

## Aorto-Mitral Discontinuity Caused by Infectious Endocarditis: Case Report

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### Abstract

### Case Report

Aorto-mitral discontinuity is uncommon complication of infective endocarditis. In the reported case, images were produced using transthoracic echocardiograms and transesophageal echocardiograms. The latter revealed aorto-mitral discontinuity and a perforated aortic valve aneurysm of the anterior leaflet. These additional examinations may assist in the planning of surgical procedures usually including double valve replacement in addition to aortic root replacement/repair.

**Keywords:** Infective endocarditis; transesophageal echocardiogram; transthoracic echocardiogram, bicuspid aortic valve, aorto-mitral discontinuity, aortic coarctation.

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## INTRODUCTION

Aorto-mitral discontinuity is an exceptional critical complication associated with infective endocarditis (IE). We herein report a case with unusual aorto-mitral discontinuity caused by IE, which was identified using transthoracic echocardiograms (TTEs) as well as transesophageal echocardiograms (TEEs). Through this approach, we detected aorto-mitral discontinuity associated with anterior aortic valve aneurysm perforation.

## CASE REPORT

A 21-year-old man was admitted to emergency department for breathlessness and neurosensory signs. He had no predisposing valvular heart diseases, however the patient reports the notion of an unquantified prolonged fever with alteration of the general condition 2 years ago. The initial review finds a conscious patient with a body temperature of 36.8°C, heart rate of 74 beats/min, blood pressure of 210/80 mmHg symmetrical, and percutaneous oxygen saturation of 97% on room air, as well as diastolic heart murmur at the third right sternal border (Levine III/VI), carotid hyperpulsatility, strong pulses in the upper limbs and weak pulses in the lower limbs.

The EKG shows left ventricular hypertrophy with secondary repolarization disorder. Computed

Tomography (CT) Chest found Localized coarctation (CoA) of the aortic isthmus (fig.1A) associated with arteria lusoria (ARSA) and aortic paravalvular sacciform aneurysmal dilation (Fig 1B).

TEEs showed bicuspid aortic valve (BAV) type 1 L-R (Fig 3A) with a prolapse of the non-coronary cusp, ruptured aneurysmal formation in the mitro aortic trine with loss of continuity (Fig 3B), causing severe aortic regurgitation AR (Fig 2A). The left ventricular (LV) was dilated with dimension at the diastolic phase was 63 mm, at the systolic phase was 48mm, and hypertrofied with 13 mm for the interventricular septum, 14 mm for the LV posterior wall and the ejection fraction was still preserved (estimated at 60% by the biplane simbson method), dilated auricles and presence of isthmic coarctation.

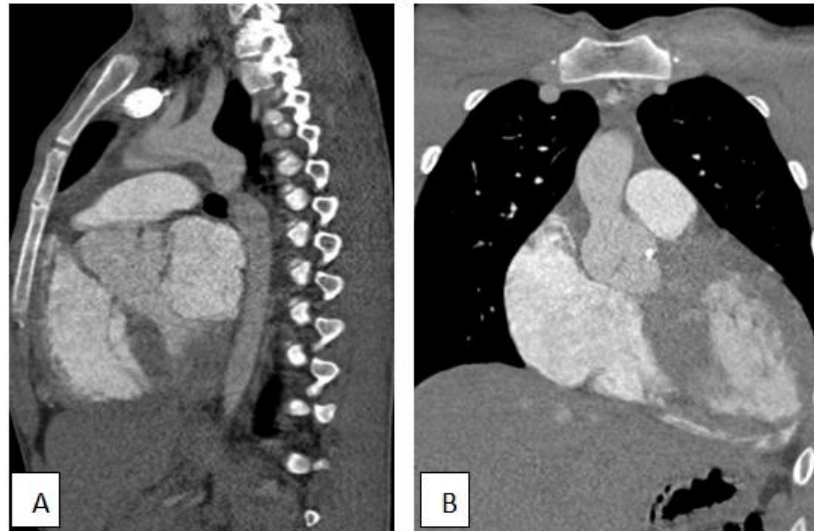
The laboratory data was normal: white blood cells/CRP/SR Intraoperative findings revealed aorto-mitral discontinuity and a perforated aortic valve with non perforated aneurysm of the anterior leaflet (Fig 3A) and isthmic coarctation.

