Delineation of a Paravalvular Leak Origin between a Rigid Mitral Ring and Supra-Annular Implanted Mechanical Mitral Prosthetic Valve

Abstract
Paravalvular leakage is not a rare condition among patients with mitral prostheses. Two-dimensional echocardiographic approaches are not sufficient to determine the origin of paravalvular leak that occurs after prosthetic mitral valve replacement. Real-time three-dimensional transesophageal echocardiography provides detailed structural identification of paravalvular leak origin and defect morphology compared to two-dimensional transesophageal echocardiography. Here we present a patient with paravalvular mitral regurgitation from a slit like defect between the mitral annular ring and the prosthetic valve delineated with the utility of 3D fullvolume and 3D color flow imaging modalities.

Keywords
Mitral ring; Paravalvular leak; Transesophageal echocardiography

Abbreviations
TEE: Transesophageal Echocardiography; 2D: Two dimensional; 3D: 3 dimensional

Case Report
A 65 year-old woman suffering from severe mitral valve regurgitation underwent mitral ring annuloplasty (31 no Saint Jude Medical Rigd Ring). After weaning from cardiopulmonary bypass pump, intraoperative transesophageal echocardiography (TEE) was performed this revealed withstandig severe mitral regurgitation. Therefore a supraannular 28 no bileaflet ATS-AP mechanical mitral valve was implanted over the mitral ring and intraoperative TEE showed normally functioning mitral prosthesis. The surgery was completed without complication. The patient experienced an uneventful postoperative period but was readmitted to hospital with ongoing NYHA Class 2 dyspnea one month after discharge. Transthoracic echocardiogram did not show any pericardial effusion but a moderate mitral regurgitation jet detected by color Doppler imaging (Figure 1a). TEE was performed to depict the origin of the regurgitant jet. Two dimensional (2D) TEE showed a moderate paravalvular leakage with the help of color Doppler imaging (Figure 1b). Subsequently, real-time 3 dimensional (3D) TEE revealed a regurgitant jet arising from a slit like defect between the mitral annular ring and the prosthetic valve with the utility of 3D full-volume and 3D color flow imaging modalities (Figure 2a & 2b).

Paravalvular leakage is not a rare condition among patients with mitral prostheses [1] but a leakage between a mitral ring and mechanic prosthetic valve has not been reported so far. Real-time 3D TEE provides detailed structural identification of paravalvular leak origin and defect morphology compared to 2D TEE [2-5].

References


