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Aortic arch pseudoaneurysm on penetrating ulcer: delayed closure after endovascular treatment.

A case report

Luciano Izzo*, Sara Izzo*, Francesco Razionale*, Pieretti Gorizio**, Pierfrancesco Di Cello*, Paolo Izzo*, Messineo Daniela***

*Department of Surgery, Policlinico "Umberto I" Sapienza University, Rome, Italy

**Multidisciplinary Department of Medical-Surgical and Dental Specialties, Plastic Surgery Unit, Università degli Studi della Campania "Luigi Vanvitelli", Naples, Italy.

***Department of Radiological Oncological And Anatomical-Pathological Sciences, Sapienza University, Rome, Italy

Aortic arch pseudoaneurysm on penetrating ulcer: delayed closure after endovascular treatment. A case report.

Standard open repair of true or false aneurysms of the aortic arch usually require cardiopulmonary bypass, hypothermia and circulatory arrest, associated with increased mortality and morbidity rates. Thus, an alternative strategy that avoids cardiopulmonary bypass (CPB) and hypothermic circulatory arrest would benefit the patient.

Endovascular stent-grafting has developed as a safe and effective treatment for descending aortic pathologies.^{5,6}

We share our experience with the endovascular approach to pseudoaneurysm of the aortic arch in a patient with high risk for aortic arch replacement under extracorporeal circulation.

KEY WORDS: Aortic arch, Endoprosthesis, Evar, Penetrating ulcer

Introduction

Penetrating atheromatous ulcer (PAU) describes the condition in which ulceration of an aortic atherosclerotic lesion penetrates the internal elastic lamina into the media¹. It was Stanson who described PAU as a distinct clinical and pathological entity². PAU is at risk of pseudoaneurysm, intramural hematoma, aortic rupture, or an acute aortic dissection and it accounts for 2% to 7% of all acute aortic syndrome³.

PAU is typically seen in elderly individuals with hypertension and atherosclerosis and in ascending aorta is a very rare condition and very few cases are reported in

literature⁷. Troxler⁴ described only 6 patients of PAU in ascending aorta out of 130 patients of PAU.

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Case Report

A 65-year-old patient with history of hypertension, chronic obstructive pulmonary disease, non-insulin dependent diabetes, obesity, and hyperlipidemia was

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Correspondence to: Luciano Izzo, MD, Dipartimento di Chirurgia "P. Valdoni" Università degli Studi di Roma "La Sapienza", 00161 Roma, Italy (e-mail: luciano.izzo@uniroma1.it)

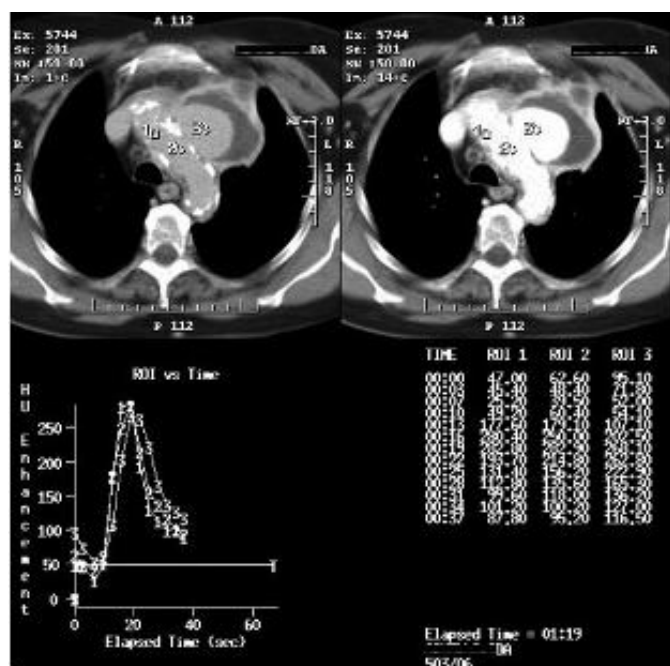


Fig. 1: **A**: axial CT image that show a large pseudoaneurysmal sac located on the anterior left side of the aortic arch towards the wall chest; **B**: axial CT image Contrast material-enhanced shows an aneurysm containing thrombus **C**, **d**: HU enhancement diagram, and ROI evaluation: the first ROI is within the aorta; the second ROI is at the collar of the pseudo-aneurysmatic formation; the third ROI is within the lumen of the pseudoaneurysm. High HU after the introduction of contrast medium presence of blood.

