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Subclavian artery-esophageal fistula after placement of a self-expanding metal stent in a patient with esophagogastric anastomosis stenosis

Abstract

Background: There have been reports on stent-related vascular erosions about patients with benign or malignant stenosis of the esophagus who received endoscopic stent insertion for palliative intention for oral intake.

Case presentation: A 61-year-old woman with esophageal cancer located in the middle part of esophagus was treated with esophagectomy. Two years following the surgery, malignant stenosis recurred in the esophagogastric anastomosis. A non-covered self-expanding metal stent (10 cm length with a diameter of 18 mm at expanded state) was inserted. Three months later, a massive hematemesis with subsequent hemorrhagic shock developed from the proximal end of the stent which resulted in the final diagnosis of arterioesophageal fistula on the left subclavian artery. An endovascular repair using a stent graft for the left subclavian artery via the right common iliac artery was performed and the patient remained well until discharge.

Conclusion: Increase in the treatment of esophageal strictures by stent insertion increases the risk of stent-related vascular fistula. These complications should be considered in any patients with massive upper gastrointestinal bleeding.

Keywords: Subclavian artery-esophageal fistula, Metal stent; Esophagogastric anastomosis, Massive hematemesis.

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Standard therapy for early esophageal squamous cell carcinoma is surgical resection or neo-adjuvant chemoradiotherapy followed by resection. In advanced stages, palliative therapy such as endoscopic placement of a stent is a safe and effective procedure to relieve dysphagia (1). Esophagoarterial fistula is a very rare life-threatening complication after esophagectomy (2). The first case of a fistula between the esophagogastric anastomosis and the thoracic aorta was reported in 1946. The patient died from massive bleeding and the results of autopsy confirmed the diagnosis of an aortoesophageal fistula with involvement of the anastomosis (3). In contrast to esophagoarterial fistula, anastomotic leakage is a frequent complication after esophagectomy. Due to advances in surgical technique and perioperative management, the outcomes of surgery have considerably improved with in-hospital mortality decreasing from 29 to 7.5% (4–6). However, postoperative esophagoarterial fistula after esophagectomy has remained an infrequent but fatal complication (7). On the other hand, there have been reports on stent-related vascular erosion. Several reports have shown development of complications in patients with benign or malignant stenosis of the esophagus who received endoscopic stent insertion for palliative intention for oral intake (8-13).

We describe a complication of a self-expanding metal stent in a patient with recurrent malignant stenosis after esophagectomy due to esophageal carcinoma.

Case Presentation

A 61-year-old woman with an esophageal squamous-cell carcinoma at stage T2N0, in the middle part of the esophagus with no lymph node involvement was treated with an esophagectomy and gastric pull-up. Two years following the surgery, dysphagia developed and malignant stenosis recurred in the esophagogastric anastomosis. Because of patient disinclination, chemoradiotherapy was not done and a non-covered self-expanding metal stent (10 cm long with a diameter of 18 mm when expanded) was inserted. Three months later, severe hematemesis and hemodynamic shock developed.

Endoscopic examination revealed massive hemorrhage from the proximal end of the stent. An endoscopic intervention to stop the bleeding was unsuccessful. Computed tomography (CT) and CT-angiography demonstrated an arterioesophageal fistula on the left subclavian artery in contact with the esophageal stent (figures 1 and 2). The cardiovascular surgeons performed emergency, endovascular repair and a stent graft was used for the left subclavian artery via the right common iliac artery. The patient remained well without bleeding and could eat one week after arterial repair.

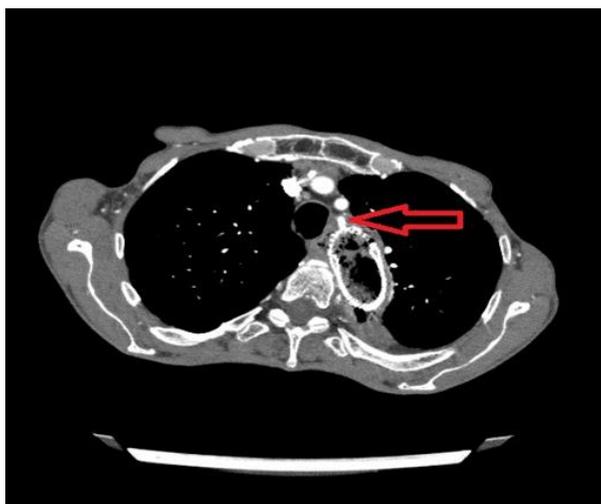


Figure 1. Computed tomography demonstrating an arterioesophageal fistula (red arrow) on the left subclavian artery where the esophageal stent touched.

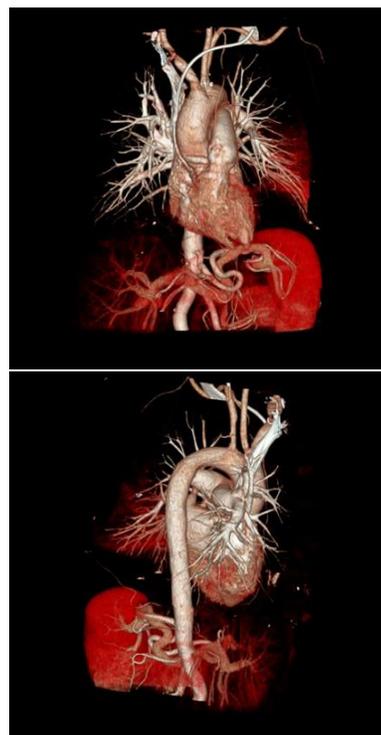


Figure 2. CT angiography of arterioesophageal fistula on the left subclavian artery.

