

Available online at [www.sciencedirect.com](http://www.sciencedirect.com)

ScienceDirect

journal homepage: [www.JournalofSurgicalResearch.com](http://www.JournalofSurgicalResearch.com)

# Analysis of risk factors and classification of aortic fistula after esophagectomy



Yuanda Cheng, MD,<sup>a</sup> Yang Gao, MD,<sup>a</sup> Ruimin Chang, MD,<sup>a</sup>  
Abdillah N. Juma, MD,<sup>b</sup> Wei Chen, MD,<sup>c</sup>  
and Chunfang Zhang, MD, PhD<sup>a,\*</sup>

<sup>a</sup> Department of Thoracic Surgery of Xiangya Hospital Central South University, Changsha, China

<sup>b</sup> Department of Surgery, Kilosa Clinical Officer Training College, Morogoro, Tanzania

<sup>c</sup> Department of Thoracic Surgery, The First Affiliated Hospital, Anhui Medical University, Changsha, China

## ARTICLE INFO

### Article history:

Received 2 May 2017

Received in revised form

2 April 2018

Accepted 12 April 2018

Available online 10 May 2018

### Keywords:

Esophageal cancer

Anastomotic fistula

Stent

Gastroaortic fistula

## ABSTRACT

**Background:** Aortic fistula after esophagectomy is a rare and serious complication. The aims of this study were to describe the causes of and classify the fistulas.

**Materials and methods:** Between January 2008 and December 2017, a total of 1018 patients underwent esophageal resection, mainly for esophageal cancer; aortic fistula after esophagectomy was diagnosed in four patients. We perform a literature review through a database search for similar cases. Aortic fistulas may be classified into two types based on the site at which they occur in relation to the alimentary tract and area of anastomosis. Type 1 fistula occurs within the area of anastomosis, whereas type 2 fistula occurs above or below the anastomosis. The risk factors and clinical features associated with aortic fistulas are described, and comparison between the two types is made.

**Results:** Through a literature search, 39 cases were identified, of which 26 cases were classified as type 1, and 13 cases were classified as type 2. Of 13 patients (33.3%) who underwent emergent intervention, seven patients survived. Approximately 76.9% of aortic fistula were related to anastomotic fistula, which was more prevalent in type 1 aortic fistula than in type 2 (92% versus 50%,  $P = 0.005$ ). There was no statistically significant difference in age, gender, side of thoracotomy, type of anastomosis, the postoperative day the hemorrhage occurred, warning hemorrhage, chest pain, or the outcome between the two types of fistula.

**Conclusions:** Anastomotic fistula is the primary cause of type 1 aortic fistula after esophagectomy, and early diagnosis and intervention of aortic fistula can improve prognosis. This classification may be a useful guide in determining the approach for second-stage alimentary tract reconstruction.

© 2018 Elsevier Inc. All rights reserved.

## Introduction

Aortic fistula is a rare and serious complication after esophagectomy due to esophageal carcinoma. In 2001,

Molina-Navarro reviewed 23 previously reported cases, and only one of these patients survived.<sup>1</sup> There have been a few additional published case reports of aortic fistula since 2001, of which only four patients survived.<sup>2–6</sup>

\* Corresponding author. Department of Thoracic Surgery of Xiangya Hospital Central South University, Xiangya Road NO.87, Changsha 410008, Hunan Province, China. Tel.: +86 13807313801; fax: +86 0731 89753205.

E-mail address: [zhcf3801@csu.edu.cn](mailto:zhcf3801@csu.edu.cn) (C. Zhang).

0022-4804/\$ – see front matter © 2018 Elsevier Inc. All rights reserved.

<https://doi.org/10.1016/j.jss.2018.04.020>

In these published case reports, less attention was paid on the site of fistula in the alimentary tract, and thus, there was no unified name for this type of aortic fistula. It was described as gastroaortic fistula by Molina-Navarro C,<sup>1</sup> but Okita R., Saramak P., and Ullmann A.S. described it as aorto-esophageal fistula.<sup>2,5,7</sup> Furthermore, other case reports used the term “aortogastric fistula”.<sup>4,8</sup> In fact, these cases of aortic fistula occurred in different sites of the alimentary tract due to different causes. The study of the survived cases demonstrates the need for individualized treatment for the different types of aortic fistula. Thus, it is necessary to classify aortic fistulas to allow uniformity in reporting and to provide a clear understanding of the site of the fistula, as this may have an impact on the choice of further treatment.

