

# Aortocavitory Fistula to Right Ventricle: A Rare Complication of Infective Endocarditis

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## ABSTRACT

Published on 30<sup>th</sup> December 2023

Aortocavitory fistulas are one of the rare complications of infective endocarditis. These fistulas can even cause cardiac failures which mandate a surgical correction. This is a case report of a 38-year-old male who is a known case of rheumatic valvular heart disease, developed aortocavitory fistula following an attack of infective endocarditis.

**Keywords:** Infective Endocarditis, Aortocavitory fistula

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## INTRODUCTION

Infective endocarditis (IE) predominantly occurs in valves with preexisting pathology. IE is a disease with relatively high morbidity and mortality with an annual incidence of 13.8 cases per 100,000 subjects.<sup>1</sup> Patients with rheumatic heart disease have an intermediate risk of IE.<sup>1</sup> IE can present in various forms depending upon the degree of involvement of valve leaflets and sub valvular apparatus. Abscess formation and development of pseudoaneurysm can lead to abnormal communication between the aortic root and various cardiac chambers called Aortocavitory fistula (ACF).<sup>2</sup>

## CASE REPORT

A 38-year-old male k/c/o rheumatic heart disease presented to the outpatient department (OPD) with fever and breathlessness. He was diagnosed to have rheumatic fever with valvular involvement in 2006 and was on irregular follow up. Patient is a smoker. No surgical intervention in past.

Patient had on and off fever for past 2 weeks. one or two fever episode per day. Fever was associated with chills and rigor. Breathlessness started one week after fever. Occurred during exertion and no history of orthopnoea.

Examination of the patient showed a radial pulse of high volume and collapsing nature with a rate of 85 beats/min blood pressure 100/40 mm of Mercury, oxygen saturation (SPO<sub>2</sub>) 96% in room air. Examination of cardiovascular system showed an apex beat at left 6<sup>th</sup> intercostal space 2cm lateral to midclavicular line which was diffuse and forceful in character. 2/4 long end diastolic murmur in aortic area and 3/6 pansystolic murmur at the apex. Traube sign and Durozeiz sign and Quincke sign were present. On examination abdomen, no visible or palpable pulsation were

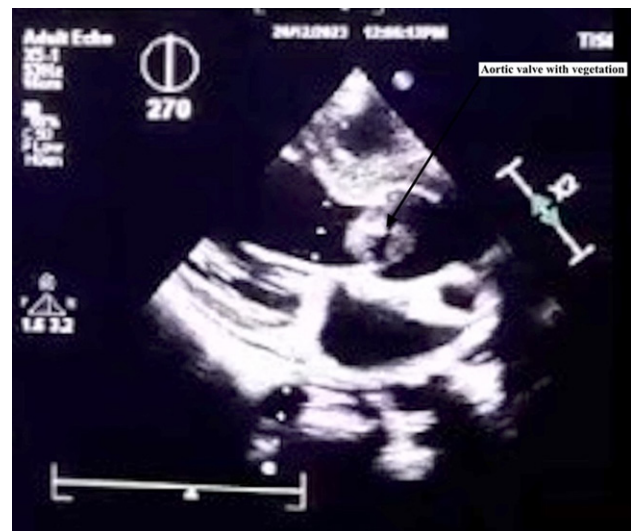


Figure 1. Echo showing aortic vegetation and thickened aortic valve

Cite this article as: Philip AK, Vinu CV, George N, Lal K, Nair AS, Yoganadhan PP. Aortocavitory Fistula to Right Ventricle: A Rare Complication of Infective Endocarditis. Kerala Medical Journal. 2023 Dec 30;16(1):25-8 | DOI: <https://doi.org/10.52314/kmj.2023.v16i1.615>

