

## Challenges in prosthetic valvular thrombosis: imaging relevance and the decision-making process

*Retos en trombosis valvular protésica: la importancia de la imagen en la toma de decisiones*

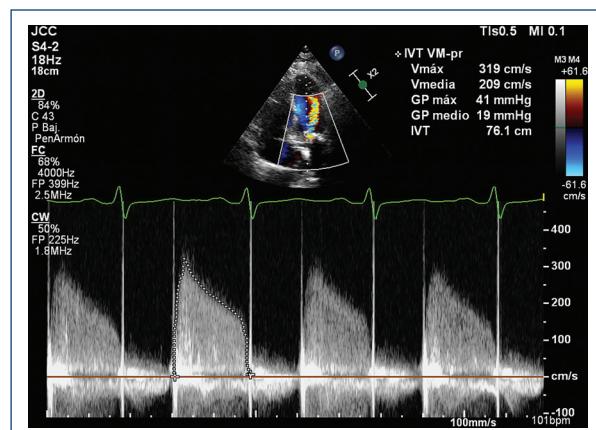
Cristhian E. Herrera-Céspedes<sup>1\*</sup>, Santiago Giraldo<sup>2</sup>, Yesid Saavedra<sup>2</sup>, Luis A. Vélez<sup>3</sup>, José A. Hernández<sup>3</sup>, Nilson López<sup>2,4</sup>, and Juan C. Chavarriaga<sup>2,4</sup>

<sup>1</sup>Cardiology Section, Department of Internal Medicine, Universidad de Antioquia; <sup>2</sup>Cardiology Unit, Hospital Pablo Tobón Uribe; <sup>3</sup>Cardiovascular Surgery Service, Hospital Pablo Tobón Uribe; <sup>4</sup>Cardiology Unit, Echocardiography Service, Hospital Pablo Tobón Uribe. Medellín, Colombia

### Prosthetic valve thrombosis

Valve thrombosis is an always standing concern in prosthetic valves. Although it is an infrequent event (between 0.3 and 8% per patient/year), it holds considerable risks, for example, heart failure and embolic events, mainly brain infarcts, and also morbidity and mortality related to cardiac surgery<sup>1</sup>.

We present the case of a 62-year-old female with two previous surgeries at mitral valve, due to rheumatic heart disease. At presentation, she complained of progressive dyspnea, lower limb edema and fever. She was non-adherent to her anticoagulation regimen. Transthoracic echocardiography showed high prosthetic gradients (mean gradient 19 mm Hg) and velocities (V Max 319 cm/seg) (Fig. 1) suggesting stenosis through the valve. She was taken to transesophageal echo. It confirmed the stenosis and also showed blocking of the posterior tilting disk, multiple globular soft echo density masses in both tilting disks, and left atria. These findings confirm prosthetic valve thrombosis<sup>2</sup>. Then, she deteriorates into atrial fibrillation with rapid ventricular rate and is transferred to the intensive care unit. Heart team decided that she is not an optimal candidate for thrombolytic therapy due to high



**Figure 1.** Continuous wave Doppler in mitral valve mechanical prosthesis, showing high transprosthetic flow velocities and gradients.

burden of thrombus in echo and risk of hemodynamic instability. She is taken to surgery; findings are abundant pannus and obstructive prosthetic valve thrombosis (Fig. 2). A #29 Medtronic Mosaic bioprosthetic valve is implanted (to avoid future need of anticoagulation) with no

#### \*Correspondence:

Cristhian E. Herrera-Céspedes  
E-mail: emilio.herrera@udea.edu.co

2604-7063 / © 2023 Instituto Nacional de Cardiología Ignacio Chávez. Published by Permanyer. This is an open access article under the CC BY-NC-ND license (<http://creativecommons.org/licenses/by-nc-nd/4.0/>).

