

A VERY EARLY STENOSIS AFTER MITRAL VALVE REPAIR

¹M. Philip, ¹N. Messas, ¹A. Abualsaud, ¹E. Moss, ²J. Lipes, ¹O. Perelstein, ¹L. Rudski.

¹Division of Cardiology, Department of Medicine, Jewish General Hospital, McGill University, Montreal, Quebec, Canada

²Division of Critical Care, Department of Medicine, Jewish General Hospital, McGill University, Montreal, Quebec, Canada

CLINICAL PRESENTATION

A 52-year-old man with myxomatous mitral valve (MV) disease, posterior prolapse, and severe mitral regurgitation underwent a robotically assisted mitral valve repair (MVR) with posterior band and one neochord (no Alfieri stitch). Due to complex anatomy and sub-optimal initial result, he had a prolonged cardiopulmonary bypass time and developed post-operative cardiogenic shock with biventricular failure, requiring veno-arterial extracorporeal membrane oxygenation. He subsequently was supported with a biventricular assist device for 20 days. The patient developed severe sepsis, preventing heart transplantation. A TTE performed 1 month post-operatively showed significant MV stenosis (PG/MG 17/9 mmHg at HR 100 bpm, mild-moderate MR) with reduced LVEF (45% on inotropes), severe pulmonary hypertension and right ventricular dysfunction.

IMAGING FINDINGS

The mechanism of this early MV stenosis was revealed by TEE, demonstrating fusion between the anterior leaflet (mostly A2) and the posterior leaflet. Due to hemodynamic instability, a multidisciplinary team decided to attempt a percutaneous balloon mitral valvuloplasty. As this had never been performed in this setting, Inoue balloon inflations with increasing size were performed in the lateral orifice (considering the central leaflets fusion), guided by real-time 3D imaging. After first and second balloon deployment (18 and 25 mm), hemodynamics improved (MG 2 mmHg at HR 90 bpm), but TEE showed evidence of persistent attachment between the tip of A2 and the posterior leaflet/band, leading to final balloon dilation (28 mm). Subsequently, the TEE showed complete opening of the MV, with free motion of the anterior mitral leaflet, and trace-mild MR.

DISCUSSION

We present a case of very early MV stenosis after repair caused by leaflet fusion. Consequently, this is the first case post-mitral valve repair and the first case to be intervened upon percutaneously. MV stenosis is underreported but may be diagnosed several years after primary repair. This complication may be associated with smaller annuloplasty ring sizes and inflammatory or calcific changes within the valve. We hypothesize that low blood flow

through the MV (cardiogenic shock) and a severe inflammatory syndrome (septic shock) promoted leaflet remodeling and subsequent fusion. Markedly improved hemodynamics were seen immediately after percutaneous balloon valvuloplasty, with improved biventricular systolic function.

IMAGE

3D TEE used to guide the percutaneous repair with imaging performed before, per and post-deployment of each balloon (18, 25 and 28 mm).

Left side. Baseline TEE. Severe MS by fusion of the anterior leaflet (mostly A2) with the posterior leaflet or band (atrial view)

Right side. TEE post 3rd balloon dilation: result of the procedure. Complete opening of the MV, with free motion of the anterior mitral leaflet (from ventricular view)

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