

# A parachute-like mitral valve with a unique calcification pattern

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ESC curriculum 2.1 Imaging modalities • 2.2 Echocardiography • 2.3 Cardiac magnetic resonance • 2.4 Cardiac computed tomography

## Case description

A 78-year-old patient with ischaemic cardiomyopathy was brought to our emergency department following arrhythmic syncope due to persistent ventricular tachycardia (VT), terminated by antitachycardia pacing by his internal defibrillator. Ventricular tachycardia did not reoccur after initiation of amiodarone therapy.

Emergent transthoracic echocardiography (TTE) showed moderate impairment of left ventricular systolic function due to akinesia of the lateral and infero-lateral walls, in the presence of known chronic total occlusion of the circumflex artery. However, an echo-rich ‘double contour’ of the mitral valve (MV) apparatus ([Figure 1A](#)) stood out, which seemed to attach to the anterolateral papillary muscle (APPM). Initial suspicion of a trapped foreign body, e.g. broken catheter after multiple transaortic and transeptal VT ablation procedures, was dispelled after reviewing older TTE investigations.

The two structures, each measuring  $3 \times 11 \times 18$  mm, had high density (1022 HU) on cardiac computed tomography (CT; [Figure 1B](#)). Surprisingly, the MV and the papillary muscles showed no calcifications. On cardiac magnetic resonance imaging (MRI), the APPM was the dominant muscle and received almost all chordae tendineae, both the calcified marginal and the non-calcified basal and intermediate chordae<sup>1</sup> ([Figure 1C and D, Supplementary material online, Video S1](#)). This morphology resembled a parachute MV.<sup>2</sup> Furthermore, transoesophageal echocardiography revealed moderate mitral regurgitation of predominantly functional cause ([Figure 1E](#)), without stenosis. Biannual TTE investigations were recommended.

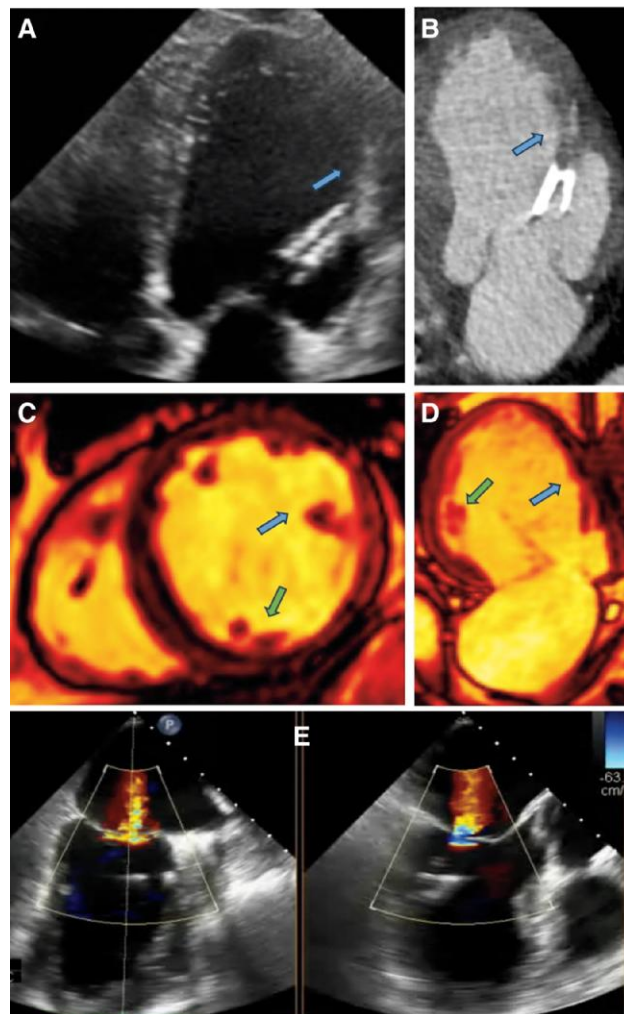
In summary, an isolated calcification of the marginal chordae tendineae was found in a ‘parachute-like’ MV with a dominant APPM. This calcification probably led to stabilization of the asymmetric MV apparatus. Anatomical knowledge and understanding of MV morphology, aided by multimodality imaging, are crucial in distinguishing between benign and serious echocardiographic findings.

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**Figure 1** Transthoracic four-chamber view (A) shows an echo-rich double-contour structure connected to the anterolateral papillary muscle (blue arrow) and both mitral valve leaflets, confirmed as calcified marginal chordae tendineae by cardiac computed tomography (B). The anterolateral papillary muscle was the dominant papillary muscle on cardiac magnetic resonance imaging (C, D), in contrast to the smaller posteromedial muscle (green arrow), pointing to parachute-like mitral valve morphology with moderate mitral regurgitation (E) of mixed cause, predominantly functional.

## Supplementary material

Supplementary material is available at *European Heart Journal – Case Reports* online.

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## Data availability

The data underlying this article will be shared upon reasonable request to the corresponding author.

## References

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