and June 2014. Informed consent was obtained from all patients or the parents of children before the procedure was performed. All patients or their parents were informed of possible adverse events and other possible treatment options.

Endoscopic incision and esophageal stenting procedure

Endoscopic incision and esophageal stenting was performed with patients under conscious sedation, or general anesthesia for children, by using a single-channel endoscope (GIF-Q260J; Olympus) with a transparent cap (D-201-11802, Olympus) attached to the front. A carbon dioxide insufflator (UCR; Olympus) was used. Other equipment and accessories included a high-frequency generator (ICC 200; ERBE, Tübingen, Germany), an argon plasma coagulation unit (APC300; ERBE), a hybrid knife (ERBE), a dual knife (KD-650Q; Olympus), an insulation-tip knife (KD611L, IT2, Olympus), and retrievable, fully covered, self-expandable metal stents (Delman Technology Co Ltd, Jinan, Shangdong, China).

Stent diameter was mainly determined by the age of the patient. A diameter of 13 mm was used for children aged between 2 and 5 years, 14 mm for children aged >5 years, and 16 mm for adults. The length of the stent was chosen to extend 2 to 3 cm on either side of the proximal and distal extents of the stricture. For anastomotic strictures, a stent with an anti-reflux valve at the distal end was used.

Abbreviations: PPI, proton pump inhibitor therapy.

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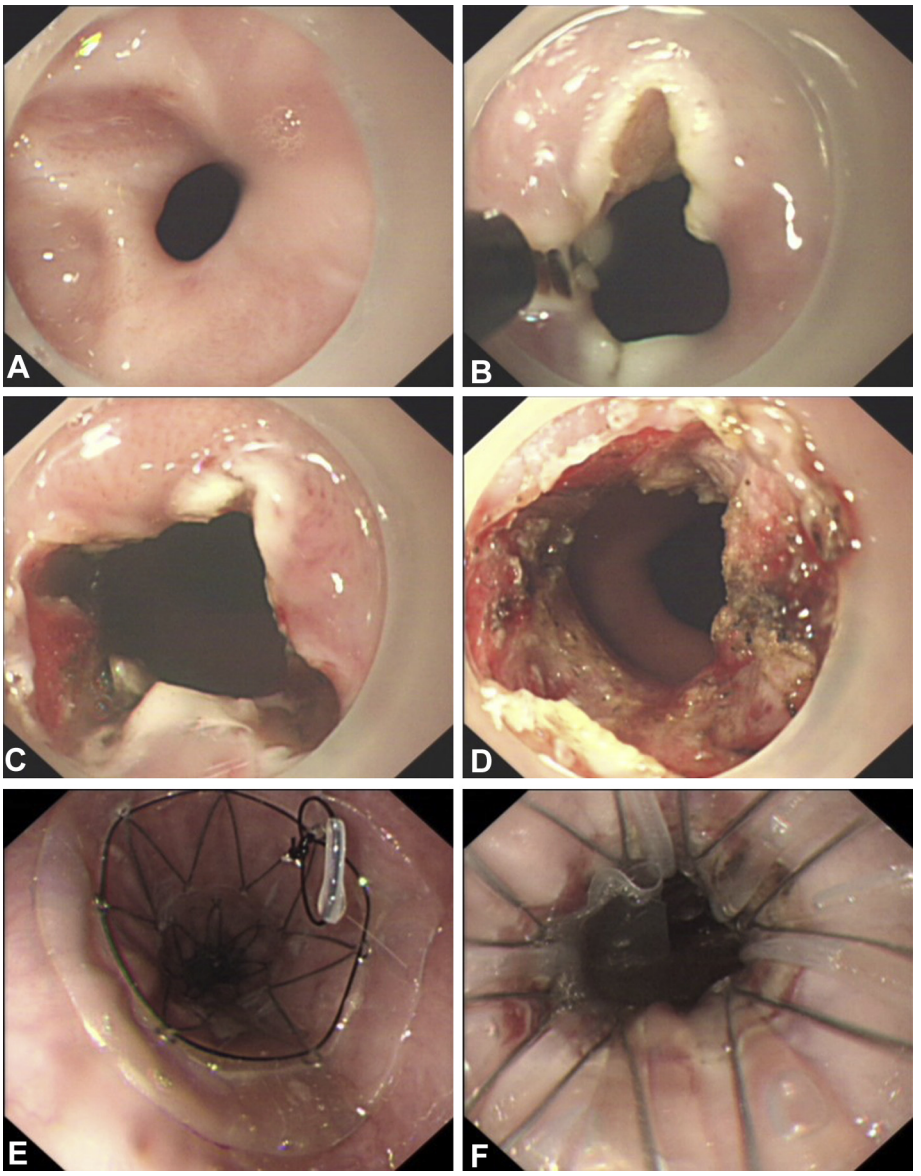

Figure 1. Case illustration of endoscopic incision with esophageal stenting. **A,** Endoscopic view of the preoperative stricture. **B, C,** The stricture site was radially incised with an insulation-tip knife. **D,** The lumen enlarged after endoscopic incision. **E, F,** Fully covered stent after incision.

Incision was performed under direct visualization. Radial incisions were made along a virtual line connecting the esophageal lumen on the oral side and the lumen on the anal side of the area of stricture. The electrosurgical unit was set in Endo Cut mode (effect 2, 50-60 W, ICC 200; ERBE). Sufficient incision depth was defined as involving the muscularis propria and/or the presence of the bottom of the incision along the virtual line. Each part of the stricture site located between the adjacent incisions was sliced off. Other strictures in patients with multiple-segment strictures were managed similarly. After the procedure, the wound surface of the stricture site was observed closely for any occurrence of hemorrhage or perforation. A fully covered retrievable metal stent was placed. Figure 1 depicts an example of the procedure.

Postoperative management

Patients were given nothing by mouth for 2 days, a liquid diet for 5 days, and returned gradually to a soft diet within a month. Intravenous proton pump inhibitor therapy (PPI) and antibiotics were prophylactically used for 3 days. Radiological examination and/or surveillance endoscopy were applied to check for stent migration, tissue overgrowth and/or ulceration every 1～3 weeks after the procedure. Stent removal or replacement time was determined according to the following criteria (1) the stent was removed if there was no migration and the stent had been placed for as long as 12 weeks; (2) the stent was removed because it fell into the stomach, but the dysphagia symptom was relieved and the diameter of the