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Succesful Embolization Of A Post-Mediastinitis False Aortic Aneurysm

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Citation

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Abstract

A 71-year-old male patient was admitted with methicillin-resistant staphylococcus aureus mediastinitis two months after coronary artery bypass grafting. Treatment with immediate surgical debridement, removal of sternal wires and use of vacuum-assisted closure device was started. Spiral computerized tomography and aortography revealed a false aortic aneurysm at the cannulation site. Active mediastinitis and patient's objection, led us to perform percutaneous coil embolization. No postoperative complication was observed and one year later the patient is in an excellent condition.

BACKGROUND

Though a rare complication of cardiac surgery, the management of false aortic aneurysms associated with mediastinal infection remains a challenging surgical problem with high associated mortality. Early diagnosis is essential due to the fact that false or mycotic aneurysms progressively expand, compress and erode the surrounding structures and the most important are associated with a high risk of sudden rupture.

CASE PRESENTATION

A 71-year-old male patient with a history of diabetes mellitus type 2, hypertension and chronic obstructive pulmonary disease presented with unstable angina. Coronary angiography revealed 3-vessels disease and an ejection fraction of 0.60. Subsequently he underwent a triple coronary artery by pass grafting. The postoperative period was uneventful and the patient discharged home on postoperative day 9.

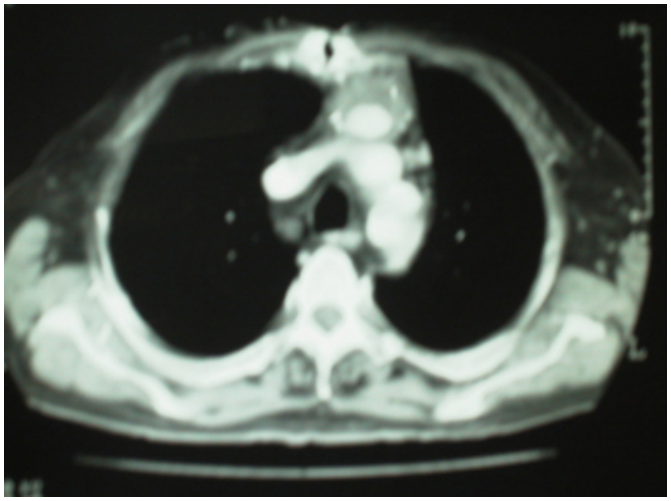
On the 60^{th} postoperative day the patient was admitted to the hospital because of high fever (39,2°C), dyspnoea, chest pain, fatigue, sternal instability and inflammation signs on the sternotomy wound. Laboratory findings were normal except for an increased leukocyte count (17.000/mm^3, 88% neutrophils).

The patient underwent urgent surgical debridement under aseptic conditions in the operating theater. After reopening the wound, sternal dehiscence with fragmentation was revealed. After removal of the sternal wires, severe suppurative mediastinal infection was confirmed. Probes for bacteriological cultures as well as sternal bone biopsies were taken. Then, aggressive debridement with removal of all necrotic tissue and irrigation with dilute povidone-iodine solution and H2O2 was done. Bony debridement was performed until healthy bleeding bone was revealed. Following the debridement procedure, the wound was fitted with vacuum assisted device.

Computed tomography revealed sternal fragmentation and loss of the integrity of the retrosternal soft tissue fat indicating mediastinitis as well as a false aortic aneurysm (Fig 1).

Figure 1

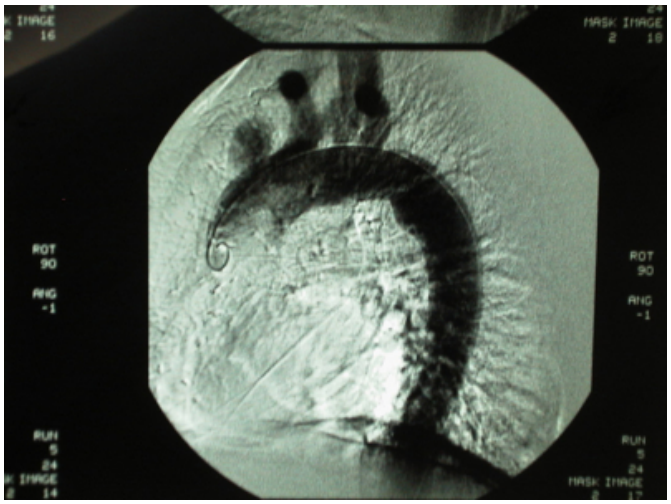
Figure 1: Sternal fragmentation and loss of the integrity of the retrosternal soft tissue fat indicating mediastinitis as well as a false aortic aneurysm.



