Poster Session

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Added value of 3D echo in diagnosing and monitoring transcatheter valve in mac procedure in a patient with severe mitral stenosis

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INTRODUCTION: Mitral annular calcification (MAC) is a chronic degenerative process involving calcification of the fibrous base of the mitral valve accounting for 12% to 26% of all mitral stenosis (MS) and eventually for significant mitral regurgitation. Calcification often extends to other parts of the mitral valve apparatus but, unlike rheumatic stenosis, does not produce commissural fusion. Surgical treatment carries a high mortality rate due to technical difficulties involving the heavily calcified annulus, advanced age and comorbidities of affected patients. In recent years, transcatheter mitral valve replacement using ballon expandable transcatheter aortic valves in severe MAC (valve-in-MAC) has been used with acceptable success rates.

PURPOSE: To describe the added value of 3D echo in the diagnostic work-up, decision making and monitoring during the interventional procedure of valve-in-MAC.

CASE PRESENTATION: Two years ago a 90-year-old female in sinus rhythm with hypertension and known coronary artery disease (CAD) was admitted with symptoms of pulmonary congestion (PC). At that time, a transthoracic 3D echocardiogram showed important MAC with a mitral valve area (MVA) estimated through 3D planimetry of 1.1 cm2, pulmonary artery pressure (PAP) of 53 mmHg, preserved biventricular function and left atrial enlargement. One year later, she was readmitted with unstable CAD and treated with percutaneous transluminal angioplasty. At that time a 3D transesophageal echocardiogram (3DTOE) showed worsening of the MVA now estimated in 0.6 cm2, a mean gradient of 19 mmHg and PAP of 88 mmHg. Albeit optimized medical therapy, her functional status worsened and less than a month later she was again readmitted in NYHA functional class III. Therefore decision making for valve-in-MAC was undertaken. Valve sizing was performed with computed tomography (CT) using the D-shape method with similar findings when compared with 3D TOE measurements. Both methods showed a favourable anatomy of the left ventricular outflow tract. Valve-in-MAC procedure was performed through transvenous transseptal access and an Edwards Sapien3-nr 29 balloon-expandable valve was deployed uneventfully, except for a residual interatrial septal defect measuring 2.2x0.8cm closed two weeks after, as she persisted with PC and pulmonary hypertension. During the procedure, 3DTOE showed a partial thrombosis involving one of the prosthesis leaflets with preserved transvalvular gradients despite anticoagulation. After that, PC resolved and PAP dropped dramatically. The patient was discharged under lifelong anticoagulation and remains asymptomatic until now.

CONCLUSION: Diagnosing and treating patients with severe MS due to MAC remains a challenge as traditional parameters and interventional procedures don't apply for this population. Valve-in-MAC is a feasible alternative and 3DTOE may have a pivotal role in the diagnostic work-up and interventional monitoring of these cases.

Abstract P247 Figure. 3D echo timeline valve in MAC
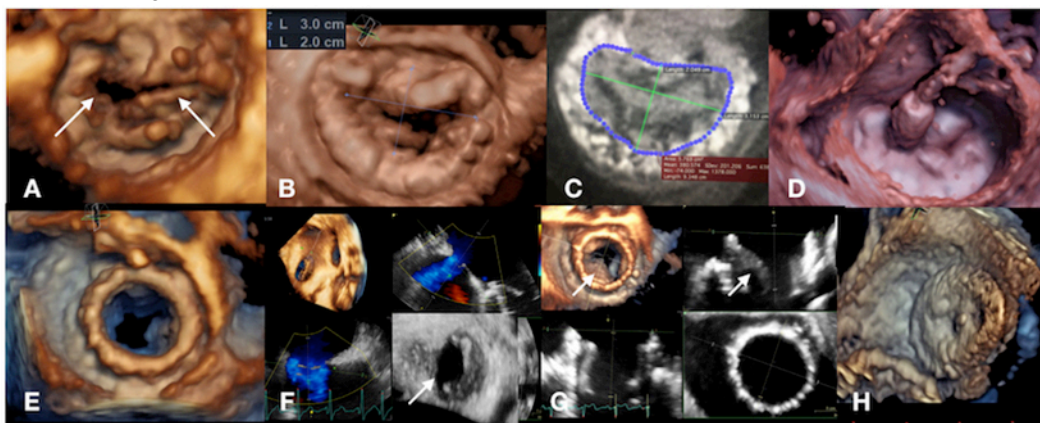
A. 3DTOE -Ventricular perspective mitral stenotic orifice B. Atrial perspective MAC **C.**CT measure D-shape method
D. Intraprocedural monitoring **E.** Valve-in-MAC final result **F.** Atrial septal defect "en face" measurement on flexi slice
G. Partial leaflet thrombosis flexi slice **H.** Device occlusion of ASD