BRIEF REPORT

Removable self-expandable plastic stent to treat postphotodynamic therapy esophageal stricture

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Benign, refractory esophageal strictures are associated with poor quality of life as well as complications such as malnutrition, weight loss, and aspiration. The frequent causes of benign esophageal strictures include chronic reflux and caustic ingestion, and occurrences after surgery and radiotherapy, and, more recently, after photodynamic therapy (PDT) in the esophagus.[1,2] Post-PDT strictures occur in 20% to 30% of cases and generally develop 3 to 4 weeks after treatment. They tend to occur in areas of treatment overlap and are usually refractory to endoscopic dilations.[3-5] Temporary placement of self-expandable plastic stents (SEPS) offers an attractive alternative to repeated dilations and may obviate the need for surgery. Use of SEPSs has been described for refractory peptic, caustic, and anastomotic esophageal strictures[6-9] but has not been reported for stricture secondary to PDT.

The case presented here is of a patient with a post-PDT stricture refractory to multiple dilations. This stricture was successfully treated with temporary placement of an SEPS, and, after more than 40 months, the patient has not had any dysphagia on a regular diet nor has there been any stricture seen on endoscopy.

Figure 1. Post-PDT esophageal stricture at 34 cm.

CASE REPORT

An 82-year-old man was referred to our center for PDT ablation of Barrett's esophagus with high-grade dysplasia, which extended from 31 to 36 cm. The photosensitizing agent, porfimer sodium (Photofrin; Axcan Pharma, Quebec, Canada) was administered intravenously at a dose of 2 mg/kg, 48 hours before PDT. PDT was performed by using a 5-cm-long, bare, cylindrical, diffusing fiber, which was passed through the accessory channel of the endoscope and placed in the center of the esophageal lumen. The treatment was done in 2 stages to cover the entire length of the Barrett's esophagus. The light was delivered from a laser (Diomed, Inc, Andover, Mass), which produces 630-nm light and delivers a total of 200 J/cm fiber energy to the mucosa. The patient tolerated the procedure well.

Two months after PDT, the patient presented with progressive dysphagia to the point that he could only swallow liquids. He also reported a 11.34 kg (25 lb) weight loss over 16 weeks. Upper endoscopy revealed a very tight, benign-appearing stricture that extended 34 to 35 cm from the incisors (Fig. 1). Only the Olympus ultraslim XP160 scope (Olympus America Inc, Melville, NY), with an outer diameter of 5.9 cm, could traverse the stricture. Biopsy specimens of the stricture were negative for dysplasia. The stricture was serially dilated every 2 to 3 weeks with 27F to 54F, wire-guided Savary dilators (Cook Medical Inc, Bloomington, Ind), with fluoroscopy. After each dilation, the patient could eat solid food for only about 10 days and then had to change his diet to pureed food or liquids because of recurrent dysphagia. After 6 dilations over 14 weeks, it was decided to place a SEPS (Polyflex; Microvasive Endoscopy, Boston Scientific Corp, Natick, Mass) for symptomatic relief, because the patient was reluctant to undergo more dilations. After hydrostatic dilation to 13.5 mm, a 18-mm-diameter, 9-cm-long Polyflex stent was placed under fluoroscopic guidance without any complications (Fig. 2). Three days after stent placement, the patient was able to eat a normal diet without difficulty. Five weeks later, the stent was removed with a rat-toothed forceps. Mild esophagitis and granulation tissue was seen

Figure 2. Polyflex stent placed across the stricture.

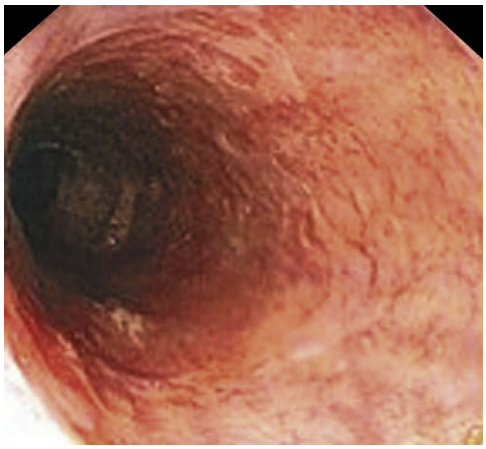

Figure 3. Esophageal lumen at 34 cm, 1 month after removal of a Polyflex stent.

just above the proximal end of the stent. Repeated endoscopy after 1 month showed normal-appearing mucosa and no evidence of stricture (Fig. 3). The patient has been able to eat regular solid food for 40 months since removal of the SEPS, and repeated endoscopies have not shown any evidence of stricture.

DISCUSSION

Benign esophageal strictures are caused by chronic reflux, caustic ingestion, and radiotherapy, and after surgery and after PDT.[1-4] Endoscopic peroral dilation with balloons and bougies is considered the first line of treatment for benign esophageal strictures.[9-11] However, because of deep-tissue injury that results in extensive fibrosis, strictures such as those that occur after PDT usually require repeated and aggressive dilations. A stricture is considered refractory if, after 5 or more dilations at 2-week intervals, the patient remains symptomatic and a regular upper endoscope cannot pass through it. If a satisfactory esophageal luminal diameter cannot be maintained for 4 weeks and the patient develops dysphagia, then the stricture is considered to be clinically recurrent.[12]

Different strategies have been suggested for treatment of refractory and recurrent benign esophageal strictures. These include continuing esophageal dilations, steroid injection in the stricture, and stricturoplasty, all with variable success.[12-14] Surgeries that involve esophagectomies with gastric pull-up are usually last-resort options because of the high rates of morbidity and mortality.[15] Removable stents are now increasingly being used for treatment of benign, refractory, and esophageal strictures.[6-9]

The self-expandable esophageal metal stents (SEMSs), which had been used for palliation of malignant strictures, were initially tried for benign strictures. Permanent uncovered SEMSs were successful in relieving the obstruction, but restenosis because of hyperplasia and granulation tissue limited their long-term therapeutic efficacy. The covered SEMSs were then used, but their uncovered ends were associated with hyperplastic tissue reaction and grooving of the stent mesh in the wall of the esophagus.[16-19] More recently, fully covered SEPSs were tried to overcome these complications.[6-9] In 1 study, 6 of 8 patients with a caustic, peptic, or postradiotherapy benign stricture experienced sustained relief from dysphagia after temporary placement (2-56 weeks) of SEPSs.[9] In another study, 12 of 15 patients (80%) with benign strictures had significant improvement in symptoms after placement of SEPSs for 6 weeks.[7] It is, however, less clear whether the effect is sustained. Santharam and Dua[8] reported 13 patients with refractory benign esophageal strictures who had SEPSs placed for 4 weeks. All had symptomatic relief when the stent was in place, but 83% had recurrence of symptoms 12 weeks after the stent was removed.[8] In a recent retrospective review of 20 patients with SEPSs placements for strictures of benign etiology, all the patients had symptomatic relief initially, but long-term resolution of symptoms was seen in only 17% of patients.[10]

Complications after SEPS placement are relatively minor, although there are rare reports of tracheal compression[7,10] and esophageal perforation.[10] Migration of SEPSs is a significant problem, with reported rates that ranged from 6% to 60%.[7,9,10] This wide range may be related to the different etiologies and location of strictures. Holm et al[10] reported lower rates of stent migration for mid esophageal and radiation-induced strictures.

PDT is now increasingly being used for treatment of Barrett's esophagus with high-grade dysplasia and early esophageal cancer, with efficacy rates up to 77%.[5,20,21] The main complication of the procedure is the development of