The operating procedure consisted of a replacement of the aortic valve, cure of the coarctation and closure/patching of the mitro aortic discontinuity. The micropathological findings of the excised aortic valve revealed infiltrations of lymphocytes, plasma

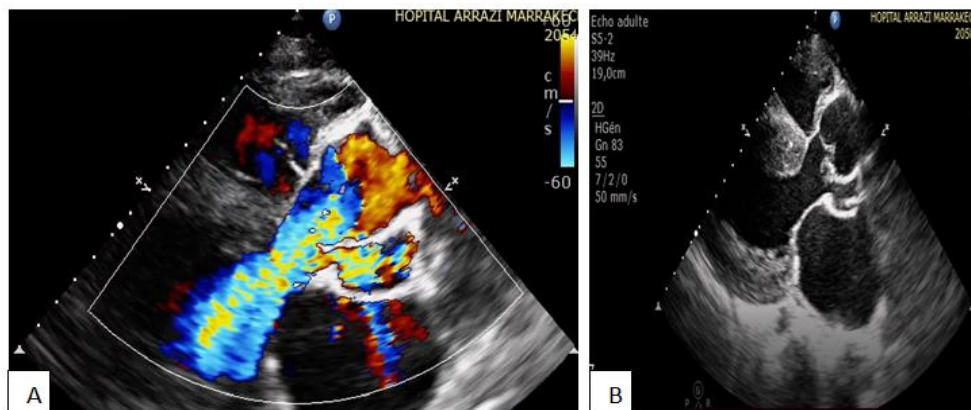
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cells, histiocytes, and a small amount of eosinophils, findings that were compatible with changes caused by IE, although no bacterial bodies were detected. The

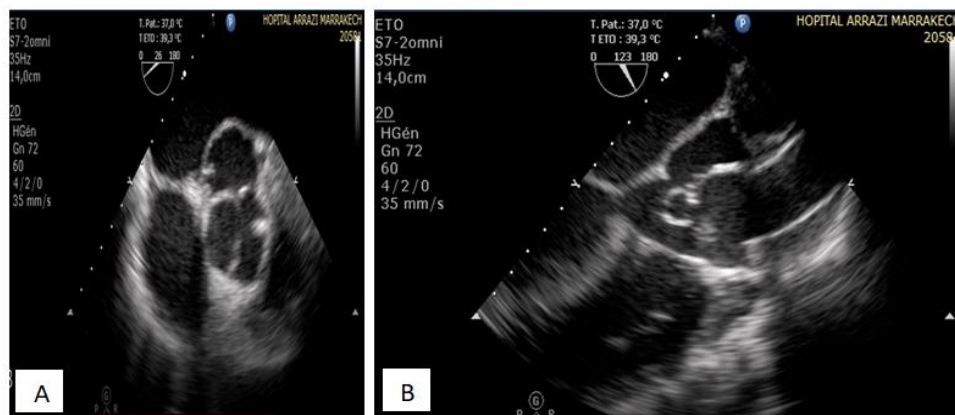
clinical course subsequent to the surgical procedure was good. The patient was followed without complications at our outpatient department.



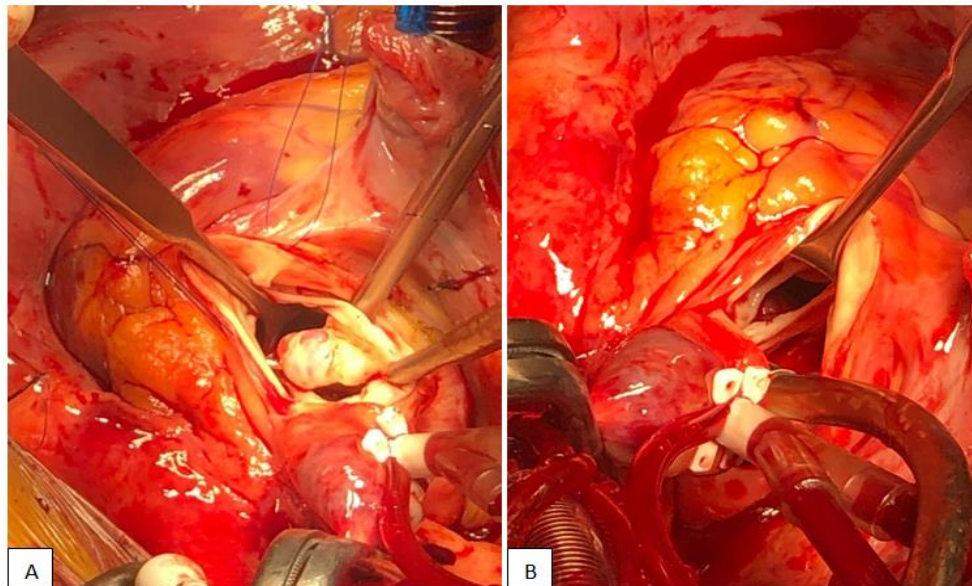
**Figure 1: Thoracic CT scan demonstrating: A) Localized coarctation of the aortic isthmus, B) Aortic paravalular sacciform aneurysmal dilation**



