

# Functional mitral stenosis: a result of bacterial endocarditis

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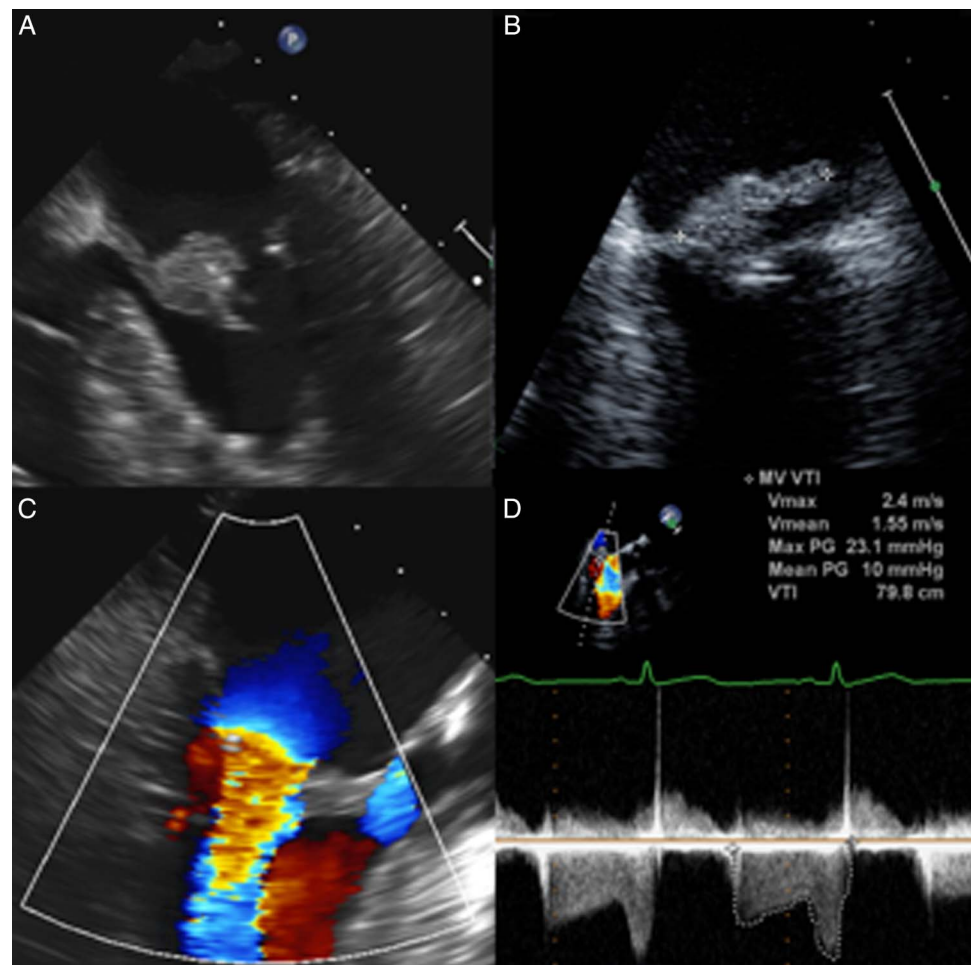
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## DESCRIPTION

A 72-year-old man received a non-emergent drug-eluting stent to mid-right coronary artery (RCA) for chest pain. He represented 3 weeks later with congestive cardiac failure and rigours. Blood cultures grew *Streptococcus sanguinis* (viridans); there was no history of rheumatic disease; however, a root canal abscess was treated 3 months prior. Transthoracic echocardiograms (TTE) revealed a thickened anterior mitral valve (MV) and posterior directed jet of mitral regurgitation as well as thickened, restricted posterior mitral valve leaflet (PMVL) with an insignificant gradient of 3 mm Hg. Transoesophageal echocardiogram (TOE) revealed a large 3.0×1.5 cm anterior MV vegetation causing functional mitral stenosis (MS) with a mean gradient of 10 mm Hg (figure 1). He went on to receive a mechanical MV replacement 5 days after diagnosis.

Infective endocarditis (IE) typically results in valvular insufficiency and rarely causes obstructive or functional stenosis like in this case. A considerable portion occur in patients with preexisting MS.<sup>1</sup> Inflammation from IE may be confined to the surface of the valve, perpetuating endothelial damage while preserving underlying tissue architecture. Bacterial growth and deposition of fibrin and platelets across the expanding inflamed endocardium surface propagates further vegetation until the accumulative expansion becomes obstructive, leading to valvular stenosis.

Given the rarity of bacterial endocarditis causing valvular stenosis, fungal endocarditis is usually suspected; however, Staphylococci organisms appear to be the most common bacteria.<sup>2</sup> Treatment is medically challenging and invariably requires surgery. Early recognition and management is



**Figure 1** Transoesophageal echocardiogram findings: (A) mid-oesophageal four chamber view showing 3.0×1.5 cm anterior mitral valve vegetation, (B) mid-oesophageal at 54° showing larger anterior mitral valve leaflet vegetation, (C) mid-oesophageal long axis showing posterior directed jet of mitral regurgitation, and (D) continuous wave Doppler with a mean gradient of 10 mm Hg.



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crucial, with TOE being the accepted diagnostic investigation. Heart failure is the most common cause of death.

### Learning points

- ▶ Bacterial infective endocarditis typically results in valvular insufficiency and rarely causes a functional obstruction.
- ▶ Inflammation of valve surface perpetuates endothelial damage while preserving underlying tissue architecture. Fibrin, platelets and bacterial growth aggregate to eventually cause obstruction.
- ▶ Early diagnosis (transoesophageal echocardiogram) and management (usually surgery) are crucial for patient outcomes.
- ▶ Heart failure is the commonest cause of death.

**Contributors** AMD recognised and conceived the case. NMM and MTL contributed to the researching, editing, refinement and submission of the paper. All authors reviewed and approved the final manuscript.

**Competing interests** None declared.

**Patient consent** Obtained.

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