

Images in
Cardiovascular Disease



Aortic Root Honeycomb: A Rare Cardiac Surgery Complication

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cited.

A 33-year-old male was being followed in the cardiology outpatient clinic, after a tricuspid aortic valve replacement with a double-disc mechanical valve due to rheumatic aortic valve disease (**Movies 1** and **2**). The postoperative period was complicated by mediastinitis and *Saphylococcus aureus* bacteremia (without evidence of endocarditis), which resolved after a four-week course of targeted antibiotic therapy. The patient had no other relevant past medical conditions and was medicated with warfarin. No other clinically relevant events were reported since the valvular surgery and an echocardiography performed one year after the surgery revealed a normally functioning aortic prosthesis.

Two years after the surgery, a routine transthoracic echocardiogram revealed a perivalvular jet and left heart chamber enlargement. The patient was asymptomatic and the inflammatory parameters were normal. A transesophageal echocardiogram showed a hypoechoogenic image around the aortic prosthesis in the short-axis view between 9 am and 3 pm, with a peculiar appearance of a honeycomb, with flow inside and a severe eccentric jet of insufficiency originating from the saccular formation in the aortic-mitral fibrous curtain directed to the exit chamber of the left ventricle (**Figures 1** and **2**, **Movies 3-5**). Computerized tomography coronary angiogram revealed an extensive pseudoaneurysm of the aortic root with involvement of approximately 3-quarters of the prosthetic circumference, the main cavity was



Figure 1. Transesophageal echocardiogram (short-axis view): hypoechoogenic image around the aortic prosthesis in the short-axis view, with a peculiar appearance of a honeycomb.

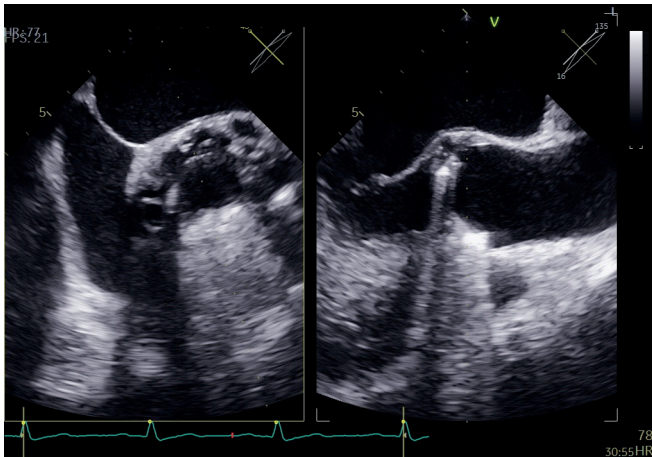


Figure 2. Transesophageal echocardiogram (left: short-axis view; right: long axis view): hypoechoic image around the aortic prosthesis.

The patient was then referred for cardiac surgery and was submitted to a combined replacement of the ascending aorta and the aortic valve, with a Dacron tube and a mechanical prosthesis, respectively. Intraoperatively, a dehiscence of the prosthetic aortic valve (at the level of the left coronary and non-coronary leaflets) and areas of false aneurysm in the subvalvular plane were evident. The patient presented a favourable evolution during hospitalization and after discharge in the control echocardiogram there was no evidence of recurrence of the pseudoaneurysm.

Aortic root pseudoaneurysm is a rare complication after cardiac surgery, and the most common risk factors are mediastinitis and graft infection. This condition carries a high risk of rupture, therefore, its identification and management are essential to avoid a potentially fatal outcome.^{1,2)}

located posteriorly with extension to the mitroaortic curtain (35 × 15 × 13 mm) and another cavity was located laterally-left and anteriorly (28 × 17 × 17 mm), conditioning prosthetic leaks (**Figures 3 and 4**), plus mild prosthetic oscillation (rocking) with good kinetics of the discs (**Movie 6**).

