"Wrong Side Restriction" – The Diagnosis of an Aberrant Mitral Valve Chord Using 3-Dimensional (3D) Transesophageal Echocardiography (TEE)

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Introduction: Intraoperative TEE is recommended as standard of care for monitoring during cardiac operations involving valve repair and replacement. 3-Dimensional (3D) TEE is also used intraoperatively, and currently the evidence based recommendations for 3D TEE use in clinical practice are to evaluate left ventricle volume and ejection fraction (EF), mitral valve (MV) anatomy and stenosis, and as guidance during transcatheter procedures. We present a case in which the adjunct use of 3D TEE during our initial TEE exam was able to assist in the diagnosis of an aberrant MV chord.

Case Presentation: An 82 year old woman presented with a three weeks history of shortness of breath and new onset atrial fibrillation. She used home oxygen therapy for chronic obstructive pulmonary disease (COPD) and was an active smoker. After admission there were ST segment changes by EKG and she became hemodynamically unstable. She was intubated and cardiac catheterization revealed severe three-vessel disease. Transthoracic echocardiography showed moderate mitral regurgitation (MR) and an EF of 40%. Prior to her surgery, an intraaortic balloon pump was inserted, and she presented to the operating room for revascularization and mitral valve repair versus replacement. Our TEE exam showed biatrial enlargement, thickened MV leaflets with bileaflet restriction, calcified and thickened subvalvular apparatuses, and lack of MV leaflet coaptation. The degree of MR was severe, and by 2D exam the valve resembled one affected by rheumatic heart disease. When viewing the valve in 3D, there was a structure on the atrial side of the valve that appeared to restrict anterior leaflet mobility. By using Multiplanar Reconstruction (MPR) we identified an extra attachment between the anterior tip of the MV and the left atrium. Surgical exposure showed a fibrinous band that originated on the intraatrial septum and attached to the tip of the A2 portion of the MV leaflet. The patient underwent 3 vessel CABG and due to the extensive disease of the MV, it was replaced with a 29 mm Biologic Magna Ease.

Discussion: This case highlights the usefulness of 3D TEE as an adjunct to 2D TEE to aid in the identification of an anomalous structure. While the cause of this patient's mitral valve disease was likely rheumatic in origin, this aberrant chord appeared to contribute to her MR. Several case reports show similar congenital anomalous mitral chords causing MR in a younger patient population, and it is reported that in patients with known intracardiac masses, 3D TEE adds additional information about the type of mass and site of attachment.

Sources: