

Three-dimensional echocardiographic features of parachute mitral valve

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Introduction: Precise delineation of the anatomy is essential to successful mitral valve (MV) repair. In recent years, three-dimensional (3D) echocardiography has emerged as an important technique for evaluation of abnormalities of the atrioventricular valves. Unique views of subvalvar MV apparatus can be obtained by 3D-echocardiography which are not achievable by standard cross-sectional two-dimensional (2D) echocardiography □

Case report: We present a 3D echocardiography comparison between a normal and parachute MV for teaching purposes to demonstrate the anatomy of the papillary muscle and chordal support apparatus.

Results: *Panel A* shows a short axis projection of a **normal MV**. By cropping a plane (line) anterior to the medial (M) and lateral (L) papillary muscles, a novel 3D projection is achieved in *Panel B*, showing the anterior MV leaflet (A), chordal attachments (arrows) and papillary muscles. Analogous projection in a **parachute MV** (*Panel C*) shows both the medial and lateral margins of the anterior MV leaflet (A) with chordal attachment (arrows) to a single lateral papillary muscle (L). *Panel D* illustrates a long axis view of the left ventricle, revealing the attachments of the lateral aspect of the anterior and posterior MV leaflets to the single lateral papillary muscle (Please, see supplemental videos 1-3) □□

Conclusions: Identification of a parachute MV is important for surgical planning. Conventional echocardiography infers the presence of a parachute MV by the presence of a single papillary muscle but cannot demonstrate all valvar attachments in a single plane. The complementary projections which are now achievable using 3D-echocardiography facilitate, in our opinion, an improved understanding of the anatomy of chordal attachment in this lesion.

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