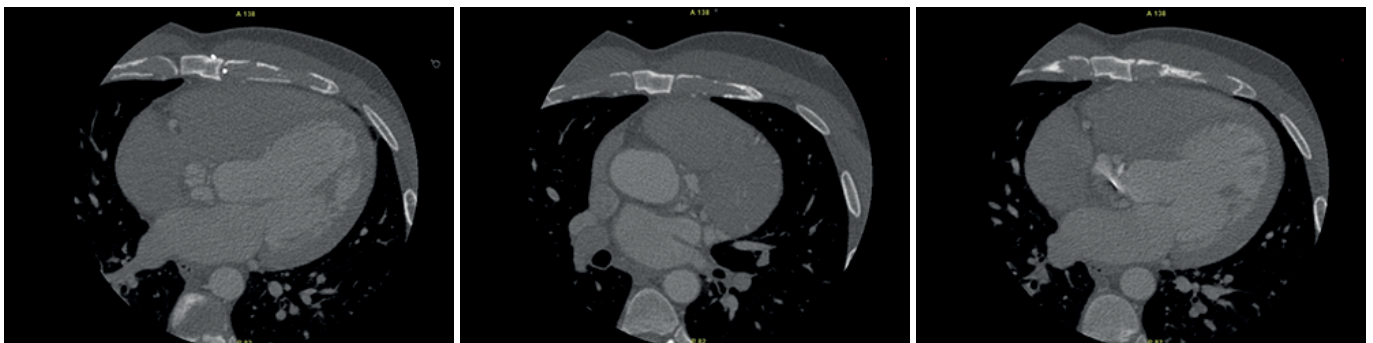


Figure 3. Computerized tomography coronary angiogram: extensive pseudoaneurysm of the aortic root.



Figure 4. Computerized tomography coronary angiogram: extensive pseudoaneurysm of the aortic root.

SUPPLEMENTARY MATERIALS

Movie 1

Transthoracic echocardiogram (parasternal long axis, long axis view): tricuspid aortic valve disease with cusp thickening and retraction during closure.

[Click here to view](#)

Movie 2

Transthoracic echocardiogram (apical 3-chamber view, Color Doppler): tricuspid aortic valve disease with cusp thickening and retraction during closure, leading to a severe central insufficiency jet.

[Click here to view](#)

Movie 3

Transesophageal echocardiogram (left: short-axis view; right: long axis view): hypoechogenic image around the aortic prosthesis in the aortic-mitral fibrous curtain.

[Click here to view](#)

Movie 4

Transesophageal echocardiogram (short-axis view, Color Doppler): hypoechogenic image around the aortic prosthesis in the short-axis view between 9 am and 3 pm, with a peculiar appearance of a honeycomb, with flow inside and an eccentric jet of insufficiency originating from the saccular formation.

[Click here to view](#)

Movie 5

Transesophageal echocardiogram (long-axis view, Color Doppler): hypoechogenic image around the aortic prosthesis in the aortic-mitral fibrous curtain, with flow inside, and a severe eccentric jet of insufficiency originating from the saccular formation in the aortic-mitral fibrous curtain directed to the exit chamber of the left ventricle.

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Movie 6

Computerized tomography coronary angiogram: extensive pseudoaneurysm of the aortic root and mild prosthetic oscillation (rocking) with good kinetics of the discs.

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Conflict of Interest

The authors have no financial conflicts of interest.

Author Contributions

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REFERENCES

1. Chu LC, Johnson PT, Cameron DE, Fishman EK. MDCT evaluation of aortic root surgical complications. *AJR Am J Roentgenol* 2013;201:736-44. [PUBMED](#) | [CROSSREF](#)
2. Tsai KT, Cheng NJ, Chu JJ, Lin PJ. Aortic root pseudoaneurysm following surgery for aortic valve endocarditis. *Chang Gung Med J* 2002;25:133-8. [PUBMED](#)