

Images in  
Cardiovascular Medicine



# Unmasked Obstructive Hypertrophic Cardiomyopathy after Mitral Valve Repair for Severe Mitral Regurgitation

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Received: Sep 18, 2019

Revised: Nov 10, 2019

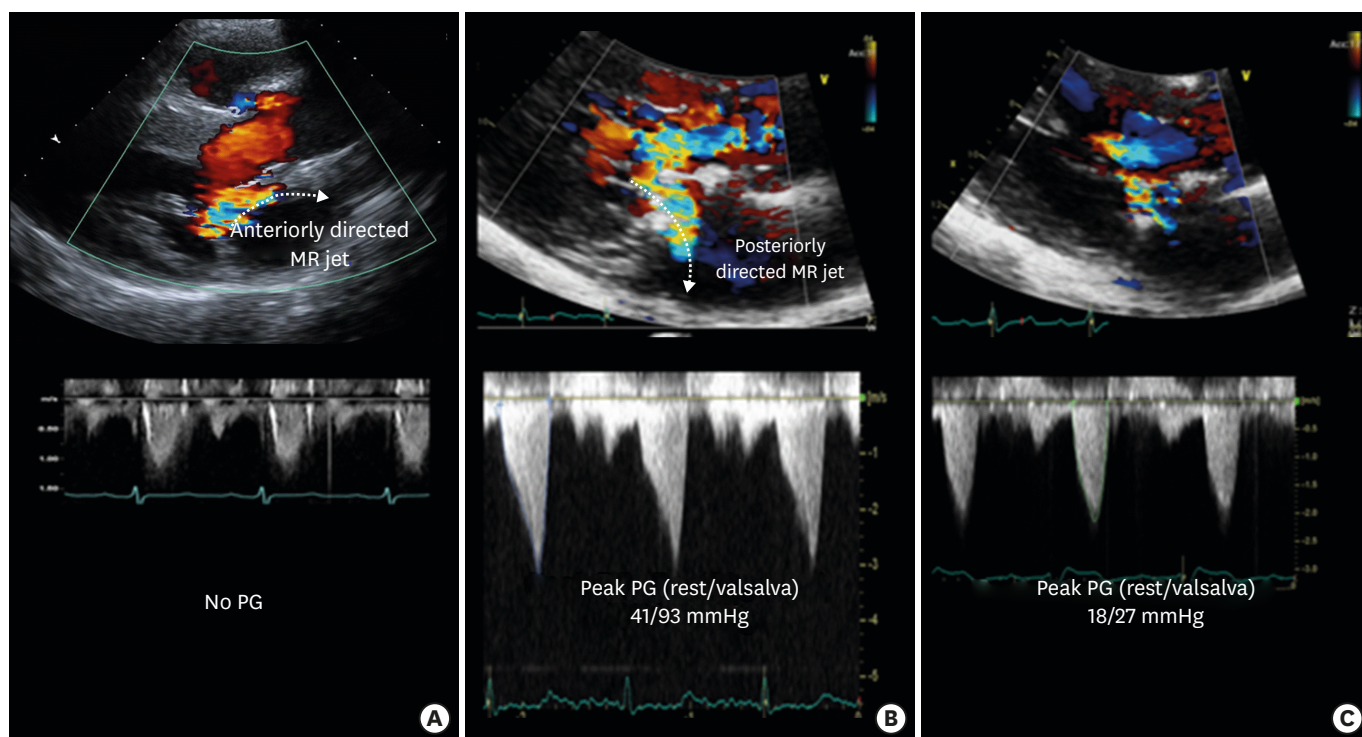
Accepted: Dec 4, 2019

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A 46-year-old male underwent mitral valve (MV) repair because of anteriorly directed severe eccentric mitral regurgitation (MR) from posterior leaflet fail (**Figure 1A, Supplementary Videos 1-3**). Five months later, he was readmitted complaining recurrent syncope caused by newly discovered dynamic left ventricular outflow tract (LVOT) obstruction (**Figure 1B**). His echo also showed systolic anterior motion of the chordae tendineae and this time, posteriorly directed MR was observed (**Figure 1B, Supplementary Videos 4-6**) which were not observed before the surgery. Hypertrophied septum, presence of elongated MV and abnormal insertion of the secondary chordae were indicative of hypertrophic cardiomyopathy (HCM) (**Supplementary Video 7**). His HCM was not diagnosed at the time of surgery and his current dynamic LVOT obstruction was absent back then, by chronic left ventricular



**Figure 1.** Echocardiographic images (A) before MV repair, (B) after MV repair, and (C) after endocardial muscle resection and resection of the abnormal chordae. MR = mitral regurgitation; MV = mitral valve; PG = pressure gradient.