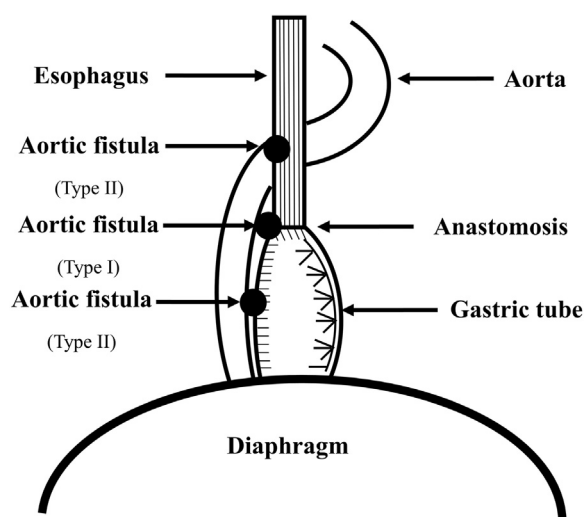
## Patients and methods

### Patient population

From January 2008 to December 2017, a total of 1018 patients with a diagnosis of esophageal carcinoma underwent esophagectomy in Xiangya Hospital and the First Affiliated Hospital of Anhui Medical University. The ethics committee approved this retrospective study and waived the need for individual consent. We reviewed the clinical and postoperative course of four (0.39%) patients who developed aortic fistula after surgery. We searched MEDLINE, Web of Science, and Embase (December 31, 2017) for similar cases with the key words “AORTIC FISTULA” and “ESOPHAGECTOMY”.

### Classification of aortic fistula

Aortic fistulas are classified into two types: type 1 and type 2 (Fig. 1), based on the site at which they occur in relation to the alimentary tract and area of anastomosis. Type 1 fistulas occur in the area of anastomosis and are often related to



**Fig. 1 – Classification of aortic fistula after esophagectomy for cancer, based on the site of fistula in the alimentary tract.**

anastomotic leakage. Type 2 fistulas occur anywhere in the alimentary tract above or below the anastomosis, such as in the remnant of esophagus, gastric conduit, colon, and jejunum.

### Statistical analysis

The following data from the patients with aortic fistula were collected, including age, sex, author and year reported, type of operation, site of anastomotic fistula, postoperative day that hemorrhage occurred, window of time from warning signs of hemorrhage to further massive hematemesis, chest pain, causes of aortic fistula, and outcome. Furthermore, the relation between anastomotic fistula and aortic fistula was analyzed. All the aforementioned indicators were analyzed between types 1 and 2, especially the risk factors for aortic fistula. In addition, the survived cases were summarized. Statistical analyses were performed using SPSS (version 20.0; IBM Corp, Armonk, NY). For all of the analyses, a P value less than 0.05 was considered to be statistically significant.

## Results

Four patients were diagnosed with aortic fistula after esophagectomy, three men and one woman, ranging in age from 51 to 71 y. Three patients developed anastomotic fistula, and two of them received the self-expanding stent; however, both patients died of aortic fistula. Rethoracotomy was mandatory in the other two patients, due to massive hematemesis; one patient survived. The four patients are as follows.

### Case 1

A 51-y-old man was diagnosed with lower esophageal squamous-cell carcinoma. A left thoracotomy was performed successfully, and intrathoracic esophagogastric anastomosis was performed below the aortic arch using a surgical stapler (CDH25, Johnson & Johnson). A routine iodine contrast study performed on postoperative d 9 demonstrated an anastomotic fistula of approximately 0.5 cm. Conservative treatment included keeping the chest drainage unobstructed, gastrointestinal decompression, acid suppression, intensive nourishment, and infection control. The patient received a self-expanding stent for the closure of the anastomotic fistula on postoperative d 15, and the stent resulted in a reduction in the amount of chest drainage. On d 24, the patient presented with trivial hematemesis, and hemostatic treatment was given. Two d later, the patient vomited a small amount of bright blood, and subsequently died from massive hemorrhage. The postmortem diagnosis was a gastric-aortic fistula, probably due to self-expanding stent compression at its inferior margin (Fig. 2).

### Case 2

A 61-y-old man with esophageal squamous-cell carcinoma at 30 cm from the incisors underwent a successful left thoracotomy. The same surgical procedure was performed in the first case. The patient was diagnosed with anastomotic fistula

Download English Version:

<https://daneshyari.com/en/article/8835463>

Download Persian Version:

<https://daneshyari.com/article/8835463>

[Daneshyari.com](https://daneshyari.com)