



Parachute Mitral Valve in an Adult

MULTIMODALITY
MUSEUM IMAGE

PRISCILLA WESSLY, MD 

WILLIAM A. ZOGHBI, MD 

*Author affiliations can be found in the back matter of this article

HOUSTON
Methodist
DEBAKEY HEART &
VASCULAR CENTER

ABSTRACT

Two-dimensional transthoracic echocardiography images for a 49-year-old female with a history of ventricular septal defect status post repair, type 2 diabetes mellitus, and hyperlipidemia whose evaluation of her lower extremity edema showed parachute mitral valve.

CORRESPONDING AUTHOR:

William A. Zoghbi, MD

Houston Methodist DeBakey
Heart & Vascular Center,
Houston, Texas, US

wzoghbi@houstonmethodist.org

KEYWORDS:

parachute mitral valve; mitral
stenosis; congenital heart
disease

TO CITE THIS ARTICLE:

Wessly P, Zoghbi WA. Parachute
Mitral Valve in an Adult.
Methodist DeBakey Cardiovasc
J. 2023;19(1):12-14. doi:
[10.14797/mdcvj.1193](https://doi.org/10.14797/mdcvj.1193)

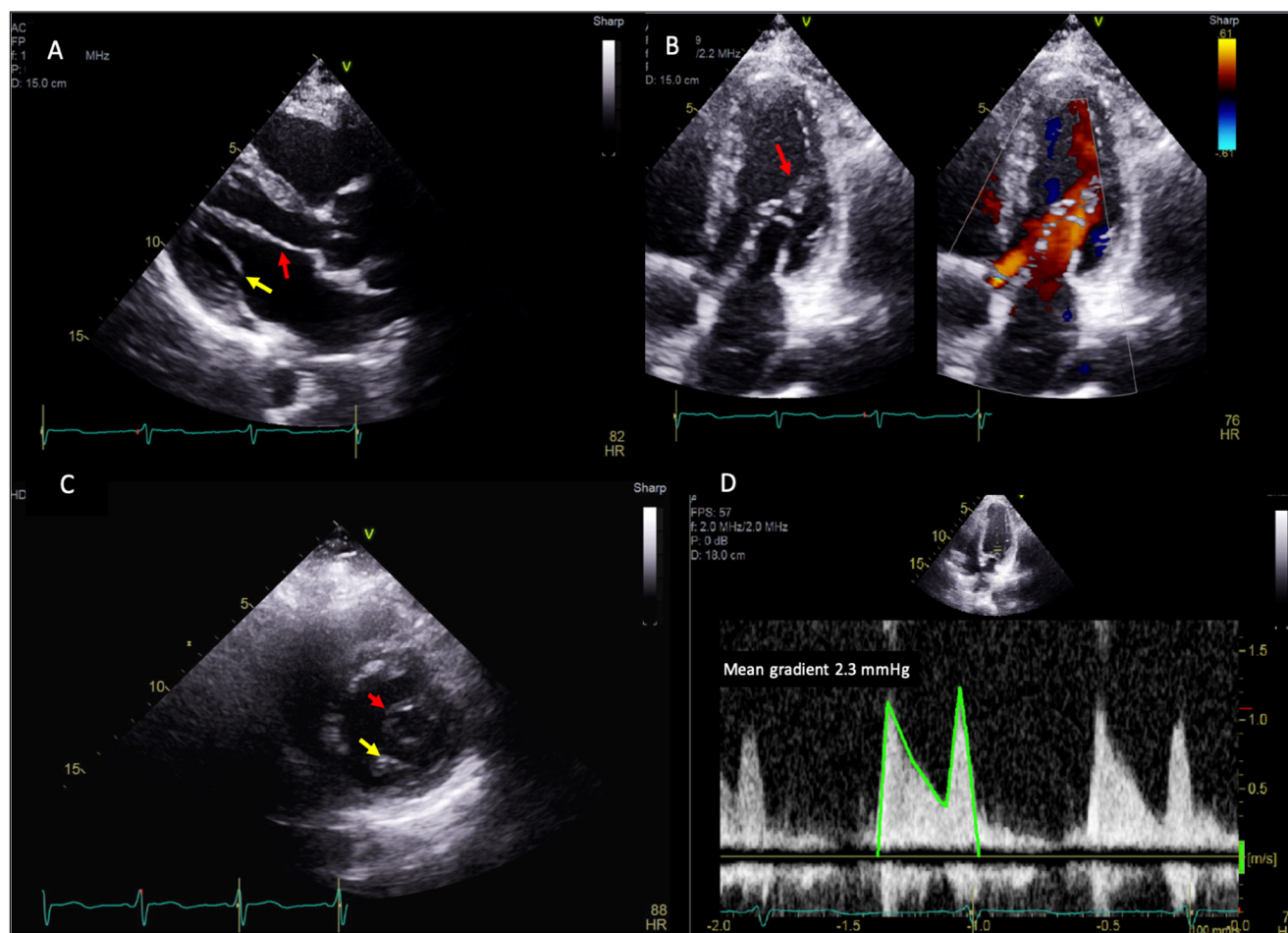


Figure 1 (A) Parasternal long view on transthoracic echo showing thickened anterior (red arrow) and posterior mitral valve (yellow arrow) leaflets. (B) Apical long-axis view showing pear-shaped eccentric opening of the mitral valve with short chordae tendineae attached to the anterolateral papillary muscle (red arrow) and transmitral flow during diastole. (C) Parasternal short-axis view showing an eccentric mitral valve orifice (red arrow) predominately oriented towards the anterolateral papillary muscle and a remnant of the posteromedial papillary muscle (yellow arrow). (D) Spectral Doppler showing mean gradient of 2.3 mmHg at a heart rate of 74 beats/min across the mitral valve in diastole.

Parachute mitral valve is a rare congenital anomaly characterized by unifocal attachment of the chordae tendineae of anterior and posterior mitral valve leaflets to a single papillary muscle. They are thought to develop due to disturbed lamination of the anterior and posterior part of the trabecular ridge, which normally forms the anterolateral and posterolateral papillary muscles respectively between the 5th and 19th week of gestation.¹ It rarely occurs as an isolated lesion and is usually associated with other congenital cardiac anomalies. The outcomes are dependent on the spectrum of associated lesions.² The pathognomonic pear-shaped view is seen in the apical long views on transthoracic echo, with the atrium forming the base of the pear and mitral valve leaflets forming the apex. The chordae tendineae are often short and thick. This, coupled with the convergent papillary


