Bristol Publishers

Case Reports and Case Series in Cardiology Journal

Case Report | Open Access | Volume: 01 Issue: 02 ((July-September 2025) Pages: 57-60

ISSN: 3107-6416 (Online) | DOI: doi.org/10.64874/crcscj.v1i2.2025.012

Porcelain Left Atrium in a Patient Being Evaluated for Percutaneous Closure of a Patent Foramen Ovale

Enrique Sánchez-Muñoz✉, Carmen Garrote Coloma and Armando Pérez de Prado

Complejo Asistencial Hospitalario de Leon, Leon, Spain

Corresponding author: Dr. Enrique Sánchez Muñoz, Complejo Asistencial Hospitalario de León, C/Altos de Nava, S/N 24071 León, Spain. E-mail: enricsan2@hotmail.com.

Received: 16 August 2025; **Revised:** 18 September 2025; **Accepted:** 22 September 2025; **Published:** 25 September 2025

Academic Editor: Dr. Mohamed Ahmed Mostafa

Abstract

Left atrial wall calcification is a rare finding, typically associated with rheumatic heart disease, prior atrial surgery, or chronic inflammatory states. Its presence can complicate transcatheter procedures by creating a rigid and irregular substrate for device deployment.

We report the case of a 54-year-old woman with no history of rheumatic disease, prior cardiac surgery, or other conditions predisposing to atrial calcification, in whom an unusual crescent-shaped, non-annular left atrial calcification was unexpectedly identified during percutaneous closure of a patent foramen ovale (PFO). Successful device implantation was achieved using an UltraSept™ occluder, underscoring the relevance of multimodality imaging and individualized device selection in challenging anatomies.

Keywords: Left atrial calcification; Multimodal imaging; Patent foramen ovale; Percutaneous closure; Structural heart intervention

Case Presentation

A 54-year-old woman with a history of hypertension, dyslipidemia, and a transient ischemic attack in 2023 underwent evaluation for paradoxical embolism. Transthoracic echocardiography revealed a patent foramen ovale (PFO), and percutaneous closure was indicated.

Intra-procedural imaging demonstrated extensive crescent-shaped mural calcification of the left atrium, extending from the atrial roof to the posterior mitral annulus, the retroaortic region, the ostium of the left atrial appendage, and the ligament of Marshall. This finding was confirmed by transesophageal echocardiography (Figure 1) and computed tomography (Figure 2). Standard biplane TEE (mid-esophageal 60°-120° views) and contrast-enhanced CT with 0.6-mm slices were used for detailed anatomical characterization.

Citation: Sánchez-Muñoz E, Coloma CG, Pérez de Prado A. Porcelain Left Atrium in a Patient Being Evaluated for Percutaneous Closure of a Patent Foramen Ovale. Case Rep Case Ser Cardiol J. July-September 2025; 01(02): 57-60. **DOI:** doi.org/10.64874/crcscj.v1i2.2025.012.

