2 in 1 Mitral Insufficiency: Diagnosis Established with Real-time Three-Dimensional Transesophageal Echocardiography

İkisi Bir Arada Mitral Yetersizliği Nedeninin Gerçek Zamanlı Üç Boyutlu Transözofajiyal Ekokardiyografi ile Tanısı

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A 54-year old man complaining of atypical chest pain presented to the outpatient clinic. He had a history of inferior myocardial infarction treated with primary angioplasty two years ago. Physical examination revealed a grade 4/6 systolic ejection murmur radiating to the axilla. Electrocardiogram showed q waves on inferior leads. An ejection fraction of 40% and posterior wall akinesia were detected on transthoracic echocardiography. Color Doppler showed severe mitral regurgitation jet directed posteriorly suggesting an underlying functional pathophysiology. Two-dimensional (2D) transesophageal echocardiography (TEE) revealed a separate second regurgitation jet on the posterior mitral leaflet (Figure 1). Real-time three-dimensional transesophageal echocardiography (RT-3D TEE) was performed and a posterior mitral cleft between P2 and P3 scallops was observed (Figure 2A). 3D color views allowed better delineation of the spatial orientation of jets and magnitudes as well (Figure 2B). The jet through the cleft was more marked as compared to the central jet. The estimated regurgitation volume and ERO were 60 mL/beat and 28 mm^2, respectively. The low ejection fraction was better accounted for by the previous myocardial infarction rather than the moderate to severe mitral regurgitation. A decision was made to follow the patient medically due to absence of symptoms. Acquired mitral clefts had remained underdiagnosed before development of 3D TEE. Despite accumulating experience with this technique in the past decade, only few cases of acquired posterior mitral clefts were reported[1]. Papillary muscle malposition due to ischemic remodeling and senile degeneration could have had additive effects[2]. In our case, acquired mitral cleft was associated with papillary muscle malposition as a result of previous myocardial infarction. These clefts could be the underlying reason for residual regurgitation observed after mitral repair. We believe that it is crucial to evaluate mitral valve pathologies with 3D TEE for complete elucidation of the valvular pathophysiology.

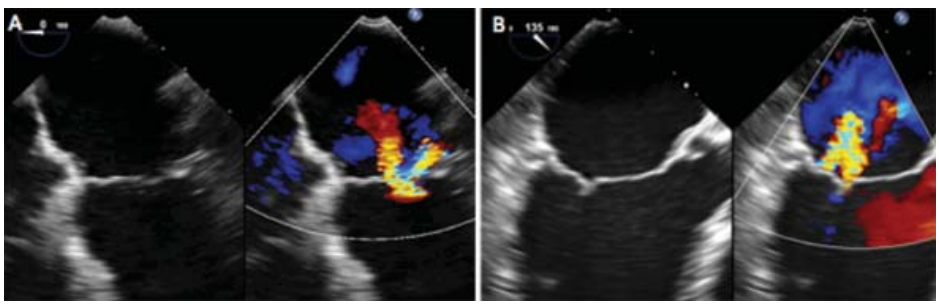

Figure 1. 2D TEE and color doppler, **(A)** Midesophageal four chamber view showing two different regurgitation jets, **(B)** Long axis view showing posteriorly directed jet originating from posterior mitral leaflet.

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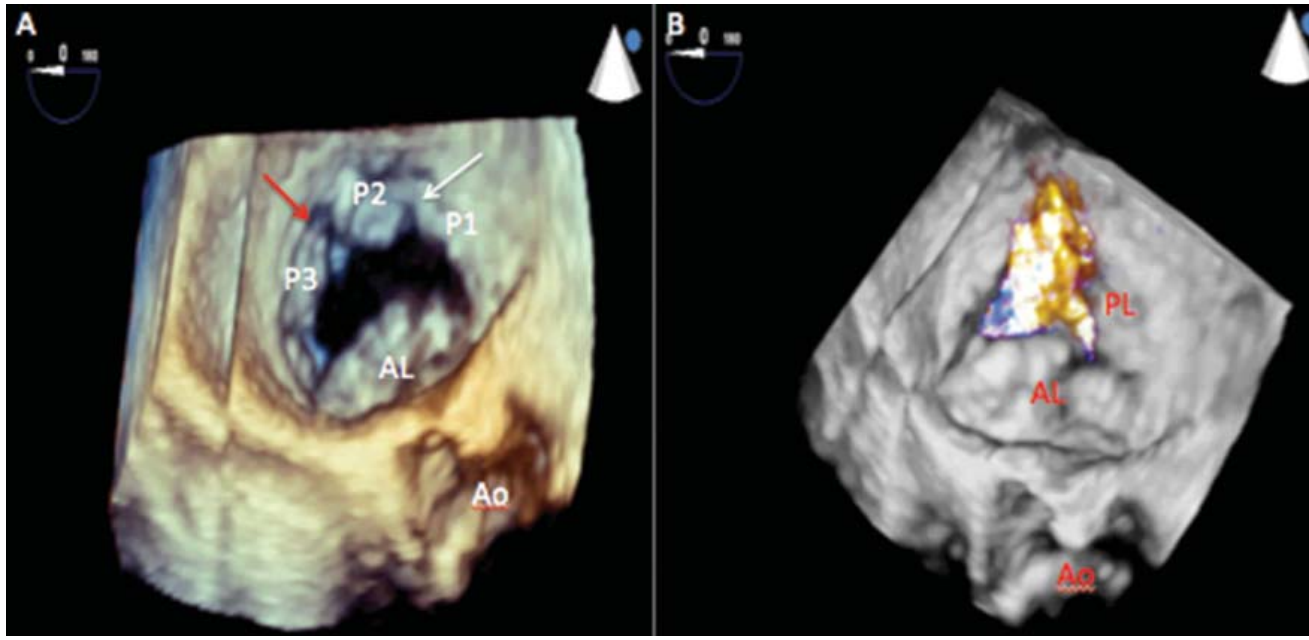

Figure 2. (A) RT-3D TEE demonstrating an indentation between P1 and P2 (white arrow) and a cleft between P2 and P3 scallops (red arrow), **(B)** 3D Color Doppler showing the locations of the jets. (AL: Anterior mitral leaflet, PL: Posterior mitral leaflet, Ao: Aortic Valve).

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