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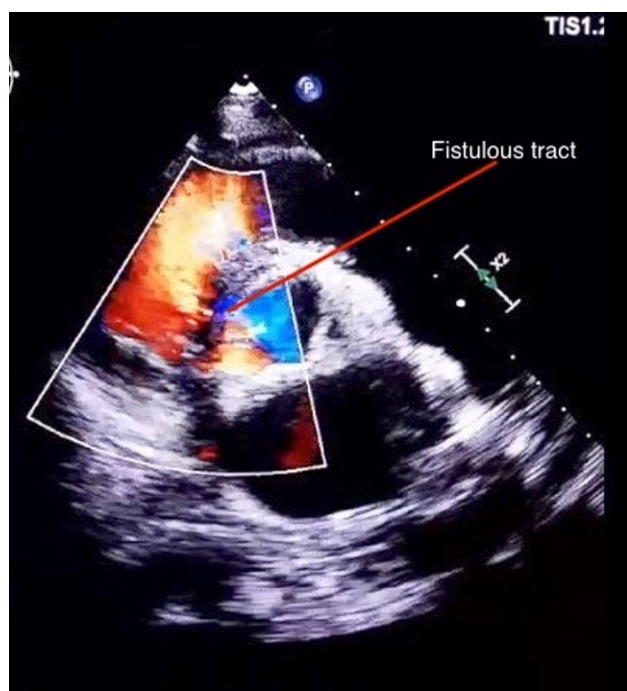


Figure 2. Showing fistulous tract between aorta and right ventricle

present. Skin did not show any focus of infection but multiple infected teeth were present.

Laboratory showed haemoglobin of 8.8g/dl, Total WBC count 14000 with differential count of N85,L15,ESR 50mm/hr, renal function test and liver function tests parameters were in normal range. Trans thoracic echocardiogram (TTE) showed a thickened aortic valve with vegetation, severe aortic insufficiency and mild mitral regurgitation (Figure 1). Blood culture showed growth of *Staphylococcus aureus* sensitive to

vancomycin and ceftriaxone. Patient was on antibiotics for 21 days. Repeated blood cultures were negative for bacterial and fungal growth. During the course of hospital stay infected teeth were extracted and patient developed features of cardiac failure. Repeat TTE and TEE showed and vegetation in aortic valve (1.5cm x 1cm) with severe aortic insufficiency and fistulous tract between right coronary sinus and right ventricle (Figure 2).

Surgical correction of severe aortic insufficiency (Aortic valve replacement using 23mm TTK Chitra mechanical tilting disc valve) and primary closure aortic end of fistulous tract using pledgeted sutures along with debridement of all infected tissue (Figure 3). Post-operative period was uneventful. Echo done on post-operative day 5 showed normal functioning prosthetic valve with preserved ventricular function and no residual shunt.

## DISCUSSION

Formation of periannular abscesses are known complication of IE.<sup>[3]</sup> However, progression of periannular abscess into ACF is about 2.2% in native valve endocarditis and is about 5.8% individuals with prosthetic valve endocarditis.<sup>3,4</sup> Destruction of valvular and perivalvular tissue by infectious organism cause formation of ACF. This abnormal pathways can cause flow dynamic similar to other valvular pathologies. ACF causing left to right shunt can cause significant hemodynamic instability.<sup>4,6</sup>