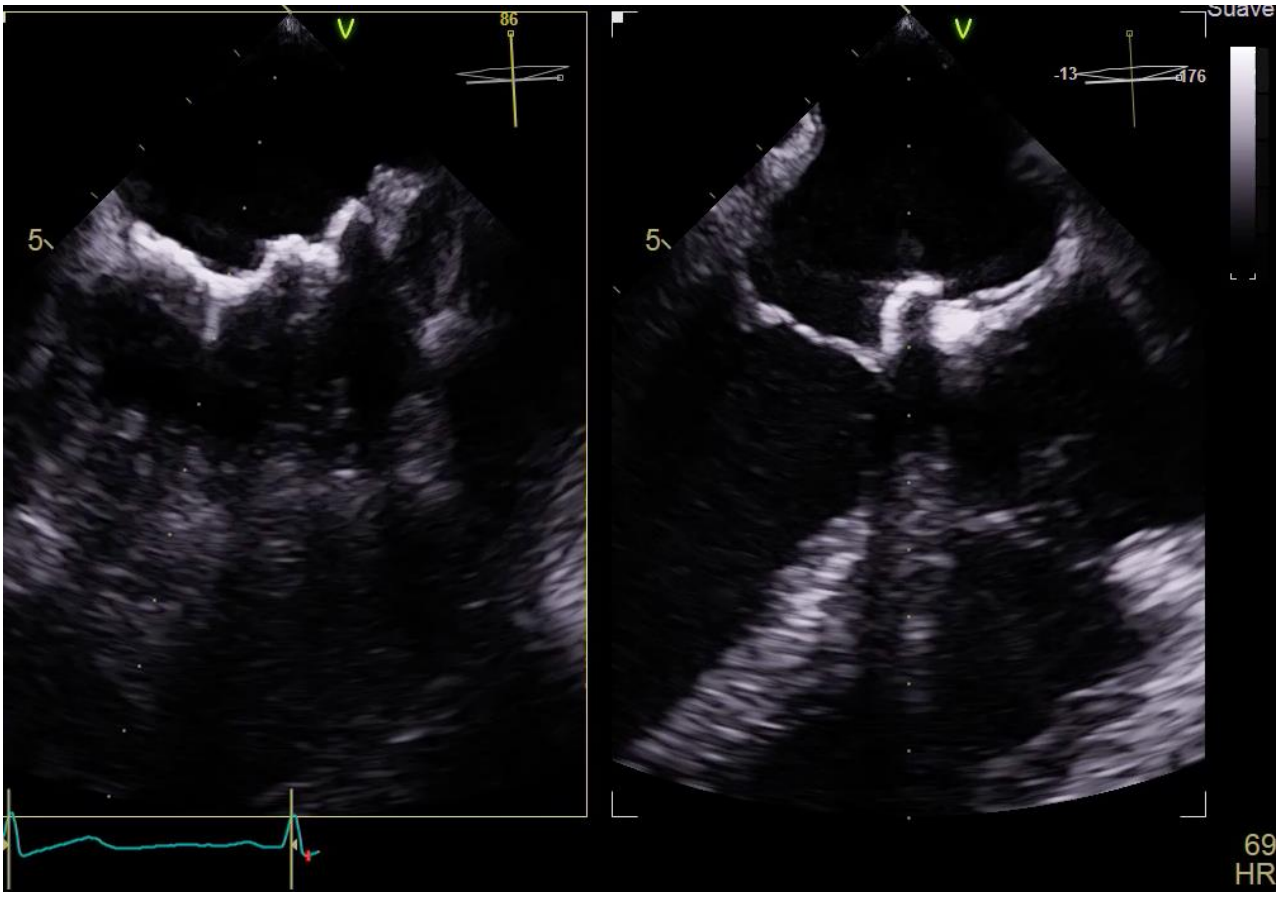

Figure 1: TTE calcification of the left atrium, extending from the atrial roof to the posterior mitral annulus.

Figure 2: CT with the calcification previously reported.

Citation: Sánchez-Muñoz E, Coloma CG, Pérez de Prado A. Porcelain Left Atrium in a Patient Being Evaluated for Percutaneous Closure of a Patent Foramen Ovale. Case Rep Case Ser Cardiol J. July-September 2025; 01(02): 57-60. **DOI:** doi.org/10.64874/crcscj.v1i2.2025.012.

Importantly, the calcification was not annular in origin but imparted rigidity and irregularity to the atrial wall, particularly at the anticipated site of left-disk deployment.

Considering this complex anatomy, an **UltraSept™ PFO occluder (Cardia Inc., Eagan, MN, USA), size 18/20**, was selected (Figure 3). The symmetrical and flexible disk design facilitated adaptation to the irregular atrial surface. Device release was successful on the first attempt, achieving stable parallel disk apposition and complete closure without residual shunting (Video 1).

Video 1: Device release in the cath-lab. (This clinical video is available online with the published article).

