

Treatment and prevention of esophagogastrostomy leaks using anchoring silicone stent

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Abstract: Esophagogastrostomy leakage is a severe complication after esophagectomy for esophageal cancer. Cervical anastomosis usually has a higher leak rate than intrathoracic anastomosis. Esophageal stents will be considered in the management or prevention of esophagogastrostomy leaks. Previously we have used an externally fixed silicone tube in the treatment of cervical esophagogastrostomy leaks. Recently, we started to use anchoring silicone stent for managing or preventing esophagogastrostomy leaks. In the management of one patient with anastomotic leakage, the stent was kept in place for 27 days. In three patients who had a high risk of esophagogastrostomy leaks, the anchoring silicone stents were kept in place for 1 week to protect the anastomosis.

Keywords: Esophagogastrostomy leaks; esophageal cancer; anchoring silicone stent

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Introduction

Anastomotic leakage (0–30%) after esophagectomy is a severe complication and is associated with considerable morbidity and mortality (1). The cervical anastomosis was associated with a higher leak rate than intrathoracic anastomosis (2). Prevention of esophagogastrostomy leaks has been emphasized using many strategies, including embedded three-layer esophagogastric anastomosis (3), omentoplasty (4), and mechanical suture. However, the anastomotic leakage still presented in all major series after esophagectomy for esophageal cancer (1,2). The mortality rate of cervical anastomotic leakages was still high (1). Almost one-third of cervical esophagogastric anastomotic leaks resulted in an anastomotic stricture (5). Esophageal stents will be considered in the technical success, the clinical success of complete healing of leakage, stent migration, and stent removable. Previously we have used a silicone stent in the treatment of cervical esophagogastrostomy leaks using two fixation stitches at the proximal end of a silicone tube to tie over outside the neck skin (6). Recently, we anchored a silicone stent on a nasogastric tube for managing or preventing esophagogastrostomy leaks.

Patients and methods

Patient selection for placement of anchoring silicone stent

The patient presented with manifestations of esophagogastrostomy leaks and patients had high risk of anastomotic leakage are eligible for placement of the stent.

Application of anchoring silicone stent

This method has been used in the treatment of one patient with cervical esophagogastrostomy leaks and in the prevention of three patients with a high risk of esophagogastrostomy leaks. In the leakage patient who had proximal thoracic esophageal cancer was initially treated with neoadjuvant chemoradiotherapy and complication of anastomotic leaks occurred on the postoperative day 6. Anchoring silicone stent was placed on the postoperative day 25 and the stent was kept in place for 27 days. The anastomotic leakage was completely sealed (*Figure 1*). In prevention patients, the first one had proximal esophageal cancer associated with diabetes mellitus and hypertension, the second one had synchronous esophageal cancer and rectal cancer associated with hypertension and diabetes



Figure 1 A contaminated wound was induced by cervical esophagogastrostomy leaks (left), that was healed after placement of anchoring silicone stent (right).

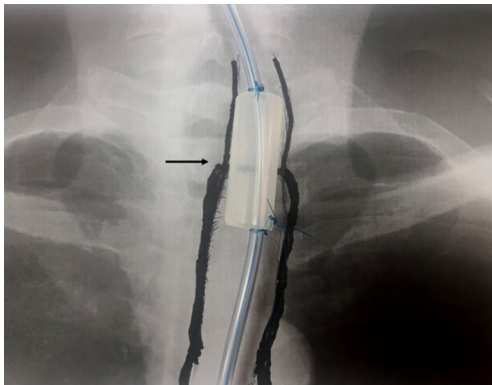


Figure 2 The illustration indicates the center of anchoring silicone stent inner the anastomosis (arrow).

mellitus, and the third one had esophageal cancer associated with chronic obstructive pulmonary disease and gall stones. Their stents all were kept in place for 1 week.

Placement and removal of anchoring silicone stent

A silicone stent is prepared, which is 5 cm in length, 1.8 cm of out diameter, and 0.1 cm of wall thickness. At surgery, both ends of the silicone stent are anchored on a 16 French nasogastric tube using 2-0 Prolene (Ethicon, Inc., Somerville, NJ, USA) trans-fixation following posterior

sutures of esophagogastrostomy. The stent is adjusted inner the anastomosis (*Figure 2*). The timing of stent removal depends on different situations. In prevention patients, the stent usually kept in place for 1 week and in treating patients, the stent will be kept more than 3 weeks until the ceasing of leakage was confirmed by clinical observation and Methyl blue test. The stent is removed via the oral cavity using Magill forceps at the bedside.

Discussion

Leakage of the cervical anastomosis usually occurred at a median time of 7 days after esophagectomy (1) or on the 6th to 8th postoperative day (7). Cervical anastomotic leakage near two-third presented with intrathoracic spread (1). Gooszen pointed out that anastomotic leakage predictors are American Society of Anesthesiologists (ASA) fitness grade III or higher, chronic obstructive pulmonary disease, cardiac arrhythmia, diabetes mellitus and proximal esophageal tumors (2). Xu *et al.* pointed out that anastomotic leakage predictors are blood supply of the tissue around the suture line, tension along the suture line, the effectiveness of gastrointestinal decompression, prominent aortic knob, and emphysematous lung (7). Superior thoracic aperture size is also significantly associated with cervical anastomotic leakage after esophagectomy (8,9). In the management of anastomotic

leaks include stent (10), endovacuum therapy (11), and T-tube (12). Two types of the stent are commonly used including covered self-expanding stent and plastic stent. In a total of 66 studies, patients with anastomotic leaks, plastic stents were associated with higher stent migration, perforation, repositioning, and lower technical success (13). In the present report, we used anchoring silicone stents that avoided stent migration, perforation, or repositioning. The anchoring silicone stent is an alternative tool to manage or prevent esophagogastronomy leaks.

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Footnote

Conflicts of Interest: Both authors have completed the ICMJE uniform disclosure form (available at <http://dx.doi.org/10.21037/aoe.2019.12.05>). MHW serves as an unpaid editorial board member of *Annals of Esophagus* from Oct. 2019 to Sep. 2021. The other author has no conflicts of interest to declare.

Ethical Statement: The authors are accountable for all aspects of the work in ensuring that questions related to the accuracy or integrity of any part of the work are appropriately investigated and resolved. Written informed consent was obtained from the patient for publication of accompanying images.

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