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## Images in Cardiology

## An unusual cause of left ventricular outflow tract obstruction

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## ABSTRACT

Left ventricular outflow tract obstruction (LVOTO) has been reported with bio-prosthetic and mechanical mitral valves (MV), though it is more common with the former. The obstruction can be dynamic or fixed. We hereby report a case of fixed LVOTO following bio-prosthetic MV replacement (MVR).

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A 48 year female, two years post Mitral Valve Replacement (MVR) with 29 mm Carpentier-Edwards Pericardial Bio-prosthesis for calcific severe Rheumatic Mitral Stenosis, presented with 6 months history of NYHA class II exertional dyspnea. The immediate post-operative period was uneventful. Her echocardiogram demonstrated normal functioning prosthetic MV and normal left ventricular (LV) function with evidence of left ventricular hypertrophy. The mean gradient across LVOT was 53 mmHg (Fig. 1A). Careful examination of LVOT in parasternal-long-axis view demonstrated the abnormal orientation of mitral prosthesis with one of its strut obstructing the LVOT; Aortic valve appeared normal (Fig. 1B, Video 1). Color Doppler examination showed flow turbulence at the site where the strut of mitral prosthesis obstructed the LVOT (Fig. 1C, Video 2). Pulse wave Doppler across the aortic

valve in apical 5-chamber view demonstrated a peak gradient of only 14 mmHg (Fig. 1D).

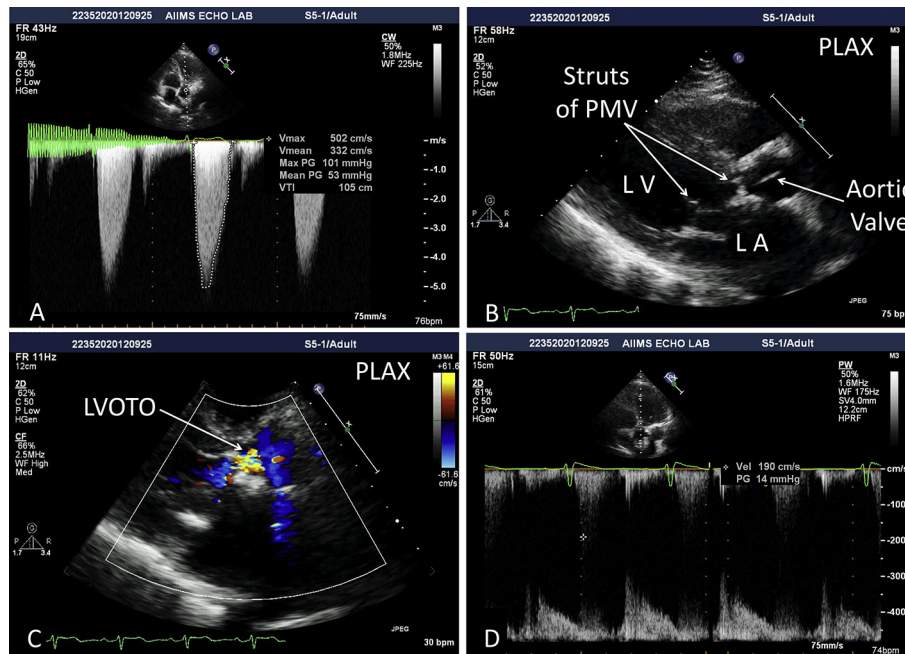
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Left ventricular outflow tract obstruction (LVOTO) has been reported with bio-prosthetic and mechanical mitral valves (MV), though it is more common with the former. The obstruction can be dynamic or fixed. Fixed LVOTO after MVR most frequently results from protrusion of a high-profile biological prosthesis into LVOT or from abnormal subvalvular positioning of the prosthesis. Transient or dynamic obstruction after MVR may occur due to a thickened interventricular septum, reduced LV dimensions, hypercontractile left ventricle or atrial fibrillation. Dynamic obstruction may

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**Fig. 1 – A:** Continuous wave doppler across left ventricular outflow tract in apical 5-chamber view measuring a mean gradient of 53 mmHg. **B:** Parasternal long axis view showing normal aortic valve leaflets with strut of Prosthetic Mitral Valve (PMV) obstructing the Left Ventricular Outflow Tract (LVOT). **C:** Color doppler across left ventricular outflow tract (LVOT) in parasternal long axis (PLAX) view showing flow turbulence; LVOTO – LVOT obstruction. **D:** Pulse-wave doppler across aortic valve measuring a peak gradient of 14 mmHg across aortic valve.

respond to beta-blockers. Once the diagnosis of severe LVOTO is made, a conservative therapeutic approach may lead to insidious development of LV failure with an adverse clinical outcome; early surgery is recommended. Our patient was advised redo mitral valve surgery, however the patient was lost to follow up.

### Conflicts of interest

The authors have none to declare.