



# Cardiac computed tomography imaging of a giant ascending aortic double chambers pseudoaneurysm infiltrating into the sternum

## IMAGING

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## CASE REPORT



### ABSTRACT

In this report we show an unusual case of a giant ascending aortic double chambers pseudoaneurysm eroding the sternum. The patient was an asymptomatic 22-year-old man who underwent CT Angiography with ECG gating and who previously underwent aortic valve replacement.

### KEYWORDS

CCT, Cardiac CT, pseudoaneurysm, Aorta, CT Angiography

Pseudoaneurysm of the ascending aorta is a rare complication (<1%) that may occur after cardiac surgery procedures but can be a life-threatening complication. Often, ascending aortic pseudoaneurysm is asymptomatic but in some cases symptoms and clinical

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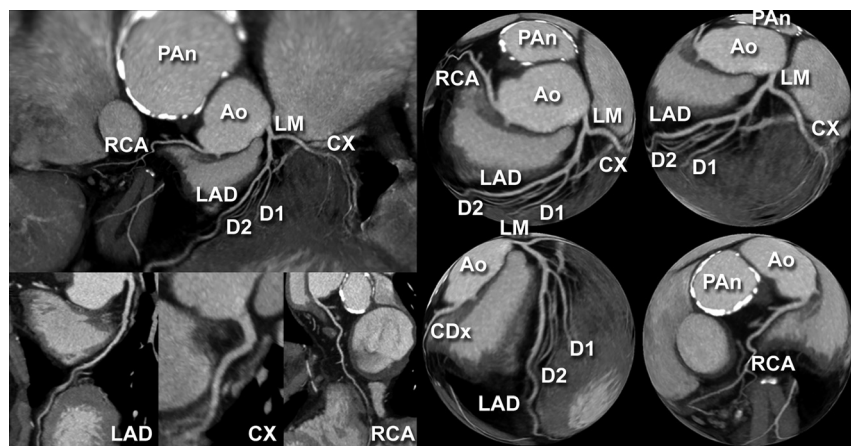
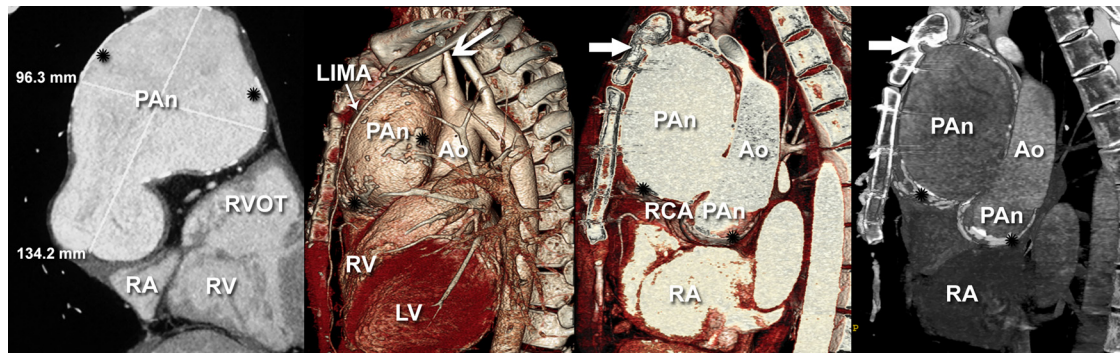


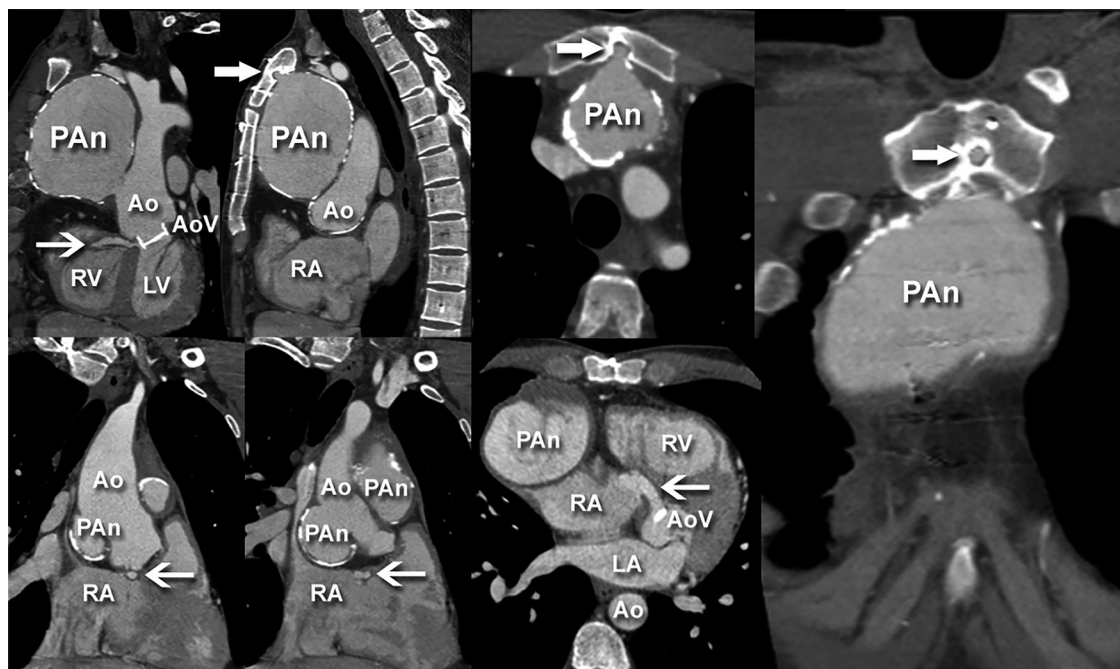
Figure 1. Different settings of Maximum Intensity Projections displaying the entire coronary tree: no hemodynamically significant stenoses were found.

