Journal of Cardiology Cases xxx (2017) xxx–xxx

Contents lists available at ScienceDirect

Journal of Cardiology Cases

journal homepage: www.elsevier.com/locate/jccase

Case Report

The effect of pannus and weight gain in mitral stenosis after mitral ring annuloplasty

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ARTICLE INFO

Article history:
Received 8 March 2017
Received in revised form 26 August 2017
Accepted 12 September 2017

Keywords:
Pannus
Mitral annuloplasty
Stenosis
Obesity

ABSTRACT

Pannus formation is a known complication of valve replacement surgery. However, few cases describe pannus formation in the mitral position, and they are mostly associated with prosthetic valves rather than only annuloplasty. We describe the case of a 62-year-old woman who first underwent reductive annuloplasty using a Carpentier-Edwards 28 mm ring prosthesis in 2009 that performed well on regular follow-up for 5 years. In 2014, the patient presented with significant weight gain, shortness of breath (New York Heart Association functional class III) and signs of severe mitral stenosis. Echocardiography demonstrated the formation of a pannus and increased pressure gradients. Removal of the ring prosthesis and pannus-like fibrotic tissue was performed. The native valve was left in place as it had supple leaflets and performed well once properly debrided. The patient remained well throughout a 24-month follow-up.

<**Learning objective:** This case report presents a rare phenomenon that will help familiarize readers with this complication type. Pannus formation of this type is rarely documented and encountered.>

Introduction

Pannus formation is a rare yet well-documented complication of aortic valve replacement surgery. Some case reports describe pannus formation in the mitral position following valve replacement [1,2]. This phenomenon following mitral annuloplasty is rare. We present herein an interesting case of pannus formation following mitral valve (MV) annuloplasty.

Case report

A 62-year-old woman was admitted for elective MV annuloplasty. She was complaining primarily of shortness of breath, NewYork Heart Association (NYHA) functional class III. She also suffered from obesity [body mass index (BMI) 34], hypertension, dyslipidemia, type 2 diabetes, and sleep apnea.

She underwent MV repair surgery for significant chronic mitral regurgitation due to A2 leaflet prolapse. MV repair was performed. A chordal transfer from P2 to A2 was done and a Carpentier-Edwards (CE) 28 mm annuloplasty ring was implanted. Post-operative echocardiogram showed resolution of the regurgitation with normal pressure gradients and a MV area (MVA) of 2.1 cm^2.

Five years later, the patient returned with shortness of breath. Her BMI had increased to 50 since her first surgery. Transthoracic echocardiography (TTE) showed increased left atrial volume index with a mean mitral pressure gradient of 9 mmHg and MVA of 1.27 cm^2,

Stress echocardiography was also performed and showed a reduced functional capacity, achieving only 2.8 Mets and 79% of the maximal heart rate. There were no signs of cardiac ischemia but the mean mitral pressure gradient increased from 9 mmHg at rest to 22 mmHg during exercise. The pulmonary artery pressure was measured at 53 mmHg.

Cardiac catheterization showed mean mitral pressure of 13.5 mmHg for a MVA of 1.4 cm^2, or 0.68 cm^2/m^2 when indexed for patient size. It was then decided that the best option was a redo surgery.

Transesophageal echocardiography (TEE) was performed intra-operatively and showed severe stenosis of the MV. On 3D reconstruction, there seemed to be a membrane located just above the mitral annulus (Fig. 1). The operation was performed through median sternotomy with aortic and bi-caval cannulations. Antegrade (Del Nido) cardioplegia was administered. The MV was

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https://doi.org/10.1016/j.jccase.2017.09.004
1878-5409/

