

Emergency Endovascular Treatment of An Aortoesophageal Fistula with Torrential Bleeding After Mediastinal Mass Resection

Mediastinal Sarkoma Rezeksiyonu Operasyonu Sonrasında Gelişen Aşırı Kanamalı Aortoözofageal Fistülün Acil Endovasküler Tedavisi

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ABSTRACT A 67 years old female patient was admitted to the emergency room with acute massive gastrointestinal hemorrhage. She had been operated for the resection of a mediastinal sarcoma 3 weeks before. A segment of the esophagus had been resected within the tumor and was reanastomosed in an end-to-end fashion. In light of the previous history, an aorto-esophageal fistula (AEF) was suspected. Emergent endoscopy revealed massive clots and active bleeding at the level of the esophageal anastomosis. CT also revealed contrast extravasation into the esophagus. The esophageal side of the defect was controlled by inflation of the esophageal balloon of a Sengstaken-Blakemore tube. Then the AEF was totally controlled by implantation of an aortic endovascular stent-graft. The patient had no gastrointestinal hemorrhage until she died of pneumonia 30 days later. Aorto-esophageal fistula remains to be a highly lethal complication of thoracic surgery. Endovascular stent implantation within the aorta is a fast and effective technique to control the massive bleeding, but other risks such as life-threatening infections remain until definitive therapy may be achieved.

Key Words: Gastrointestinal hemorrhage; emergency treatment; esophageal fistula; sarcoma

ÖZET 67 yaşında bir kadın hasta akut masif gastrointestinal kanama ile acil servise getirildi. Hasta üç hafta önce mediastinal sarkom tanısı ile opere edilmiş, tümör rezeksiyonu sırasında özofagusun bir bölümü de rezeke edilmek zorunda kalmıştı. Ardından özofagusun iki ucu yeniden uç-uca anastomoz edilmişti. Bu hikayenin ışığında bir aortoözofageal fistül gelişmiş olabileceği düşünüldü. Acil olarak gerçekleştirilen endoskopide özofageal anastomoz sahasında yoğun pıhtılar ve aktif kanama odağı tespit edildi. Bilgisayarlı Tomografi'de de (BT) özofagus içerisine kontrast madde ekstravazasyonu vardı. Defektin özofagus tarafı Sengstaken-Blakemore sondası ile kontrol edildi. Ardından aortoözofageal fistül endovasküler stent-greft yerleştirilerek tamamiyle kontrol altına alındı. Hasta işlemden 30 gün sonra pnömoni sebebi ile kaybedilinceye kadar gastrointestinal kanama problemi olmadı. Aorto-enterik fistül gelişimi, torasik cerrahi sonrası halen son derece ölümcül sonuçlara sebep olabilen bir komplikasyon olarak önemini korumaktadır. Aorta içerisinden endovasküler stent-greft yerleştirilerek hızlı ve etkili bir şekilde masif kanama kontrol altına alınsa da, kesin tedavi gerçekleştirilene kadar, hayatı tehdit eden enfeksiyonlar gibi riskler devam etmektedir.

Anahtar Kelimeler: Gastrointestinal kanama; acil tedavi; özofagus fistülü; sarkom

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Aortoesophageal fistula (AEF) is a rare but usually a fatal disorder. Transient self-limited bleeding may produce fatal exanguination and is often a significant feature of the disease process. The purpose of this report is to describe the experience of our cardiovascular surgery department in an emergency case presenting with AEF three weeks after a mediastinal mass resection operation.

CASE REPORT

A-67 years old female patient had been operated through a bilateral thoracotomy for the resection of a giant mediastinal mass. The proximity of the mass to the great vessels, trachea and the esophagus posed a serious challenge for surgery, and a segment of the esophagus had to be resected together with the mass. The two ends of the esophagus were reanastomosed in an end-to-end fashion and a jejunostomy was performed. Jejunostomy was closed after a two weeks period of enteral feeding. A computed tomography (CT) with oral contrast had revealed no leak prior to initiation of oral feeding, and the patient was discharged from the hospital.