**Figure 2: TTEs showing: A) Right panel of apical long-axis view with color Doppler demonstrating mitral valve aneurysm of the anterior leaflet and severe mitral regurgitation. B) Parasternal long-axis view demonstrating aneurysmal change of aorto-mitral discontinuity**



**Figure 3: TTEs findings of a patient with aorto-mitral discontinuity caused by infective endocarditis, (A) View showing bicuspid aortic valve (BAV) type 1 L-R, (B) View demonstrating aneurysmal change of aorto-mitral discontinuity**



**Figure 4:** (A) Intraoperative image showing non perforated aneurysm of the anterior leaflet, (B) Bicuspid aortic valve (BAV)

## DISCUSSION

1. In the case described here, infective endocarditis grafted onto a bicuspid aortic valve causing severe AR, mitro aortic discontinuity and pseudo aneurysm of the anterior leaflet. In this regard, the BAV type 1 (with one raphe) was the most common type observed in 0,7% of 2053 patients with cardiovascular diseases [1]. However, the coexistence of BAV and right ARSA has only been reported in single cases, mostly in the paediatric patients [2]. Both BAV and CoA as Congenital Heart Disease (CHD) are commonly associated in 85% of cases and can be present together with subvalvular, valvular or supravalvular aortic stenosis and malformation of the mitral valve with mitral valve stenosis [3].

In the present case, the severity of AR is due to both BAV and unsuitable past IE. We would like to emphasize that even individuals without predisposing cardiac diseases can be complicated with severe valvular heart disease associated with IE. The prevalence of aorto-mitral discontinuity has been shown to be as high as 10.6% among cases of left-sided IE [4], and in left-sided double-valve IE, aorto-mitral discontinuity reconstruction is required in 28% of cases [5].

There is wide agreement about the indications and role of surgery for IE [6], more than half of patients with IE have been surgically treated, although the extent and complexity of the surgical procedure have been shown to be associated with a poor prognosis, with an early mortality rate ranging between 10% and 32% [7], It is important to be aware of cases complicated with aorto-mitral discontinuity that require additional surgical procedures among patients with IE, particularly those with left-sided double-valve IE.

## CONCLUSION

Surgical treatment of extensive aortic valve infective endocarditis remains a challenge. Outcomes were not affected by the surgical complexity of aortic reconstruction procedure or valve substitute. Surgical approach should be tailored to individual patient's characteristics.

## BIBLIOGRAPHIE

1. Szymczyk, K., Polguy, M., Szymczyk, E., Bakoń, L., Pacho, R., & Stefańczyk, L. (2016). Assessment of aortic valve in regard to its anatomical variants morphology in 2053 patients using 64-slice CT retrospective coronary angiography. *BMC Cardiovascular Disorders*, 16(1), 1-9.
2. Tyczyński, P., Michałowska, I., Fronczak, A., Wolny, R., Łazarczyk, H., Kocańda, S., ... & Witkowski, A. (2017). Coexistence of bicuspid aortic valve, aberrant right subclavian artery and common origin of carotid arteries. *Folia Morphologica*, 76(3), 414-419.
3. Sinning, C., Zengin, E., Kozlik-Feldmann, R., Blankenberg, S., Rickers, C., von Kodolitsch, Y., & Girdauskas, E. (2018). Bicuspid aortic valve and aortic coarctation in congenital heart disease—important aspects for treatment with focus on aortic vasculopathy. *Cardiovascular diagnosis and therapy*, 8(6), 780.
4. Forteza, A., Centeno, J., Ospina, V., Lunar, I. G., Sánchez, V., Pérez, E., ... & Cortina, J. (2015). Outcomes in aortic and mitral valve replacement with intervalvular fibrous body reconstruction. *The Annals of Thoracic Surgery*, 99(3), 838-845.
5. Sheikh, A. M., Elhenawy, A. M., Maganti, M., Armstrong, S., David, T. E., & Feindel, C. M. (2009). Outcomes of double valve surgery for active infective endocarditis. *The Journal of*

*Thoracic and Cardiovascular Surgery*, 138(1), 69-75.

6. Nishimura, R. A., Otto, C. M., Bonow, R. O., Carabello, B. A., Erwin, J. P., Guyton, R. A., ... & Thomas, J. D. (2014). 2014 AHA/ACC guideline for the management of patients with valvular heart disease: executive summary: a report of the American College of Cardiology/American Heart Association Task Force on Practice Guidelines. *Journal of the American College of Cardiology*, 63(22), 2438-2488.
7. Forteza, A., Centeno, J., Ospina, V., Lunar, I. G., Sánchez, V., Pérez, E., ... & Cortina, J. (2015). Outcomes in aortic and mitral valve replacement with intervalvular fibrous body reconstruction. *The Annals of Thoracic Surgery*, 99(3), 838-845.