Single-stage endovascular treatment of an infected subclavian arterio-oesophageal fistula

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INTRODUCTION

Arterio-oesophageal fistula (AOF) is a life-threatening complication of oesophageal perforation. Undiagnosed, it will almost always lead to fatal exsanguination. Therapeutic options are limited and show inherent risks, because these fistulas are mostly associated with mediastinitis. We present a case of an infected subclavian AOF that was treated with endovascular covered stent-graft placement. Antibiotics and parenteral feeding were administered till the mediastinitis cleared. To our knowledge, this is the first report of a successful endovascular treatment of an infected subclavian AOF.

CLINICAL SUMMARY

A 45-year-old man presented at the emergency department of a community hospital with haematemesis and hypovolemic shock after ingestion of a chicken bone. Imaging revealed an infected fistula between the oesophagus and the left subclavian artery. Haemorrhage stopped after endovascular deployment of a stent graft in the subclavian artery. Aftercare consisted of intravenous antibiotics and parenteral feeding. The patient was discharged after 3 weeks and he encountered no infectious or vascular problems on follow-up. This unique case deals with a patient in whom an infected arterio-oesophageal fistula was successfully treated with a vascular stent-graft, thereby avoiding open surgical repair.

DISCUSSION

Most AOFs caused by foreign body involve the aorta. As only 3.5% of all upper gastrointestinal bleeding occur from aorto-oesophageal fistula, it is a relatively rare entity [1]. Chiari first described the ‘aorto-oesophageal syndrome’ consisting of a series of symptoms starting with an event causing mid-thoracic pain, a sentinel arterial haemorrhage and a symptom-free period ultimately followed by fatal exsanguination. Later on, this sequence was called the Chiari
Although the subclavian artery is only rarely affected in AOF, it has a high risk of exsanguination, as described in this case. Untreated subclavian AOFs, as aortic AOF, have a very high mortality. Before the development of adequate endovascular treatment, AOF required extensive surgery with thoracotomy, aortic graft placement, oesophageal surgery and mediastinal drainage. Especially in an infected environment, there was a very high mortality and morbidity due to adhesions and indolent sepsis [2].

Most surviving AOF cases found in more recent literature were treated with a two-step surgical strategy [3]. First of all, endovascular repair allows quick haemodynamic stabilization. Although not curative, it may provide a bridge to more definitive repair at a later time. A minimally invasive endovascular approach offers a good alternative to surgery avoiding tissue damage, bleeding, infectious complications, disability and long recovery time [4].

The unique feature about our case is that we treated the subclavian pseudoaneurysm with a single-stage placement of a covered stent-graft. Additional intravenous antibiotics cured the mediastinitis. Parenteral feeding was administered while the oesophageal laceration healed. There was no recurrence of fever, dysphagia or stent-graft dysfunction during 5 years of follow-up, avoiding the need for a second-stage open surgical repair.

Although there is little enthusiasm to perform extensive open surgery on a patient after having closed a bleeding vessel of an AOF, leaving an endoprosthesis in an infected region is still controversial. The infection can affect the stent-graft fabric, resulting in recurrent mediastinitis, upper gastrointestinal haemorrhage or stent thrombosis. This would compromise subsequent surgery even more. Therefore, definitive open surgical correction of the fistula might be undertaken as soon as possible after successful endovascular repair resulting in lower fistula-related mortality compared with patients who did not receive additional oesophageal surgery ($P = 0.018$) [5].

Considering both risks, we decided to monitor the patient closely with daily check of inflammatory parameters, several oesophagograms and two contrast-enhanced computed tomographies during a 3-week hospital stay. After discharge, there were controls by clinical examination and CT for 2 more years. Later on, the patient was followed up on a clinical basis.

As a conclusion, we can assume that there may be a place for treating a subclavian AOF solely by a stent-graft, even in an infected environment. Extensive clinical and imaging follow-up is necessary to identify potential early or late complications.

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REFERENCES