Leakage from esophageal and gastric perforations carries a high morbidity rate and presents a challenging problem for physicians. Traditionally, esophageal leaks have been treated surgically with immediate repair or diversion in cases of delayed presentation. Over the past several years, esophageal stenting has emerged as a viable option to treat esophageal and gastric perforation [1]. Despite promising early results, stent migration is a problem that continues to plague the physician, and occurs in 20% to 60% of esophageal stenting cases [2]. Esophageal stent migration is not a benign process. It places the patient at risk for recurrent leaks, sepsis, and increased morbidity, and requires repeated endoscopic placement, all of which add to health care costs. A technique to prevent migration of the stent is described.

Technique

Fourteen patients presenting with leakage from the foregut underwent stent fixation with a novel technique (Fig 1) in a single institution from January 2008 to August 2011. In this process, patients are evaluated for leakage with a contrast evaluation of the esophagus before the stenting procedure. Once the stent is placed, fluoroscopy with contrast is used to evaluate the seal of the leak. The endoscope is then removed from the patient and a short rat-toothed forceps is placed through the working channel of the endoscope. The forceps grasps the end of a long piece of umbilical tape and pulls the tape inside the tip of the endoscope. The endoscope is then reintroduced into the esophagus and into the lumen of the stent (Fig 2A). The forceps is delivered out of the tip of the endoscope and the grasper is opened, releasing the umbilical tape into the distal lumen of the stent. The toothed forceps is then delivered through one of the proximal folds of wiring and grasps the umbilical tape (Fig 2B). The distal end of the tape is then retrieved through the mouth as the endoscope is withdrawn, securing the stent for 4 days. None of the 14 patients’ X-rays showed migration of the stent. This new technique is both safe and effective when treating leaks and perforations from the foregut. Until nonmigrating stents can be developed, such techniques will be an important resource for treatment.

allowing the other end of the tape to travel into the mouth. At the end, the 2 ends of the tape are exited from the mouth (Fig 2C). A bridle is then created by using McGill forceps and an endotracheal suction catheter to deliver the umbilical tape through each nostril (see Fig 1) and the ends of the tape are tied to prevent migration. Total procedure time is approximately 30 minutes. The tape is used to secure the stent for approximately 4 days (this length of time is necessary to allow the partially uncovered portion of the stent to grow into the wall of the esophagus and serve as an anchor). Daily chest X-rays are performed to determine whether stent migration has occurred while the bridle is in place. Migration is defined as any radiographic evidence of stent movement, either proximally or distally of any detectable distance. Once enough time has passed to allow granulation tissue ingrowth into the uncovered portion of the stent, typically 4 days later, the tape is cut. A chest X-ray is performed 24 hours after cutting the bridle to check for migration. If a patient develops symptoms, another chest X-ray is performed. All patients with esophageal stents are placed on a stent diet consisting of lukewarm puree foods. All stents are removed within 1 month of placement.

Fourteen patients underwent the bridle technique. The average age was 58 years and 64% were male. Four patients had an anastomotic leak from an esophagojejunostomy after gastrectomy, 4 had a leak from the lower thoracic esophagus secondary to spontaneous perforation (Boerhaave), 3 had leaks after esophagectomy at the esophagogastric anastomosis, 2 had leaks after sleeve gastrectomy, and 1 had a leak of the gastrojejunostomy anastomosis after a Roux-en-Y gastric bypass. Four patients who had previously presented with stent migration required repositioning of their stents. They were treated with the temporary bridle technique and achieved successful stent fixation. An additional 10 patients who were at high risk for stent migration also were treated with the new technique and experienced successful anchor of the stent. None of the 14 patients exhibited stent migration...

Fig 2. Photographs of steps for bridling procedure (for teaching purposes, these are photographed outside the body but the intent is for the procedure to be performed inside the esophagus). (A) Inserting the umbilical tape into the lumen of the stent inside the esophagus; (B) passing the grasper through the proximal loop of the wire of the stent and grasping the umbilical tape once again; and (C) pulling the umbilical tape out.
Comment
Stent migration from esophageal and gastric perforations may have devastating consequences for patients, possibly resulting in repeated leakage, erosion, aspiration, or obstruction [3]. The increased morbidity and even mortality associated with these complications underscore the need for a reliable technique to prevent stent dislocation. This novel method of stent anchoring with bridling to prevent migration is both safe and effective when treating patients with leaks and fistulas of the foregut. Until nonmigrating stents can be developed, such techniques will be required to prevent additional complications. This technique can be used with partially or fully covered stents but we would expect better outcomes with partially covered stents, as they would allow better tissue ingrowth that would help prevent stent migration. We do not feel this technique would be necessary for patients with strictures.

References