Esophageal stent placement without optical or fluoroscopic visualization

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Esophageal cancer is the most common malignancy presenting to Tenwek Hospital in rural southwestern Kenya.[1] Western Kenya has been within a geographic high-risk area for esophageal squamous cell carcinoma,[2,3] but there is an increasingly recognized corridor of risk within eastern and southern Africa.[4,5] To provide meaningful palliation for this difficult disease, physicians at Tenwek have begun placing self-expanding metal stents (SEMSs).[6] The overall cost of stent placement is approximately U.S. $400, including import and procedure-related expenses. The procedure is performed on an outpatient basis and averages 15 minutes in duration. The technique has great utility in low-resource areas without access to fluoroscopy and is easily replicable.

Recent reports have shown that SEMSs can be used for refractory variceal bleeding[7] with the use of a specially made stent; however, we do not have experience with those indications. In other settings with limited infrastructure and where chemoradiation is not yet readily accessible, outpatient SEMS placement with measurements alone may offer efficient palliation at low cost. To demonstrate the effectiveness and efficiency of the method, we describe a typical case at Tenwek Hospital (Video 1, available online at www.VideoGIE.org).

A 62-year-old man presented with dysphagia to solids, marked weight loss, and cachexia. A preprocedure evaluation was performed, and additional laboratory investigations confirmed stability. The patient gave consent and was prepared for endoscopy. Because of his frailty and his preference, EGD was done with topical pharyngeal lidocaine spray only.

Video endoscopy was done with an EG 250 WR5 Gastroscope (Fujinon, Tokyo, Japan). EGD revealed an obstructing tumor in the mid-esophagus, starting 30 cm from the incisors. A 0.035 250-cm guidewire was placed with smooth advancement under optical guidance (Fig. 1), the endoscope was removed, and Savary dilation was then performed to 12 mm to allow passage of the gastroscope (Fig. 2). Repeated EGD alongside the guidewire demonstrated a 5-cm esophageal tumor and a normal stomach and duodenum. Tumor biopsies were completed as indicated, measurements were taken at the proximal (30-cm) and distal (35-cm) margins of tumor from the incisors, the gastroesophageal junction was also measured, and then the stent was prepared for placement (Fig. 3).

A 12-cm, 20-mm diameter Chinese SEMS (Advanced Technology and Materials Company, Beijing, China) was then deployed over the guidewire by the use of markings on the delivery system to place the proximal end of the

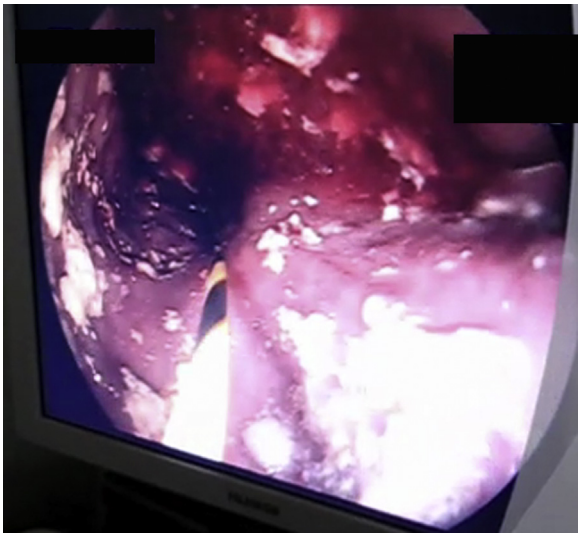

Figure 1. Initial guidewire placement.

Figure 2. Tumor dilation with Savary dilators.

Written transcript of the video audio is available online at www.VideoGIE.org.

Figure 3. Prepacked unopened stent.

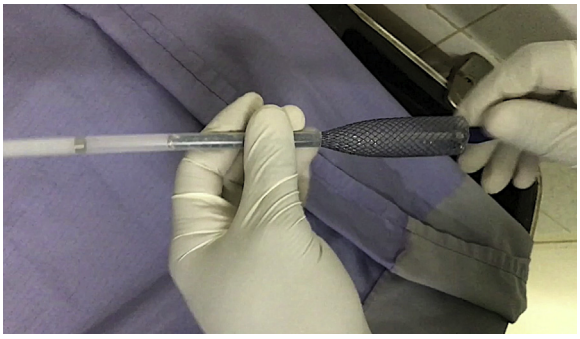

Figure 4. Loading the stent.

Figure 5. Fully loaded stent ready for deployment.

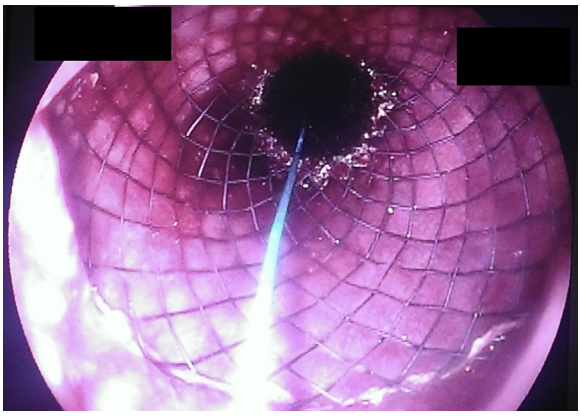

Figure 6. Endoscopic view showing deployed stent.

Figure 7. Patient taking a drink after stent deployment.

stent 4 cm above the tumor with the distal end 3 cm below the tumor.

We routinely use 12-cm and 14-cm stents. No direct optical or fluoroscopic visualization is done with this technique at the time of deployment. The stent is marked at the point where the proximal margin of the stent will be as measured from the incisors.

To allow for 2-cm shortening, which occurs when the stent is loaded in the delivery system, the markings were placed 24 cm from the incisors (Figs. 3-5). Proximal stent positioning was confirmed optically after deployment and by repeated endoscopy 26 cm from the incisors (Fig. 6), and the procedure was completed. The 12-cm stent (at 26-38 cm) fully covered the tumor (30-35 cm) with adequate margins on both sides, while avoiding the gastroesophageal junction to limit poststenting reflux.

Acceptable placement is ±0.5 cm from the intended delivery mark, and we achieve this in over 95% of cases.

Dilation is done mainly in completely obstructing tumors to facilitate stent placement. Given the low socioeconomic status and the advanced nature of the disease in many patients, every attempt is made to safely perform all necessary interventions during 1 visit, especially if the tumor is also grossly convincing for malignancy. Stent placement is deferred if the patient has an early lesion or if there is any uncertainty; for example, placement is deferred if there are inflammatory changes where biopsy results will guide ongoing care.

If sedation is used, the patient is taken to the recovery room. Once recovered, the patient is allowed to immediately take liquids (Fig. 7) and is discharged home on the

same day after review. Instructions are provided to the patient and family regarding dietary restrictions and reasons to call or return. To avoid the significant costs of travel, the patient is instructed to call for pathologic examination results and to return with any problems. The patient is connected with a hospice program at either our hospital or a facility near the home. This patient experienced effective palliation of his dysphagia and was able to tolerate semisolid foods without difficulty.

In conclusion, we report our revised method of safe, nonfluoroscopic, nonoptical SEMS placement with measurements alone, which is a feasible alternative with acceptable outcomes. This low-cost, efficient intervention allows for effective palliation of dysphagia and improved quality of life. SEMS placement with measurements alone is reproducible in similar settings and will help to provide care in low-resource settings, where it will be of greatest utility.

DISCLOSURE

All authors disclosed no financial relationships relevant to this publication.

Abbreviation: SEMS, self-expanding metal stent.

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