Discussion

Esophagoarterial fistula is an infrequent complication after esophagectomy (1). The first successful surgical intervention in a case of postoperative aorto-esophageal fistula was described by Maillard et al. in 1967 (14). They reported four patients with aorto-esophageal fistula after thoracoabdominal partial esophagectomy. Apparently fistula had simultaneously generally improved outcome after esophageal surgery became a very rare complication that had only sporadically been seen. Nearly all reported fistulas originated from an insufficient anastomosis (1). The report of stent-related vascular erosions has been mostly reported in patients with benign or malignant strictures of the esophagus who received stent insertion in palliative intention for oral intake. Erosion of the stent through the esophageal wall into the aortic arch was reported after prolonged stent placement of several months as well as after short placement of only a few days (9-12). Also, stent-related erosions of other major blood vessels were reported (8). Aorto-esophageal fistulas can develop after esophagogastrectomy in patients with normal aortic anatomy. In a review of 500 cases of aorto-esophageal fistula, 15 were presumed to be due to esophagogastrectomy. All 15 of these cases occurred

between 12 and 40 days postoperatively. Among the 500 reported cases of aorto-esophageal fistula, three cases were believed to be due to atherosclerosis and ulceration of the atheroma (15, 16). Nearly all of patients had received no adjuvant therapy. Therefore neoadjuvant chemotherapy or chemoradiotherapy does not provide an explanation for the origin of aorto-esophageal fistula, but additional mechanical irritation by the stent may have a contribution in the development of fistula. In conclusion, increase in the treatment of esophageal strictures by means of endoscopic stent insertion puts the risk of stent-related vascular fistula. This fistula is a very rare, but potentially fatal cause of bleeding. Bleeding is often massive and develops. Awareness to life-threatening and often fatal consequences of these conditions are of particular importance. Notwithstanding, the risk of esophagoarterial fistula, stent implantation remains an effective therapy. Further modifications of the design of stents are required to improve their safety.

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References

1. Allgaier HP, Schwacha H, Technau K, Blum H. Fatal esophagoarterial fistula after placement of a self-expanding metal stent in a patient with esophageal carcinoma. *N Engl J Med* 2000; 337: 1778.
2. Schweigert M, Dubecz A, Stadlhuber RJ, Muschweck H, Stein H. Risk of stent-related aortic erosion after endoscopic stent insertion for intrathoracic anastomotic leaks after esophagectomy. *Ann Thorac Surg* 2011; 92: 513-9.
3. Merendino KA, Emerson EC. Aorto-esophagogastric fistula, an unusual complication of esophagogastrectomy performed under the aortic arch following esophageal resection for carcinoma. *J Thorac Surg* 1950; 19: 405-11.
4. Bonavina L, van Lanschot JJB. Complications in esophageal and gastric surgery. *Dig Surg*. 2002; 19: 86-7. Available at: <http://www.karger.com/Article/Abstract/52016>
5. Abunasra H, Lewis S, Beggs L, et al. Predictors of operative death after oesophagectomy for carcinoma. *Br J Surg* 2005; 92: 1029-33.
6. Lerut T, Coosemans W, Decker G, et al. Anastomotic complications after esophagectomy. *Dig Surg* 2002; 19: 92-8.
7. Unosawa S, Hata M, Sezai A, et al. Surgical treatment of anaorto-esophageal fistula caused by stent implantation for esophageal stenosis. *Surg Today* 2008; 38: 62-4.
8. Vanden Eynden F, Devière J, Laureys M, de Cannière D. Erosion of a retroesophageal subclavian artery by an esophageal prosthesis. *J Thorac Cardiovasc Surg* 2006; 131: 1183-4.
9. Siersema PD, Tan TG, Sutorius FF, Dees J, van Blankenstein M. Massive hemorrhage caused by a perforating Gianturco-Z stent resulting in an aorto-esophageal fistula. *Endoscopy* 1997; 29: 416-20.
10. Um SJ, Park BH, Son C. An aorto-esophageal fistula in patient with lung cancer after chemo-irradiation and subsequent esophageal stent implantation. *J Thorac Oncol*. 2009; 4: 263-5.
11. Rogart J, Greenwald A, Rossi F, Barrett P, Aslanian H. Aorto-esophageal fistula following polyflex stent placement for refractory benign esophageal stricture. *Endoscopy* 2007; 39: 321-2.
12. Ahn M, Shin BS, Park MH. Aorto-esophageal fistula secondary to placement of an esophageal stent: emergent treatment with cyanoacrylate and endovascular stent graft. *Ann Vasc Surg* 2010; 24: 555.
13. Molina-Navarro C, Hosking SW, Hayward SJ, Flowerdew AD. Gastroaortic fistula as an early complication of esophagectomy. *Ann Thorac Surg* 2001; 72: 1783-8.
14. Maillard JN, Blanc L, Brucher C. Aorto-esophago-gastric fistula following resection of an esophageal cancer. Description of an operative cure. *Ann Clin Thorac Cardiovasc* 1967; 6: 103-9. Available at: <http://www.ncbi.nlm.nih.gov/pubmed/6036805>
15. Hollander JE, Quick G. Aorto-esophageal fistula: A comprehensive review of the literature. *Am J Med* 1991; 91: 279-87.
16. Millar A, Rostom A, Rasuli P, Saloojee N. Upper gastrointestinal bleeding secondary to an aberrant right subclavian artery-esophageal fistula: a case report and review of the literature. *Can J Gastroenterol* 2007; 21: 389-92.