

## CASE IMAGE

## A case of mitral regurgitation causing patent foramen ovale behaving like an atrial septal defect: A rare finding in an adult patient

Patent foramen ovalenin atriyal septal defekt gibi davranmasına neden olan mitral yetersizlik olgusu: Yetişkin bir hastada nadir görülen bir bulgu

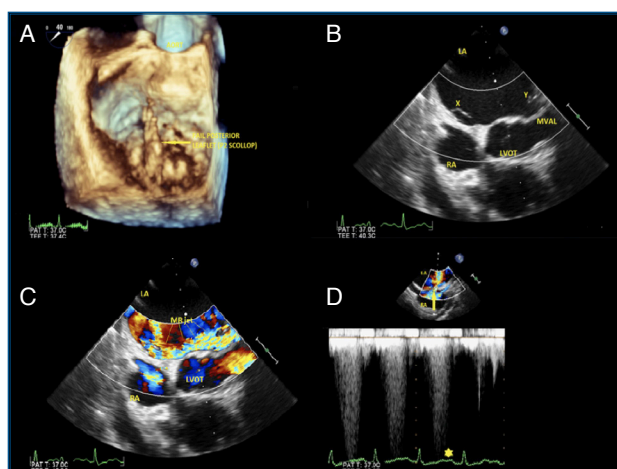
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A 59-years-old female patient presented to our cardiology department with the chief complaint of progressive dyspnea. Medical history of the patient was not conclusive. Physical examination revealed a pan-systolic murmur at apical region radiating to left

axilla. Sinus rhythms together with left ventricular hypertrophy findings were prominent on electrocardiography (ECG). Transthoracic echocardiography (TTE) revealed a normal left ventricular systolic function, moderate left ventricular eccentric hypertrophy, severe mitral regurgitation, and posterior mitral valve prolapse along with posterior mitral valve chordal rupture. The left atrial diameter was 59 mm. There was no significant left-to-right atrial shunt on TTE examination. Systolic pulmonary artery pressure was estimated to be 59 mmHg. Ratio of the total pulmonary blood flow to total systemic blood flow was calculated as 1.4. The right ventricle was mildly dilated on TTE, with a basal diameter of 37 mm. The patient underwent a transesophageal echocardiography (TEE) examination to evaluate the mitral valve morphology better. On TEE examination, there was a P2 scallop prolapse and a rupture of the chorda supporting the P2 scallop (Figure 1A, Video 1\*), causing a significant eccentric mitral regurgitation. This significant eccentric mitral regurgitation extended into the right atrium through patent foramen ovale (PFO) by licking left atrial flap of the interatrial septum resulting in a significant left atrial-to-right atrial shunt through the interatrial septum (Figure 1B-C, Video 2\*). The CW Doppler recording of the interatrial septum showed a high velocity (about 320 cm/sec) flow through the interatrial septum (Figure 1D). Although surgical repair of the mitral chorda rupture was planned, the patient refused to be operated on and was discharged without surgery.

Iatrogenic atrial septal defect may be detected either after a septostomy or by the retraction of the left atrial flap by an interatrial septal aneurysm. However, a case of PFO behaving as an atrial septal defect hemodynamical-



**Figure 1.** (A) Three-dimensional image of the chorda rupture and posterior leaflet prolapse; (B) Color-suppressed image showing that the left atrial flap is lifted. (C) It is clearly seen in this image that the jet is passing through the tunnel of patent foramen ovale and proceeding into the right atrium; (D) Transesophageal echocardiography image showing a high velocity (about 320 cm/sec) flow through the interatrial septum. X: left atrial flap of PFO; Y: flail mitral posterior leaflet; LA: left atrium; RA: right atrium; MVAL: mitral valve anterior leaflet; LVOT: left ventricle outflow tract. \*: a high velocity [about 320 cm/sec] flow through the interatrial septum).

ly because of mitral regurgitation has not been reported until now. Thus, our case is the first one in the literature demonstrating a different mechanism of a PFO behaving like an atrial septal defect. The mitral regurgitation jet passes through the tunnel of PFO and extends into the right atrium. Possible mechanism was thought to be due to a high (corresponding to 40 mmHg) blood velocity flow through the defect, which could not be explained by the pressure difference between the left and right atrium. In addition, color Doppler imaging clearly revealed that the regurgitant jet toward PFO and the ratio of the pulmonary circulation to systemic circulation was much higher than expected.

Informed consent was obtained from the patient for the publication of the case image and the accompanying images.

\*Supplementary video files associated with this article can be found in the online version of the journal.