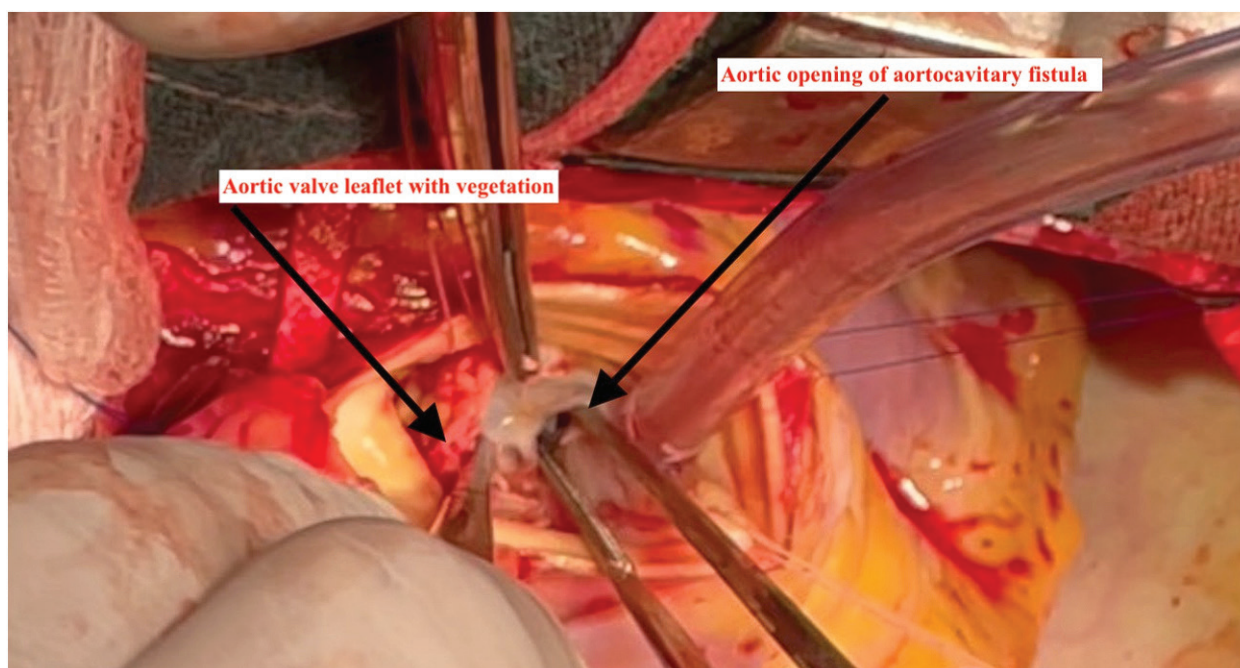


Figure 3. Intraoperative picture showing opening of aortocavitary fistula in the right coronary sinus

Prevalent organism causing IE are Staphylococcus aureus, Streptococcus spp, Enterococcus spp.<sup>4</sup> Infections of the skin, genitourinary tract, oral cavity, direct inoculation are the common entry points of organism to blood. Patient with rheumatic heart disease have an intermediate risk of developing IE.<sup>1</sup> Clinical presentation of ACF can vary from an insignificant murmur to overt cardiac failure. Size of the shunt is an important parameter in determining the severity of disease and clinical course. Common type of ACF are aorto-right atrial type or aorto-pulmonary type. Aorto-right ventricular fistulas are far more less common.<sup>5</sup>

ACF predominantly occur as result of infection of prosthetic valve in aortic position followed by infection native aortic valve and rarely in right sided valve infection. Echocardiography is the initial investigation in evaluating IE. Even though TTE is easy to perform and less invasive, TEE provide more information regarding anatomy of valves and its function.<sup>6</sup>

Cardiac CT is an excellent complimentary investigation especially when echocardiography is inconclusive. Cardiac CT provide information regarding coronary anatomy which precludes invasive coronary angiography.<sup>6</sup>

Surgical correction is considered to be the preferred treatment of ACF. It mainly includes removal of all necrotic valvular and perivalvular tissue, exclusion of fistulous tract and if necessary valve replacement. Valve replacement can be performed using mechanical or bioprosthetic valve, pulmonary autograft or homograft. Surgical management is associated with a 92% freedom from recurrent infection. About 75% cases were free of reoperation for a time span of 17 years.<sup>7</sup> Mortality associated with surgical management ranges from 13%-26%.<sup>8</sup> Transcatheter closure of ACF has also been met with variable success.<sup>7</sup>

## CONCLUSION

Fever in patients with known valvular heart disease and new cardiac murmurs should be promptly evaluated. Destruction of valvular and paravalvular tissue can lead to rare complications. Surgical corrections plays an important role management of many of the complications of IE.<sup>3</sup>

Conflict of interest and funding: The authors have not received any funding or benefits from industry or elsewhere to conduct this study.

Ethics approval: This case report does not require ethical approval. Consent was taken from patient for publishing data.

Data availability: Data regarding study is available with corresponding author. Data will be provided at request.

## END NOTE

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**Conflict of Interest:** None declared

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