New Echo Window to Quantify Eccentric Mitral Regurgitation Using a Transgastric Approach on Transesophageal Echocardiography

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**Figure.** Transesophageal echocardiography (TEE). (A) Standard TEE 2-chamber view; (B) color Doppler 2-chamber view; (C) transgastric TEE view showing P3 prolapse; (D) color Doppler transgastric view; (E) proximal isovelocity surface area method; (F) continuous wave Doppler signal of the mitral regurgitant jet. LA, left atrium; LV, left ventricle.
Proximal isovelocity surface area (PISA) has been used to quantify mitral regurgitation (MR) volume as well as effective regurgitant orifice area (ERO) in patients with MR. One of the limitations of the PISA method is its Doppler angle dependence. The PISA method requires both color Doppler-derived proximal flow convergence signal measurement and the mitral regurgitant jet signal by continuous wave (CW) Doppler. Because the CW signal needs to be well aligned with the mitral regurgitant jet, it is difficult to maintain adequate CW signal in patients with eccentric regurgitant jet.

Transesophageal echocardiography (TEE) provides better visualization of the mitral valve complex and thus is widely used for the assessment of MR. Recently, we introduced a transgastric approach for TEE as a new echocardiographic window to visualize and to assess subvalvular apparatus including papillary muscles and chordae tendinea.

A 78-year-old man was admitted to hospital because of progressive exertional dyspnea. He had a past history of chronic obstructive pulmonary disease. On physical examination, grade 3/6 pan-systolic murmur was audible at apex. Transthoracic echocardiography showed eccentric MR due to prolapse of the postero-medial leaflet (P3). Because quantitative assessment of the MR was difficult, he underwent TEE. TEE clearly visualized eccentric mitral regurgitant jet from P3 prolapse using standard approaches (Figures A,B). We further inserted the transducer deep into the stomach and tilted up the transducer to obtain a transgastric view (Figures C,D). Using this approach, prolapse of the P3 and the regurgitant jet through the leaflet could be better visualized. In addition, good alignment of the CW Doppler signal with the regurgitant jet was obtained, and thus PISA could be used to quantify MR volume and ERO (Figures E,F). MR volume was 77 ml and ERO was calculated as 0.35 cm² and he was diagnosed with severe MR. During the examination, the patient partially awoke and the blood pressure temporarily rose up to 190/90 mmHg, which subsequently returned to normal after additional sedation.

Surgical indication of MR should be individually determined based on the severity of the MR and the symptoms. Because ERO correlates well with MR prognosis, quantification of the MR rather than semiquantitative assessment is strongly recommended. Transgastric view may be a useful alternative echo window in some MR patients with eccentric regurgitant jet and thus should be used for such patients.

References