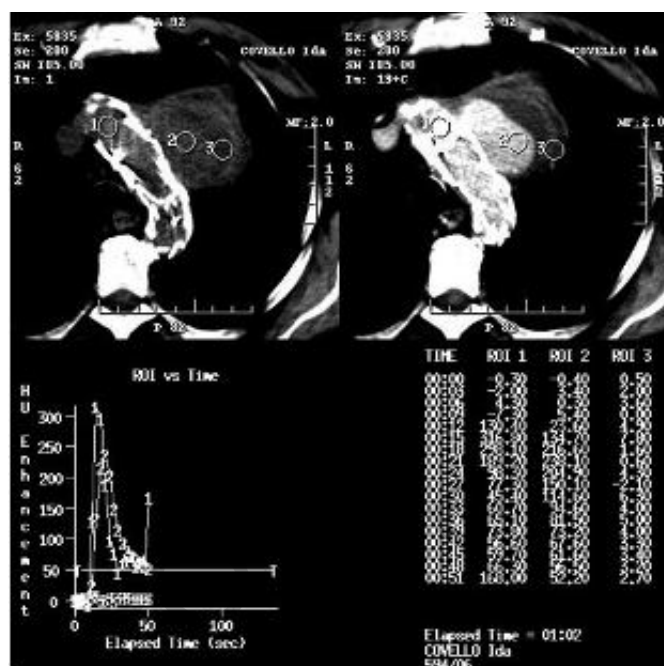


Fig. 3: **A**, **B**: axial CT image before and after contrast enhancement. CT scan performed 7 days later, confirmed the presence of a small endoleak with slow pseudoaneurysm refilling. **C**, **D**: HU enhancement diagram, and ROI evaluation. The presence of bleeding and ulceration is evidenced by variability of the Hounsfield units a tenuously hyperdense image shows a supply with slight contrast imbibition within the plaque.

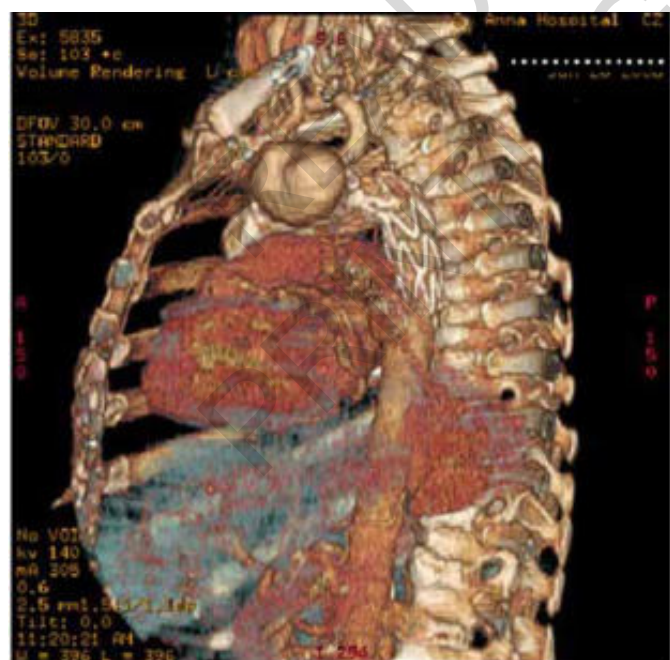


Fig. 2: Three-dimensional VR sagittal view. CT image shows the endoprosthesis and the large pseudoaneurysmal sac.

referred to our Hospital for evaluation of thoracic pain and dysphonia. A chest Computerized Tomography (CT) scan showed a penetrating ulcer 1,2 cm distal to the origin of the left common carotid artery and immediately proximal to the left subclavian artery. A large pseudoaneurysmal sac measuring 63 mm x 67 mm, was located on the anterior left side of the aortic arch towards the wall chest (Fig. 1). The patient's EuroSCORE was 13, and predictive mortality was 41,12%.

