Mitral Prosthesis Balloon Valvuloplasty..3-D Style!

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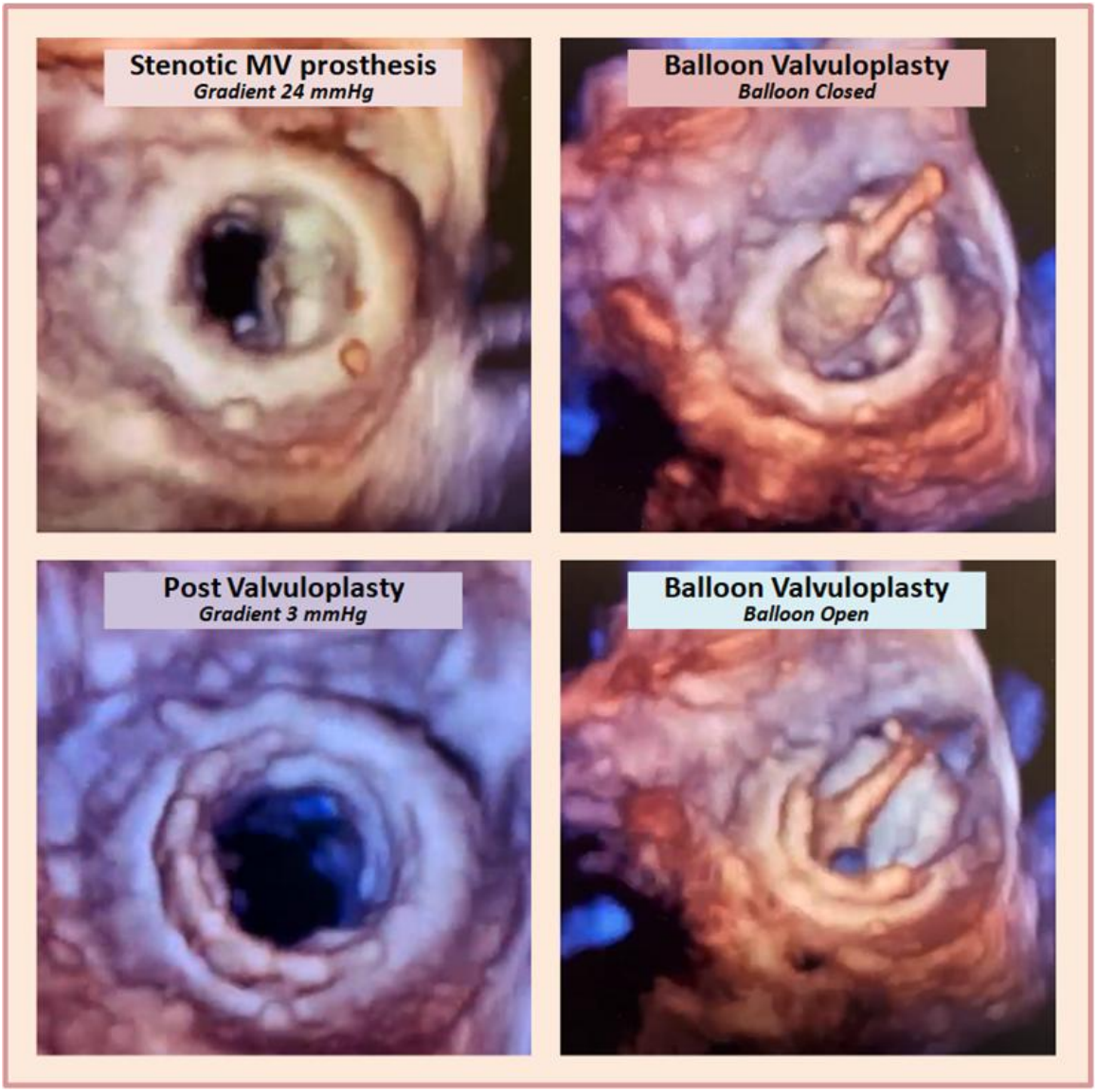

Description

The above 3-dimensional echocardiographic images (3-D) were acquired during balloon valvuloplasty of a stenotic mitral valve bioprosthesis. The gradual inflation of the balloon (see videos) resulted in successful increase in the valve area and significant decrease in the transvalvular gradient.

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Discussion:

Kanji Inoue, a Japanese cardiothoracic surgeon, introduced in 1982 the concept that a stenotic degenerative mitral valve can be dilated using a balloon [1]. This technique became widely used since then, with some procedural modification, and largely replaced surgical mitral commissurotomy in appropriate patient based on echocardiographic criteria [2].

Patient follow-up up to 20 years following percutaneous mitral valvuloplasty (PMV) reveals a good event-free survival; echocardiographic scoring based on available criteria of leaflet mobility, calcification, thickening and subvalvular thickening is vital prior to the procedure as it predicts long term events post PMV [3].

Two-dimensional echocardiography has emerged early on as a crucial tool in the assessment of stenotic mitral valves with regards to eligibility for PMV, and help in the selection of appropriate balloon size [4]. Echocardiographic guidance currently plays a crucial role in the success and safety of PMV [5].

Transesophageal echocardiography (TEE) provides added advantage and clarity allowing for greater detail and guidance during PMV [6]. More recently, the availability of real-time 3-dimensional (3-D) TEE has further improved the visualization of the mitral valve and commissures, providing better procedural guidance and assessment of procedural success [7]. Three-D TEE also helps in predicting the occurrence of post-PMV significant mitral valve regurgitation, a determinant of long term outcomes [8].

Intracardiac echocardiography (ICE) provides high-resolution real-time images of cardiac structures and early recognition of pericardial effusion with tamponade or intraluminal thrombi [9], and has recently gained grounds in PMV in addition to other percutaneous deployment of cardiac devices. It is well tolerated and can lead to less fluoroscopy time and radiation exposure.

Recent reports of PMV in the setting of a stenotic bioprosthetic mitral valve provide great insight on its feasibility and safety, allowing the delay or avoidance of surgical intervention [10].

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KEYWORDS: Bioprosthetic Valve; Valvuloplasty; Mitral Stenosis; Echocardiography.

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