Combined subaortic membrane and aortic valve stenosis: additive value of three-dimensional echocardiography

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A 75-year-old woman was referred to our hospital for further assessment of undefined transaortic high-pressure gradient obtained by transthoracic echocardiography. Transesophageal echocardiography revealed the presence of a subaortic membrane co-existing with aortic valve stenosis (Panel A, see Supplementary data online, Video S1). Colour flow and continuous-wave Doppler echocardiography (Panels B and C) demonstrated an increased aortic jet velocity of 5.7 m/s. Pulsed wave Doppler recording of the outflow area showed a mosaic pattern indicative of high subaortic flow velocities. Live three-dimensional echocardiography was performed, which improved the spatial assessment of the subaortic membrane (Panel D, see Supplementary data online, Video S2), including direct en face visualization from the left ventricular cavity (Panel E, see Supplementary data online, Video S3) and through a plane immediately below the aortic valve (Panel F, see Supplementary data online, Video S4). The membrane was circumferential and its attachment to both the ventricular septum and the anterior mitral leaflet was clearly demonstrated. En face view of the aortic valve from the ascending aorta was also obtained (Panel G, see Supplementary data online, Video S5). A multiplanar review mode was used to perform the planimetry of both the subvalvular and valvular stenotic areas, resulting 1.5 cm² at the level of the membrane during systole (Panel H), indicative of no significant obstruction, while at the level of the aortic valve cusps was 0.7 cm² (Panel I), consistent with severe aortic valve stenosis. This report shows the usefulness of three-dimensional echocardiography in combined valvular and subvalvular obstruction, where Doppler-derived methods are limited.

Supplementary data are available at European Heart Journal — Cardiovascular Imaging online.