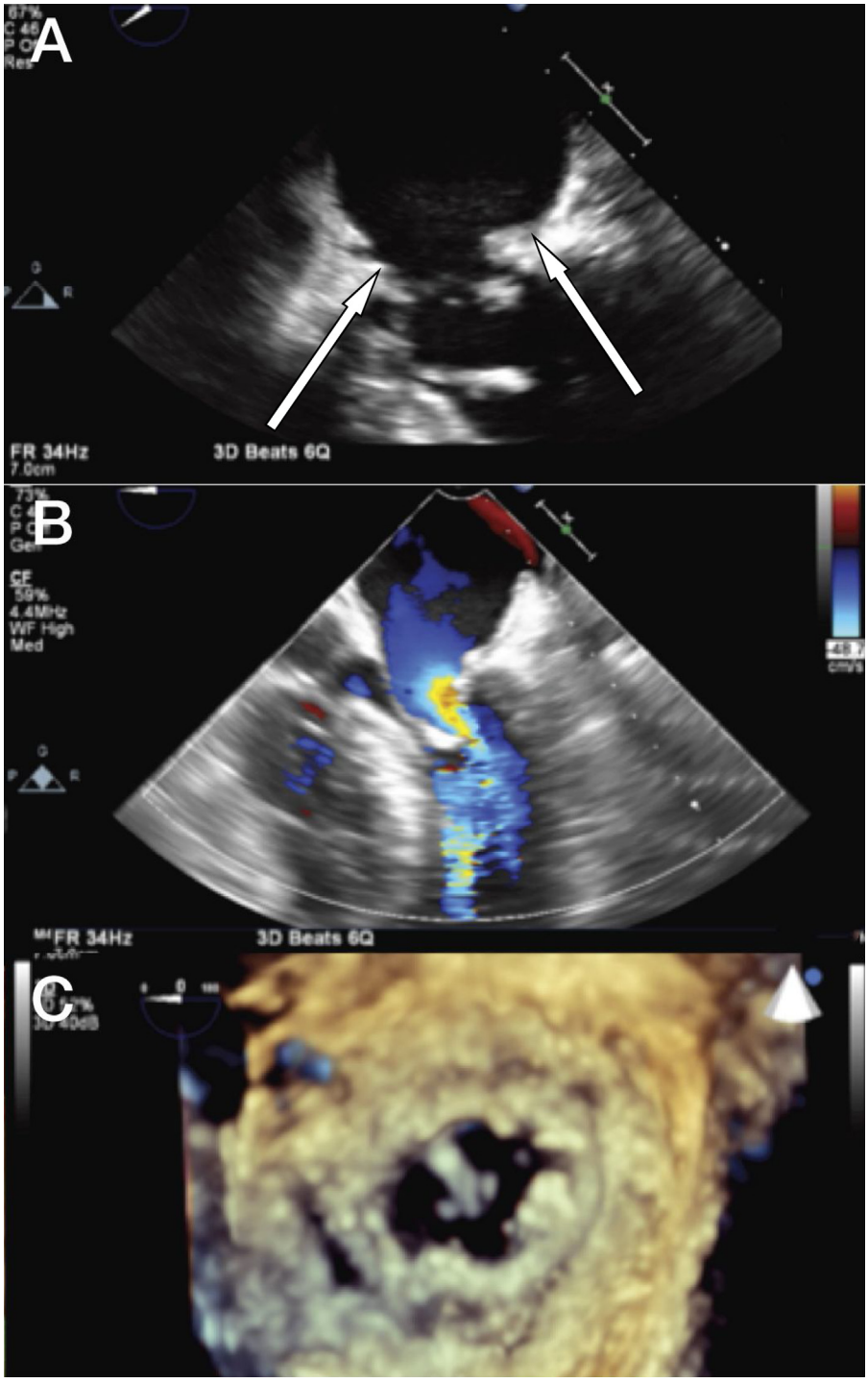

Fig. 1. 2D and 3D transesophageal views and surgical view of the mitral valve pre-operatively. (A) Mid-esophageal view showing abnormal tissue at the mitral valve level (arrows at pannus) and (B) color flow Doppler acceleration. Chordal transfer (P2 to A2) is also visualized. (C) Transesophageal 3D view from the atrial perspective of the mitral ring, mitral valve and abnormal tissue over the ring.

accessed using a trans-atrial approach. Important mitral stenosis (MS) was confirmed. Pannus-like fibrotic tissues surrounding the ring and mitral annulus were removed. Finally, removal of the CE 28 mm ring prosthesis was completed. Overgrowth of this pannus-like fibrotic tissue was also removed at and under the mitral annulus, although the ring remained stiff. The leaflets were unaffected by the pannus and had preserved mobility and flexibility. After consideration and thorough confirmation of the competence of the MV, it was decided to leave the existing valve in place.

Post-extra corporal circulation TEE (Fig. 2) showed no mitral regurgitation and the mean mitral pressure gradient was measured at 3 mmHg. The patient recovered quickly and 5 days later control TTE showed a mean mitral pressure gradient of 3 mmHg and MVA of 2.2 cm^2.

Please cite this article in press as: Abdallah H, et al. The effect of pannus and weight gain in mitral stenosis after mitral ring annuloplasty. J Cardiol Cases (2017), https://doi.org/10.1016/j.jccase.2017.09.004