Three-Dimensional Transesophageal Echocardiography in a Patient With Early Failure of Mitral Valve Repair

Why Are We Still Looking at a Three-Dimensional Structure in 2 Dimensions?

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A 47-year-old man was admitted with a massive inferolateral wall infarction due to proximal circumflex artery obstruction. After emergent percutaneous coronary intervention, the patient remained hemodynamically unstable because of severe mitral valve insufficiency due to massive annular dilatation combined with diffuse 3-vessel coronary disease and poor left ventricular function. Mitral valve annuloplasty and concomitant coronary bypass grafting were performed with good recovery initially. On the ward, the patient became progressively dyspnoeic with a new systolic apical murmur. Because of inadequate transthoracic acoustic windows, transesophageal echocardiography (TEE) was performed.

Two-dimensional TEE showed severe mitral valve regurgitation. Posterior dehiscence of the annuloplasty ring was suggested (Figure 1A and 1B). Three-dimensional TEE images (3D transesophageal Philips probe, transducer X7-2t) provided a comprehensive anatomic overview almost undisputedly confirming our suspicion of annuloplasty ring dehiscence (Movie I; Figure 2). The patient was scheduled for early reoperation. Operative findings correlated fully with the preoperative 3D images (Figure 3). Because of the massively dilated posterior annulus, rerepair was not attempted and mitral valve replacement was performed with uneventful recovery.

In contrast to late failure of mitral valve repair, which is valve related in most cases, early recurrent mitral regurgitation is usually procedure related, with suture dehiscence as the predominant cause. It may result in dehiscence of commissural repairs or ring annuloplasty, as demonstrated in our case.

Three-dimensional echocardiography can provide detailed anatomic information additional to standard 2D TEE. It is conceivable that 3D TEE will evolve to become a cornerstone in the management of patients with valvular heart disease, especially mitral valve disease.

Disclosures

None.

References


Figure 1. A, Two-dimensional TEE (0°) suggesting partial dehiscence of the mitral valve annuloplasty ring (red arrow). B, With color Doppler flow, severe mitral regurgitation with an eccentric jet is shown.
Figure 2. A, Peroperative photograph confirming partial dehiscence of the mitral valve annuloplasty ring. Similarity to the preoperative 3D images is excellent (B; Movie 1). Notice the torn stitches that are still connected to the annuloplasty ring. These are also visible on the 3D images (red arrows).
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