Three weeks after the initial operation the patient was admitted to our emergency department with massive upper gastrointestinal hemorrhage. Endoscopy revealed clots and active bleeding near the esophageal anastomotic site (Figure 1). Computed tomography (CT) showed contrast extravasation from the descending aorta into the esophagus. A Sengstaken-Blakemore tube was inserted and the esophageal balloon was inflated to temporarily control the bleeding.

The patient was admitted to the vascular intervention room and the location of the AEF was clearly identified under fluoroscopy (Figure 2 and 3). An endovascular stent-graft (169 mm x 30 mm Valiant Thoracic, Medtronic Vascular, Santa Rosa,

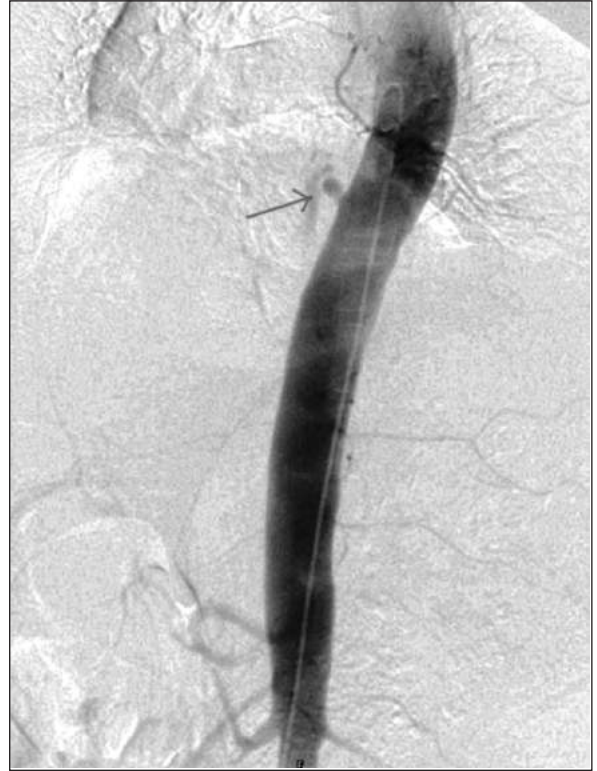


FIGURE 2: The AEF (aortoesophageal fistula) was clearly identified under fluoroscopy, (Arrow).

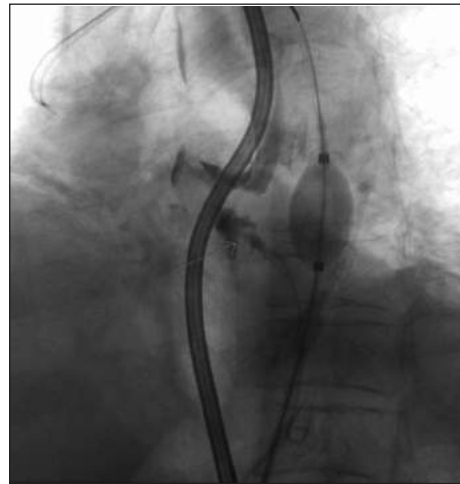


FIGURE 3: The catheter is in the AEF, (Arrow).



FIGURE 1: Endoscopy revealed some clots and active bleeding near the anastomotic site in the esophagus.

CA, USA) was implanted via the left femoral artery (Figure 4). An aortogram revealed good sealing of the aortoesophageal fistula. The patient was admitted to the intensive care unit with inotropic support and ongoing blood transfusion. There was no further bleeding but due to massive blood transfu-

