Journal Pre-proof

Pulmonary embolism secondary to partially thrombosed aneurysm of the left innominate vein: a complication of a narrow aortosternal space?

Luis Gorospe Ana Villanueva-Campos Luis Carlos Lomanto-Navarro

PII: S0300-2896(26)00015-3

DOI: https://doi.org/doi:10.1016/j.arbres.2026.01.003

Reference: ARBRES 3946

To appear in: *Archivos de Bronconeumologia*

Received Date: 21 November 2025

Accepted Date: 5 January 2026

Please cite this article as: Gorospe L, Villanueva-Campos A, Lomanto-Navarro LC, Pulmonary embolism secondary to partially thrombosed aneurysm of the left innominate vein: a complication of a narrow aortosternal space?, *Archivos de Bronconeumología* (2026), doi: https://doi.org/10.1016/j.arbres.2026.01.003

Pulmonary embolism secondary to partially thrombosed aneurysm of the left innominate vein: a complication of a narrow aortosternal space?

Luis Gorospe*[a], Ana Villanueva-Campos[a], Luis Carlos Lomanto-Navarro[b]

[a] Department of Radiology, Ramón y Cajal University Hospital, Madrid, Spain

[b] Department of Thoracic Surgery, Ramón y Cajal University Hospital, Madrid, Spain

*Corresponding author: Luis Gorospe
Department of Radiology
Ramón y Cajal University Hospital
Ctra. de Colmenar Viejo Km 9,100
28034 Madrid, Spain
E-mail address: luisgorospe@yahoo.com

A 102-year-old patient presented to our hospital with shortness of breath. A chest radiograph showed an abnormal left mediastinal contour (fig. 1A). A contrast-enhanced thoracic CT demonstrated a low-burden pulmonary embolism (fig. 1B) as well as a narrowed aortosternal space resulting in a severe left innominate vein (LIV) compression and a large retrograde partially-thrombosed aneurysm of the LIV (fig. 1C-E). Following consultation with the surgical team, it was decided to treat the patient conservatively (anticoagulant therapy). Isolated innominate vein aneurysms (IVAs) are very rare, with less than 36 cases reported in the literature.[1] The etiology of IVAs remains undetermined, although congenital malformations, trauma, vascular interventions (including intravascular devices), and inflammation/infection have been implicated. Most IVAs are incidentally detected on imaging, but some patients may experience symptoms due to rupture, thrombus formation or pulmonary embolism. The use of intravenous contrast is particularly important to avoid confusing an IVA with a solid mediastinal mass. Treatment options for IVAs include conventional open surgical repair and less invasive endovascular approaches, with the choice of technique guided by aneurysm morphology, symptomatology, and patient-specific risk factors. In our case, we speculate that the narrow aortosternal space may be the most plausible cause of chronic LIV stenosis and retrograde dilatation of the LIV with intra-aneurysmal thrombus formation.

Funding: This research did not receive any specific grant from funding agencies in the public, commercial, or not-for-profit sectors.

Conflicts of interest: the authors declare not to have any conflicts of interest that may be considered to influence directly or indirectly the content of the manuscript.

Artificial intelligence involvement: The authors declare that they have not used any type of generative artificial intelligence for the writing of this manuscript, nor for the creation of images, graphics, tables, or their corresponding captions.

Informed consent: The authors certify that they have obtained all appropriate patient consent forms. In the form the patient(s) has/have given his/her/their consent for his/her/their images and other clinical information to be reported in the journal.

Ethical considerations: This article does not involve any studies on human participants conducted by the authors.

Authorship: All authors contributed equally to the manuscript writing. L.G. selected and edited the radiological images. All authors provided input to the final version of the manuscript.

References

1. Nguyen Q, Olive JK, Vervoort D, Phan K, Luc JGY. Brachiocephalic vein aneurysm: a systematic review of the literature. J Thorac Dis. 2020;12:2747-58. doi: 10.21037/jtd.2020.04.39.