Date of reception: 22-07-2022

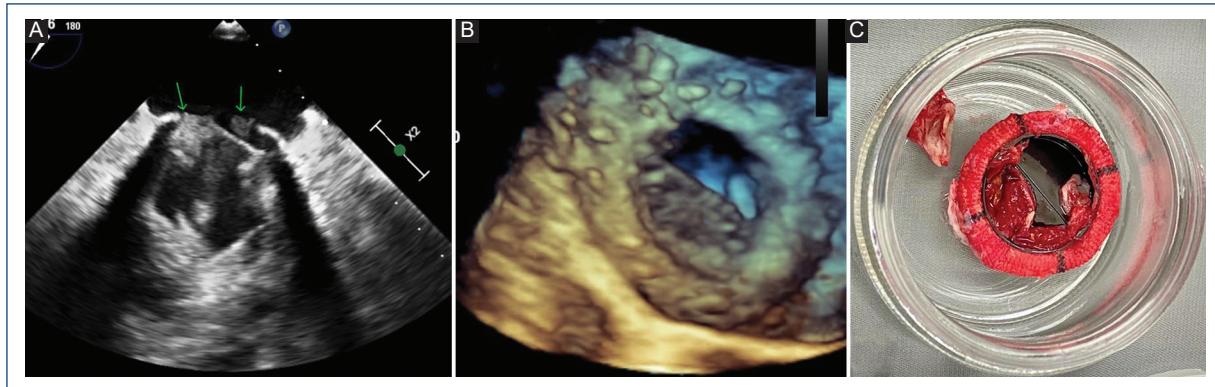
Date of acceptance: 10-01-2023

DOI: 10.24875/ACM.22000193

Available online: 20-10-2023

Arch Cardiol Mex. 2023;93(4):502-503

[www.archivoscardiologia.com](http://www.archivoscardiologia.com)



**Figure 2.** **A:** prosthetic valve thrombosis in 2D image (arrows). **B:** 3D rendering (transesophageal echocardiogram), and **C:** post-operative *in vivo* explanted valves showing prosthetic valve thrombosis.

complications. Pathology study confirms previous findings, and specimen cultures are negative. During follow-up, she remains in good condition.

This clinical case report highlights the important relationship between subtherapeutic anticoagulant regimen and prosthetic mechanical valve thrombosis (PVT). Definitive diagnosis is made with clinical criteria (acute onset of dyspnea and pulmonary edema) and cardiac imaging (echocardiography shows: high velocities and gradients and reduced or no disk opening) or histopathology (thrombus in surgical specimen). Surgery in left PVT is warranted in large thrombus ( $> 0.8 \text{ cm}^2$ ) NYHA class III-IV, left atrial thrombus, and pannus<sup>1</sup>. In lack of these criteria, slow infusion thrombolysis and echocardiographic follow-up is recommended.

## Conclusion

Prosthetic valve thrombosis diagnosis is initially suspected on a clinical scenario, then supported by cardiac imaging, it occasionally needs surgery, to confirm diagnosis, and treat the cause<sup>2</sup>.

## Funding

None.

## Conflicts of interest

None.

## Ethical disclosures

**Protection of human and animal subjects.** The authors declare that no experiments were performed on humans or animals for this study.

**Confidentiality of data.** The authors declare that they have followed the protocols of their work center on the publication of patient data.

**Right to privacy and informed consent.** The authors have obtained approval from the Ethics Committee for analysis and publication of routinely acquired clinical data and informed consent was not required for this retrospective observational study.

## References

1. Dangas GD, Weitz JI, Giustino G, Makkar R, Mehran R. Prosthetic heart valve thrombosis. *J Am Coll Cardiol.* 2016;68:2670-89.
2. Lancellotti P, Pibarot P, Chambers J, Edvardsen T, Delgado V, Dulgheru R, et al. Recommendations for the imaging assessment of prosthetic heart valves: a report from the European association of cardiovascular imaging endorsed by the Chinese society of echocardiography, the inter-American society of echocardiography, and the Brazilian department of cardiovascular imaging. *Eur Heart J Cardiovasc Imaging.* 2016;17:589-90.