We approached the aortic arch through a left femoral artery approach. Endoprosthesis was introduced under fluoroscopy control and controlled hypotension (80 mm Hg). Medtronic Valiant endoprosthesis with a diameter of 26 mm and a length of 100 mm was used.

The endoprosthesis was deployed in such a way that the freeflap was on the origin of the left common carotid artery (Fig. 2).

Fluoroscopy was performed to confirm appropriate graft deployment and the presence of small type 1 endoleak partially refilling the pseudoaneurysm. Patient's pain resolved soon after placement of the stent graft. A CT scan, performed 7 days later, confirmed the presence of a small endoleak with slow pseudoaneurysm refilling (Figs. 3,4). The postoperative period was event free, and

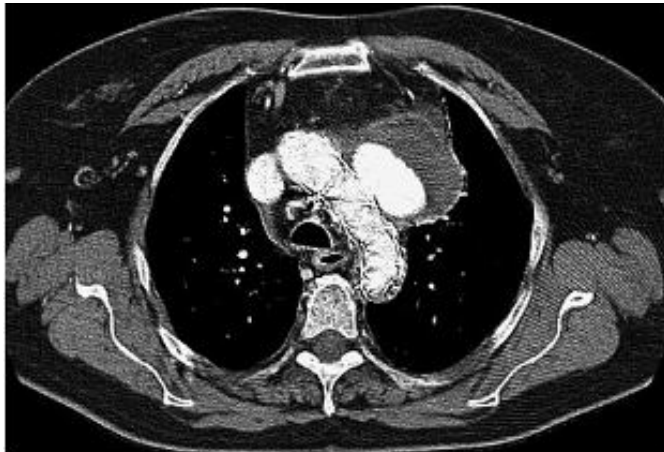
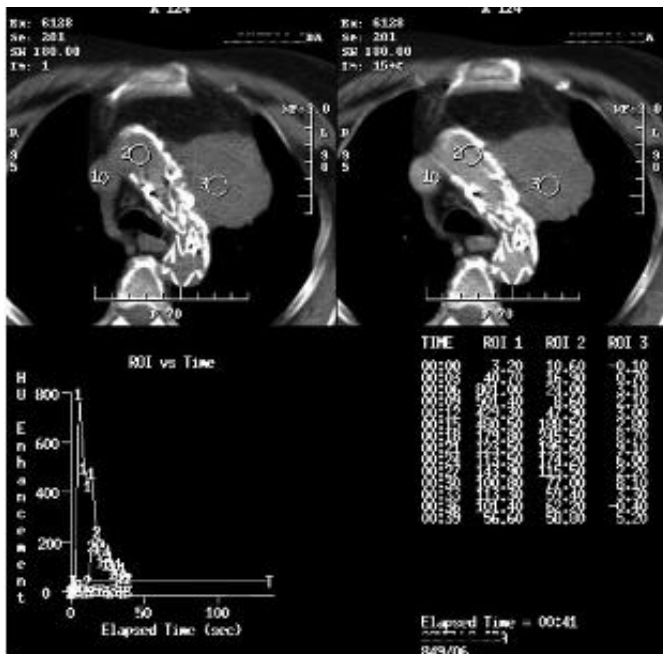


Fig. 4: Axial CT image Contrast material-enhanced follow-up at twenty days after the procedure, suggested progressive thrombosis of the pseudoaneurysm sac.



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