

# Severe Hypoplasia of Posterior Mitral Valve Leaflet Presented with Atypical Chest Pain: A Case Report

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## Abstract

**Introduction:** Absence of the posterior mitral leaflet is usually fatal for fetus in utero. Although hypoplasia of the posterior mitral leaflet is usually present in children with symptomatic mitral regurgitation, it is usually evident in a few cases of asymptomatic adults. We decided to introduce a rare case with hypoplasia of the posterior mitral valve leaflet associated with aortic stenosis.

**Case Presentation:** A 24-year-old man was admitted with a history of atypical chest pain. The patient had a normal psychophysical growth. The physical examination showed 4/6 mid-systolic ejection murmurs over the left sternal border. Chest roentgenogram was normal and the electrocardiogram showed sinus rhythm with mild LVH. Meanwhile, the echocardiography revealed severe elongated sail-like anterior leaflet and hypoplasia of the posterior mitral leaflet with moderate valvular aortic stenosis. MR grade was mild due to the complete coverage of anterior mitral leaflet. Moreover, LV function and pulmonary arterial pressure were reported normal.

**Conclusions:** This abnormality was tolerated since adulthood and mitral regurgitation was gradually developed due to annulus dilation. Therefore, the posterior mitral leaflet did not have a significant impact on mitral valve performance.

**Keywords:** Echocardiography, Hypoplastic Posterior Mitral Leaflet, Mitral Regurgitation

## 1. Introduction

Absence of the posterior mitral leaflet is usually fatal for fetus in utero. Although hypoplasia of the posterior mitral leaflet is usually present in children with symptomatic mitral regurgitation, it is usually evident in a few cases of asymptomatic adults (1, 2). We decided to introduce a rare case with hypoplasia of the posterior mitral valve leaflet associated with aortic stenosis.

## 2. Case Presentation

A 24-year-old man was admitted with a history of atypical chest pain. The patient had a normal psychophysical growth. The physical examination showed 4/6 mid-systolic ejection murmurs over the left sternal border. Chest roentgenogram was normal and the electrocardiogram showed sinus rhythm with mild LVH criteria. Meanwhile, the echocardiography revealed severe elongated sail-like anterior leaflet and hypoplasia of the posterior mitral leaflet with moderate valvular aortic stenosis, AVA = 1.2 cm<sup>2</sup>, PPG = 50 mmHg and mean gradient = 28 mmHg. MR grade was mild due to the complete coverage of anterior mitral leaflet. Moreover, normal LV function was noted by

2D and 3D echocardiography and pulmonary arterial pressure was normal. The patient discharged from the hospital ordered to annually echocardiography follow up.

## 3. Discussion

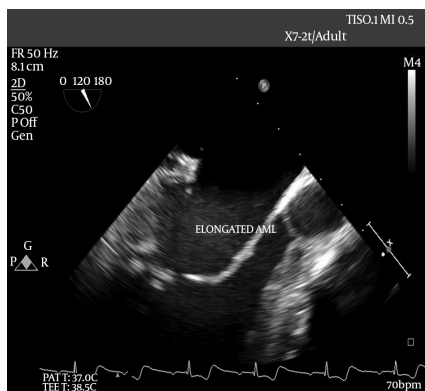
The mitral valve area is typically 4 - 6 cm<sup>2</sup>. It has two cusps or leaflets, the anterior leaflet and the posterior one (3). The anterior leaflet forms most of the leaflet's closing surface area. The posterior leaflet is crescent shaped with small cleft between the scalloped segments. There are several causes for mitral regurgitation such as structural abnormality in leaflet commissural chords and papillary muscles. Absence of the posterior mitral leaflet is usually fatal for the fetus in utero. Although this is usually present in children with symptomatic mitral regurgitation, it is usually evident in a few cases of asymptomatic adults (1, 2).

Hypoplasia of the posterior mitral leaflet was reported to be associated with stenosis of supravulvar mitral ring (4). Furthermore, this abnormality may be tolerated since adulthood and gradual mitral regurgitation is gradually developed due to annulus dilation. Therefore, the posterior mitral leaflet did not have a significant impact on mitral valve performance (5). We reported a case of con-

genital hypoplasia of the posterior mitral leaflet presented with atypical chest pain in adulthood.



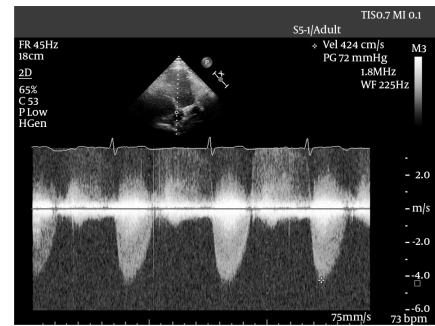
**Figure 1.** Elongated Anterior Mitral Leaflet and Hypoplasia of Posterior Leaflet in 2D TTE



**Figure 2.** Elongated Anterior Mitral Leaflet and Hypoplasia of Posterior Leaflet in 2D TEE



**Figure 3.** Severe Hypoplasia of Posterior Mitral Leaflet in 3D echo



**Figure 4.** Moderate Valvular AS Associated with Hypoplasia of Posterior Mitral Leaflet

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## Footnote

**Conflict of Interest:** Afsoon Fazlinezhad, Masoumeh Alvandi Azari and Lila Bigdellu reported no financial interests or potential conflict of the interest.

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