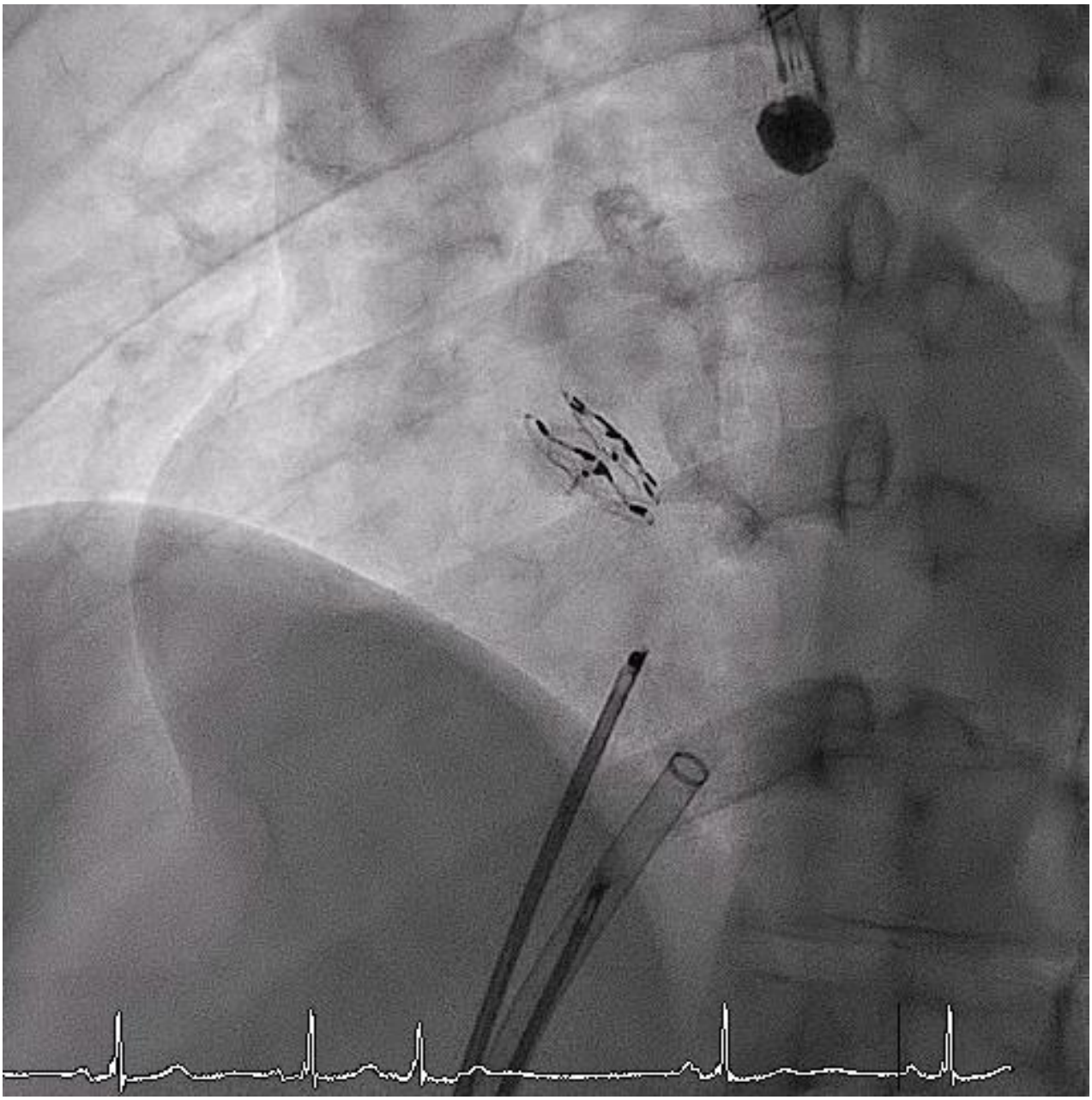

Figure 3: Device and calcification in X-ray.

Citation: Sánchez-Muñoz E, Coloma CG, Pérez de Prado A. Porcelain Left Atrium in a Patient Being Evaluated for Percutaneous Closure of a Patent Foramen Ovale. Case Rep Case Ser Cardiol J. July-September 2025; 01(02): 57-60. **DOI:** doi.org/10.64874/crcscj.v1i2.2025.012.

Discussion

This case illustrates the clinical relevance of unexpected left atrial calcification during structural heart interventions. Non-annular calcifications are particularly challenging because they alter atrial geometry and may hinder device stability. The differential diagnosis included annular calcification, organized thrombus, and atrial neoplasms; however, multimodality imaging with TEE and CT was essential to confirm the diagnosis and define the extent of calcification.

The underlying pathophysiological mechanism in this case may involve localized dystrophic calcification after subclinical inflammation, although no clear predisposing factors were present. Comparable reports in the literature have mainly described massive or annular calcifications in rheumatic disease or post-surgical settings, but, to our knowledge, no prior case has described this non-annular crescent-shaped pattern complicating transcatheter PFO closure.

The choice of device was decisive: the UltraSept™ occluder, with its flexible disks, provided an optimal solution for sealing against a rigid and irregular substrate. Currently, there is no published literature to inform the choice of device in this cases. This highlights the importance of tailoring device selection to individual anatomical characteristics.

Conclusions

This case represents an exceptional presentation of extensive non-annular left atrial calcification in a patient without any predisposing conditions (first case in literature). Such findings, although rare, can significantly influence the technical aspects and success of percutaneous interventions. Comprehensive multimodality imaging and careful device selection were key to overcoming the anatomical challenges and achieving a favourable outcome. Recognition of these atypical scenarios is essential for interventional cardiologists to optimize procedural planning and patient care.

Acknowledgements: The authors acknowledge the Cardiology Department of University Hospital of Leon (Spain).

REFERENCES

1. Maleszewski JJ, Anavekar NS, Moynihan TJ, et al. Porcelain Atrium: A Clinicopathologic Series of 20 Cases. Am J Surg Pathol. 2012; 36: 818-823.
2. Ramlawi B, Abu Saleh WK, Edgerton JR. Porcelain Atrium: An Unusual Cause of Massive Left Atrial Calcification. Tex Heart Inst J. 2013; 40: 83-85.
3. Silbiger JJ, Bazaz R. Contemporary Insights into the Pathophysiology, Diagnosis and Management of Left Atrial Calcification. Cardiol Rev. 2009; 17: 263-268.

Citation: Sánchez-Muñoz E, Coloma CG, Pérez de Prado A. Porcelain Left Atrium in a Patient Being Evaluated for Percutaneous Closure of a Patent Foramen Ovale. Case Rep Case Ser Cardiol J. July-September 2025; 01(02): 57-60. **DOI:** doi.org/10.64874/crcscj.v1i2.2025.012.