Abbreviations. PAN: Pseudoaneurysm; Ao: Ascending Aorta; RCA: Right Coronary Artery; LM: Left Main; CX: Circumflex Coronary Artery; LAD: Left Anterior Descending Coronary Artery; D1-2: Diagonal Branch



*Figure 2.* Oblique Sagittal Multiplanar Reconstruction and Left Lateral different settings Volume Rendering images defines the extension in its maximum diameters, the partially calcified wall (asterisk [\*]), and the relationship of the giant pseudoaneurysm with neighbouring structures: the posterior compression of the ascending aorta, the coarctation-like morphology of the medium tract of aortic arch, the left common carotid artery (thin arrow) arising from the right brachiocephalic trunk, and the infiltration of the sternum (thick arrows).

Abbreviations. PAn: Pseudoaneurysm; RVOT: Right Ventricle Outflow Tract; RA: Right Atrium; RV: Right Ventricle; LIMA: Left Internal Mammary Artery; Ao: Ascending Aorta; LV: Left Ventricle; RCA: Right Coronary Artery



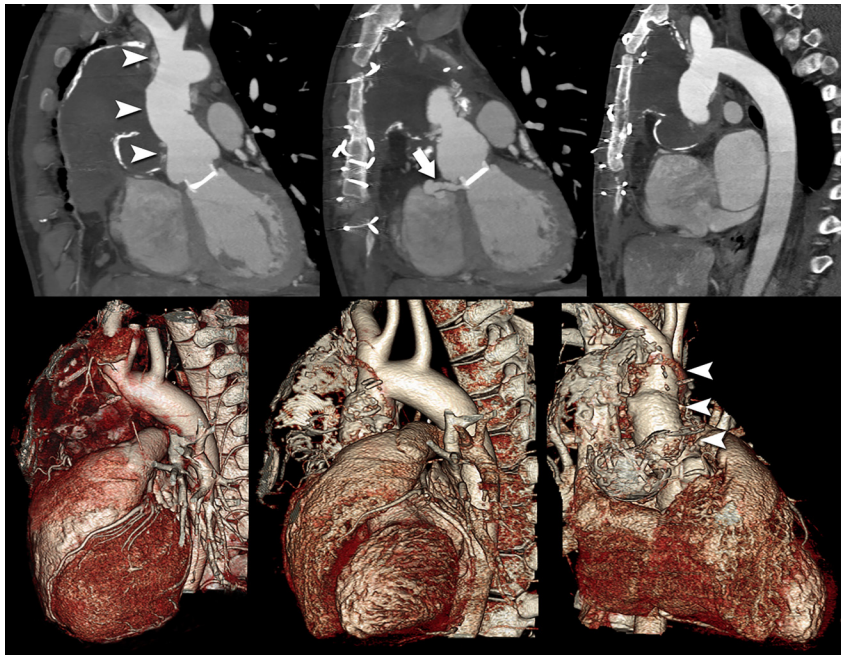
*Figure 3.* Maximum Intensity Projections images in a multiplanar approach display the most important findings: infiltration of the sternum (thick arrows) and atrio-ventricular fistula (thin arrows) which arising from the left ventricle, just below the aortic valve and, coursing in the right atrium-ventricular septum, flows right into the right atrial chamber.

Abbreviations. PAn: Pseudoaneurysm; Ao: Ascending Aorta; AoV: Aortic Valve; RV: Right Ventricle; LV: Left Ventricle; RA: Right Atrium; LA: Left Atrium

presentation could be unclear. This leads to misdiagnosis and delay in the prompt surgical approach [1-4].

A case of a 22-year-old man with asymptomatic aortic double chambers pseudoaneurysm that infiltrate the sternum. Patient is African and he has been disembarked at Lampedusa Island illegally. At the first health control in the "Policy Department", the physician relieved a systolic murmur (Levine 2/6) and detected the presence of a mechanical prosthetic valve in aortic position. Patient had

undergone aortic valve replacement 6 years ago. He reached our institution in a good clinical condition. A partially calcified ascending aortic pseudoaneurysm and a right atrium-left ventricle fistula (AVF) just below the aortic valve were detected by cardiac ultrasound. ECG-gated 64-slice Multidetector Computed Tomography Angiography (Brilliance 64, Philips Medical Systems, Cleveland, Ohio) of the entire thorax was performed to assess the coronary tree (Fig. 1), and identified the



*Figure 4.* Maximum Intensity Projections and Volume Rendering post-surgical ECG-gated 64-slice Multidetector Computed Tomography Angiography scan images well display the dacron graft of the ascending aorta (arrowheads) after surgical resection of the pseudoaneurysm. Atrio-ventricular fistula (arrow) which arising from the left ventricle, just below the aortic valve and coursing in the right atrium-ventricular septum, flows right into the right atrial chamber

extension and the relationship of the giant pseudoaneurysm with the other neighbouring structures (Figs. 2 and 3). An infiltration of the sternum for about 7 mm was detected (thick arrows in Figs. 2 and 3). The presence of the AVF was confirmed and its extension to the right atrium was observed as well (thin arrows in Fig. 3). Patient underwent surgical resection of the pseudoaneurysm (Fig. 4) and replacement of the ascending aorta using a Dacron graft (arrowheads in Fig. 4) under deep hypothermia circulatory arrest that was performed before sternotomy to avoid the risk of pseudoaneurysm rupture.

*Conflict of interest:* None.

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