SHORT REPORT

Endovascular Stent-graft Repair of an Aortobronchial Fistula: Case Report and Review of the Literature

A. Saratzis,* N. Saratzis, D. Fillipou, N. Melas and D. Kiskinis

First Surgical Department, G. Papageorgiou Hospital, Aristotle University of Thessaloniki, Thessaloniki, Greece

A 79-year old male patient was admitted with hemoptysis and anemia. Eight years previously he underwent wrapping of a thoracic aortic aneurysm. Magnetic resonance angiography (MRA) disclosed a thoracic aortic aneurysm, which was ruptured into the left bronchus. This was successfully treated with two Endofit thoracic stent grafts.

Keywords: Aortobronchial fistula; Aortic surgery; Endovascular surgery; Stent grafting; Endofit.

Introduction

Aortobronchial fistula (ABF) is a rare but life threatening complication,1 which typically occurs following thoracic aortic surgery.2,3 The classic treatment is conventional open-repair, which is associated with high morbidity and mortality.

Recent advances in endovascular surgery have made it possible to treat aortoesophageal and aortobronchial fistulae with a stent, a less invasive alternative to open surgical treatment. While there are no long-term studies available, these procedures appear to offer lower rates of mortality and morbidities in the treatment of such pathologies.

The first endovascular exclusions of aortic aneurysms using an endoluminal graft were reported by Volodos in Kiev (1986) and Parodi in Buenos Aires in 1990.4–6 Since then, a great variety of aortic pathologies have been treated using endovascular techniques. These include aneurysms, penetrating ulcers, dissections and aortobronchial as well as aortoesophageal fistulae. Increasingly, such techniques become a treatment option for lesions in various vascular territories.

We present the successful repair of an ABF using endoluminal self-expandable stent grafts.

Case Report

A 79-year old male patient was admitted with hemoptysis and anemia (Hct=32%). Eight years ago, he underwent a left thoracotomy and wrapping of a thoracic aortic aneurysm, distal to the left subclavian artery. Magnetic resonance angiography (MRA) disclosed a thoracic aortic aneurysm, which was ruptured into the left bronchus (Figs. 1 and 2). During hospitalization, he developed massive hemoptysis, resulting into hemorrhagic shock and dyspnea, requiring endotracheal intubation. Prompt surgical intervention was necessary, in order to avoid other potentially fatal complications.

Primarily, we gained intravascular access through the common femoral arteries. Using fluoroscopic techniques, a preloaded Endofit thoracic stent graft (Endomed, Phoenix AZ, USA) 40 mm in diameter and 16 cm in length, loaded in a 22F sheath, was placed into the thoracic aorta, over a stiff 0.035 Amplatz guidewire. An angiographic 5F pigtail catheter was inserted to the brachial artery extending to the thoracic arch to mark the origin of the left subclavian artery. A 7F Arrow sheath was percutaneously inserted through the left femoral artery and guided up to the diaphragmatic aorta, close to the celiac artery, to control the lowest level of the grafts’ deployment. Two grafts (40 mm × 16 cm, 38 mm × 18 cm) were required, to
cover the full length of the aneurysm. All devices were deployed under fluoroscopic control. Completion arteriogram was performed to ensure accurate placement and rule out endo-leaks. The patient was kept into intensive care unit for 12 h and post-operative scans indicated complete exclusion of the aneurysm (Figs. 3 and 4). The patient was discharged after 7 days in good condition. Five months later he was re-evaluated in our department and was in good condition. Seven months after the procedure the patient was diagnosed with an abdominal aortic aneurysm, but he refused any intervention as the condition could not be treated using an endovascular technique, due to anatomic abnormalities.

Fig. 1. Pre-operative MRI disclosed a thoracic aneurysm ruptured into the left lung.

Fig. 2. Pre-operative MRI disclosed a ruptured aneurysm into the left bronchus. The left lung was filled with blood.

Fig. 3. Post-operative plain X-ray scan of the thorax revealed good integrity of the stents.

Discussion

Aortobronchial fistula (ABF) is a potentially deadly aortic surgery complication, even though it is quite rare. In most cases, it is reported following aortic dissection, valvular heart disease repair, coarctation and most commonly after the surgical repair of aortic aneurysms.7–11

ABF is typically difficult to diagnose. In some cases repeated diagnostic tests, including various imaging techniques, can prove inadequate for the diagnosis of an ABF.12,13 A common symptom, though, is hemoptysis, which may be fatal.1,14,15

Once the presence of an ABF has been diagnosed, prompt intervention is vital.16 Open surgery is the conventional treatment and typically involves
Endovascular Stent-graft Repair of an Aortobronchial Fistula: Case Report and Review of the Literature

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17
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References


Fig. 4. Post-operative MRI revealed complete exclusion of the aneurysm and closure of the ABF.