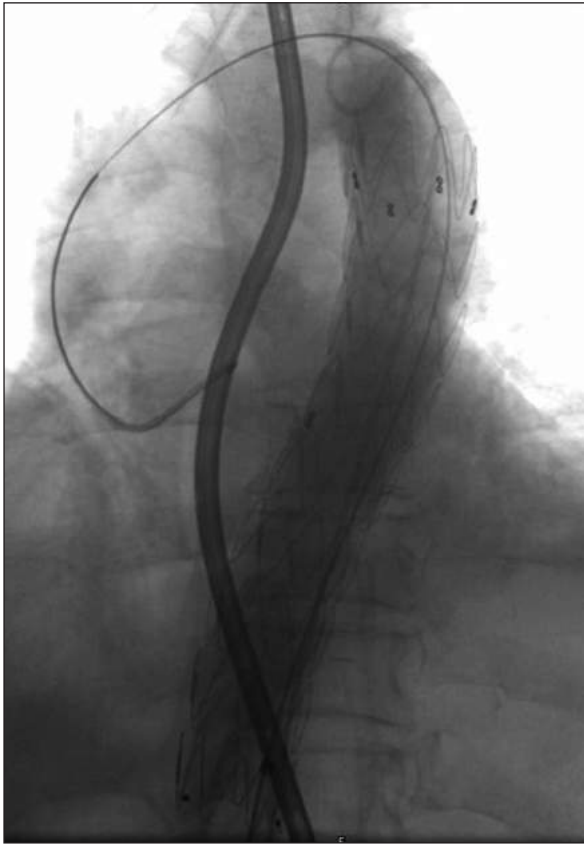


FIGURE 4: Endovascular stent-graft insertion.

sion (18 units of packed red blood cells and 4 units of whole fresh blood in 48 hours) the patient developed renal failure. Hemodiafiltration had to be done for six days after the procedure. She had no gastrointestinal hemorrhage until she died of pneumonia 30 days later.

DISCUSSION

The mediastinum is a unique anatomic area containing a variety of vital structures and multipotent cells with the potential to develop tumors. Management of a primary mediastinal sarcoma mainly consists of radical resection in a multidisciplinary approach. Overall survival in five years is significantly better among patients submitted to complete surgical resection (84.4% vs. 42.9%).¹

Aortoesophageal fistula (AEF) is a rare but fatal cause of gastrointestinal hemorrhage.² Management of a patient with AEF requires rapid diag-

nosis and emergent intervention. While searching for the site of hemorrhage, endoscopy is the golden standard for upper, and angiography for the lower gastrointestinal tract.³

Most aortoesophageal fistulae are related to aortic pathologies or procedures. In this case, the mediastinal mass was resected at the initial operation and the esophagus was reanastomosed. Development of an AEF could have been considered as a potential complication and preventive measures taken for this scenario. A surgically built barrier made of mediastinal tissues or the omentum inserted between the esophagus and the aorta could prevent the development of this rapidly progressing life-threatening complication. The erosion of tissues due to contact of ligaclips might also be responsible for the development of the aortoesophageal fistulae. Avoiding the use of ligaclips or any other foreign materials at or around the esophageal anastomosis and the aortic wall may be important.

In this case the patient was enterally fed via the jejunostomy for two weeks after the initial operation. A CT with oral contrast had revealed no leak before the initiation of oral feeding. It is still questionable, in this case, whether an additional endoscopic examination was necessary at this stage.

Initial control of torrential bleeding is challenging in patients with AEF. Permissive hypotension and insertion of a Sengstaken-Blakemore tube to achieve temporary control of bleeding are life-saving measures for such a patient.^{4,5}

Cyanoacrylate administration into the fistula tract prior to endovascular stent-graft implantation has also been proposed as an effective alternative method.⁶

Endovascular aortic repair does prevent immediate exsanguination in patients admitted with AEF, but after initial deployment of the endograft the patients are at risk for other complications. Early esophageal repair after endovascular aortic stent grafting appears to be a reasonable approach to improve the survival in AEF patients.⁷ Therefore endovascular repair may serve as a bridge to a definitive open surgical repair as soon as possible.

The most commonly used approach for AEF repair is left thoracotomy. In most cases direct exposure of the aorta is necessary. Direct primary aortic suture or patchplasty can only be used for small lesions. For larger lesions, such as in cases involving postoperative AEF, partial aortic resection must be performed. There are several case reports of prosthetic graft replacement of the resected section.⁸⁻¹⁰ Still the rate of prosthetic infection with or without recurrent AEF remains questionable in these cases.

Repair of the esophageal defect is also necessary. Conservative treatment is seldom possible. Direct suture is feasible only in small lesions without mediastinitis. Despite its highly invasive nature, subtotal esophagectomy is known to be the most effective technique.

The poor condition of the patient and the high risk of early esophageal surgery drew us to take supportive measures only in this case, instead of planning an early definitive therapy.

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