insertion, leads to decreased mobility of the valve leaflets, thus causing stenosis. In adults, parachute mitral valves are rare and can be asymptomatic or associated with mild stenosis.³


Figure 1 shows transthoracic echocardiography 2-dimensional images of a 49-year-old female with a history of ventricular septal defect status post repair, type 2 diabetes mellitus, and hyperlipidemia. She underwent transthoracic echocardiogram for evaluation of her lower extremity edema. Transthoracic echocardiography shows parachute mitral valve.

COMPETING INTERESTS

The authors have no competing interests to declare.

AUTHOR AFFILIATIONS

Priscilla Wessly, MD  orcid.org/0000-0001-9445-7631
Houston Methodist DeBakey Heart & Vascular Center, Houston,
Texas, US

William A. Zoghbi, MD  orcid.org/0000-0003-0802-0455
Houston Methodist DeBakey Heart & Vascular Center, Houston,
Texas, US

REFERENCES

1. **Oosthoek PW, Wenink AC, Wisse LJ, Gittenberger-de Groot AC.** Development of the papillary muscles of the mitral valve: morphogenetic background of parachute-like asymmetric mitral valves and other mitral valve anomalies. *J Thorac Cardiovasc Surg.* 1998 Jul;116(1):36-46. doi: [10.1016/S0022-5223\(98\)70240-5](https://doi.org/10.1016/S0022-5223(98)70240-5)
2. **Schaverien MV, Freedom RM, McCrindle BW.** Independent Factors Associated With Outcomes of Parachute Mitral Valve in 84 Patients. *Circulation.* 2004 May 18;109(19):2309-13. doi: [10.1161/01.cir.0000129269.98460.c8](https://doi.org/10.1161/01.cir.0000129269.98460.c8)
3. **López-Pardo F, Urbano-Moral JA, González-Calle A,** et al. Three-Dimensional Transesophageal Echocardiography in the Anatomical Assessment of Isolated Parachute Mitral Valve in an Adult Patient. *Echocardiography.* 2015 Nov;32(11):1732-5. doi: [10.1111/echo.13003](https://doi.org/10.1111/echo.13003)

TO CITE THIS ARTICLE:

Wessly P, Zoghbi WA. Parachute Mitral Valve in an Adult. *Methodist DeBakey Cardiovasc J.* 2023;19(1):12-14. doi: [10.14797/mdcvj.1193](https://doi.org/10.14797/mdcvj.1193)

Submitted: 02 December 2022 **Accepted:** 06 December 2022 **Published:** 20 January 2023

COPYRIGHT:

© 2023 The Author(s). This is an open-access article distributed under the terms of the Attribution-NonCommercial 4.0 International (CC BY-NC 4.0), which permits unrestricted use, distribution, and reproduction in any noncommercial medium, provided the original author and source are credited. See <https://creativecommons.org/licenses/by-nc/4.0/>.

Methodist DeBakey Cardiovascular Journal is a peer-reviewed open access journal published by Houston Methodist DeBakey Heart & Vascular Center.