Aortography confirmed the presence of a 20 mm false aneurysm at the cannulation site (Fig 2).

Figure 2

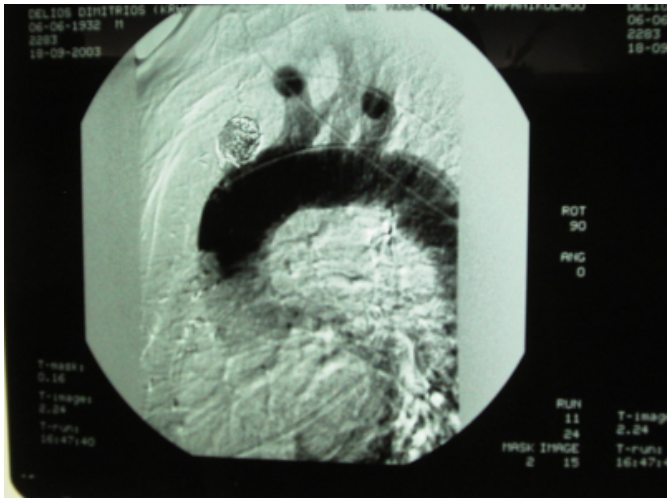
Figure 2: Aortography confirmed the presence of a 20 mm false aneurysm at the cannulation site.



Advanced age, active mediastinitis and patient's objection led us to propose a palliative percutaneous treatment. Via femoral access, through a 15 cm long 8F diameter sheath and a 7.2F diameter guiding catheter, a balloon catheter was placed so as to occlude the false aneurysm neck on balloon inflation (Moret's neurointerventional technique) [1]. Through the catheter lumen, three long coils of spiroid shape were mechanically dropped. Stable homogeneous packing was achieved and the balloon was progressively deflated after testing the material stability by successful injection into the ascending aorta (Fig 3).

Figure 3

Figure 3: Stable homogeneous packing of the aneurysm after occlusion by coils.



The patient did well with no postoperative complication. Serial quantitative wound cultures were positive for methicillin-resistant staphylococcus aureus and intravenous antibiotic therapy was started (vancomycin 500 mg X 3 daily). Vacuum assisted closure system was changed every two to three days and used in total for 22 days. The system was removed when regional and systemic signs of infection resolved and quantitative wound cultures were negative. Finally the patient underwent regional muscle flap closure (pectoralis flap) and a complete healing was achieved. One year later he is in an excellent condition and magnetic resonance imaging confirmed coil stability.

DISCUSSION

Infectious mediastinitis is a relatively common but potentially devastating complication occurring after cardiac operations that are performed through median sternotomy. Despite an incidence of less than 5%, the importance of this complication should not be underestimated [2]. Infectious mediastinitis and pseudoaneurysm formation is a very rare but highly morbid complication due to subsequent rupture [3]. Without an operation, aortic false aneurysms progressively expand, compress and erode the surrounding structures, or are a source of persistent infection and systemic embolism. Percutaneous embolization of large saccular aneurysms or pseudoaneurysms is also effective [4,5].

In the case reported here, active mediastinitis and patient's objection to undergo another operation led us to perform percutaneous treatment according to the Moret remodeling technique. This technique consists of inflating a balloon in

front of the neck thus allowing to push the coils into the aneurysm and to avoid any outside bulging. The Moret technique has been used successfully to treat 56 intracranial wide-necked or badly-shaped aneurysms with satisfactory occluder stability during follow up [1].

In conclusion, the treatment of false aneurysms poses special challenges to the cardiothoracic surgeon. The optimal surgical management is a subject of controversy. Endovascular treatment with coils may be a good and safe alternative to surgery.

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