Figure legend

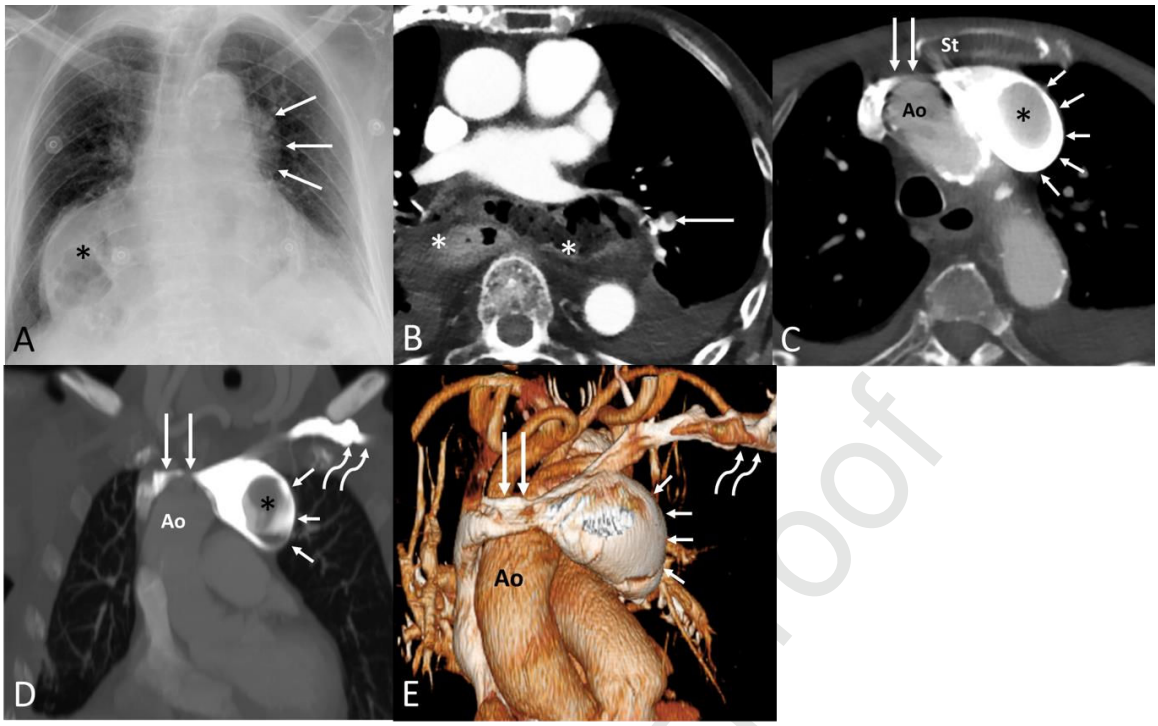

Figure 1. A) Anteroposterior chest radiograph shows an abnormal left mediastinal contour (arrows). Note a large hiatal hernia (asterisk). B) Axial thoracic CT image shows a non-occlusive filling defect involving a segmental pulmonary artery (arrow); note the large hiatal hernia (asterisks). C) Axial thoracic CT image demonstrates a narrowed left innominate vein (long arrows) running between the sternum (St) and the ascending aorta (Ao), a saccular aneurysm of the left innominate vein (short arrows), and a large filling defect within the aneurysm (asterisk). D) Coronal thoracic CT image shows the compressed left innominate vein (long straight arrows) by the ascending aorta (Ao) and the retrograde aneurysmal dilatation of the left innominate vein (short arrows); note the intra-aneurysmal thrombus (asterisk) and the normal-looking left subclavian vein (curved arrows). E) 3D reconstruction CT image shows the stenotic left innominate vein (long straight arrows) compressed by the ascending aorta (Ao), the retrograde dilatation of the left innominate vein (short arrows), and the normal-looking left subclavian vein (curved arrows).