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**ORCID iDs**

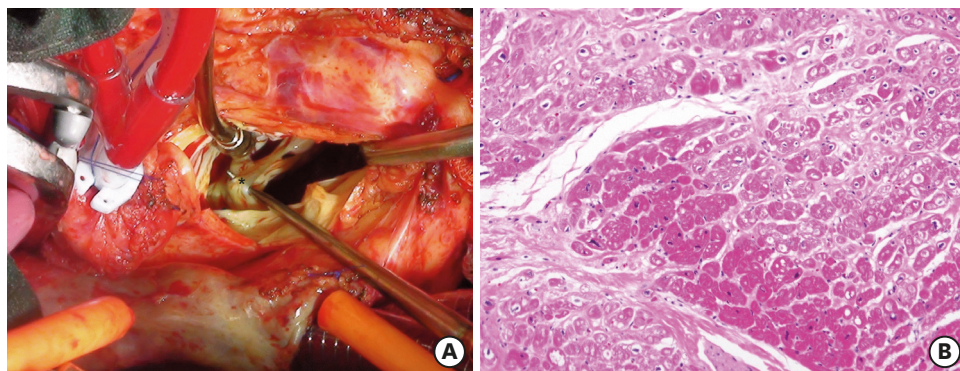
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**Conflict of Interest**

The authors have no financial conflicts of interest.

**Author Contributions**

Conceptualization: Shim CY; Resources: Hong GR, Chang BC; Writing - original draft: Kim D; Writing - review & editing: Shim CY.



**Figure 2.** Surgical views of abnormally attached chordae (A) and histopathology (B) of the resected myocardium. \*Abnormally attached chordae.

(LV) remodeling due to the coexistence of chronic severe MR, which was unmasked after LV cavity decreased after successful MV repair (preoperative LV end-diastolic dimension (EDD)/end-systolic dimension (ESD): 56/32 mm, postoperative LV EDD/ESD: 43/26 mm). Despite optimal medication, he had to undergo endocardial muscle resection (3 cm depth, 0.5–0.8 cm thickness, a total of 3 grams) and resection of the abnormal chordae attached at the A2 portion of the anterior mitral leaflet (**Figure 2A**). The histopathology of the resected myocardium revealed hypertrophy and disarray of the myocytes with interstitial fibrosis (**Figure 2B**). The patient recovered well, with significant relief of the dynamic LVOT obstruction (**Figure 1C, Supplementary Videos 8-10**). MV prolapse occasionally presents in association with myocardial disease. Although incidence of coexisting MV prolapse with HCM is not frequent, when associated with unusual LV hypertrophy, one needs to vigilantly search for possible associated cardiomyopathy. Assessment of the myocardial abnormalities is as important as assessment of the MV structure, given the possibility of the combined presence of HCM and MV prolapse.<sup>1,2)</sup>

**SUPPLEMENTARY MATERIALS**

**Supplementary Video 1**

Flail of posterior mitral leaflet is observed.

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**Supplementary Video 2**

Anteriorly directed severe eccentric MR is observed.

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**Supplementary Video 3**

Flail of posterior mitral leaflet is observed with elongated mitral valve leaflets and abnormal insertion of secondary chordae to anterior mitral leaflet.

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**Supplementary Video 4**

LV dimensions were normalized (LV end-diastolic dimension/end-systolic dimension: 43/26 mm) as a course of LV reverse remodeling. Systolic anterior motion of the chordae tendineae with asymmetric hypertrophy of septum was noted.

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**Supplementary Video 5**

Posteriorly directed MR was newly observed.

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**Supplementary Video 6**

Systolic anterior motion of the chordae tendineae with dynamic LVOT obstruction was observed.

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**Supplementary Video 7**

Cardiac magnetic resonance imaging also showed asymmetric septal hypertrophy (19 mm), systolic anterior motion of abnormally inserted chordae, and patchy late gadolinium enhancement in the hypertrophied myocardium, compatible with obstructive hypertrophic cardiomyopathy.

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**Supplementary Video 8**

Echocardiography after endocardial muscle resection.

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**Supplementary Video 9**

Significant relieve of dynamic LVOT obstruction was observed after endocardial muscle resection.

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**Supplementary Video 10**

Significant relieve of dynamic LVOT obstruction was observed after endocardial muscle resection.

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