

TEE ESSENTIALS

Assessment of the mitral valve: Anatomy of the mitral valve

TEE is superior to transthoracic echo for imaging the structure and function of the mitral valve, largely because of the valve's proximity to the TEE transducer. The mitral valve is a complex structure comprising the valve leaflets, annulus, chordae tendineae, and papillary muscles. Abnormalities affecting any part of the mitral valve apparatus can lead to valvular dysfunction.

The mitral valve should be imaged and assessed with color Doppler in the mid-esophageal four-chamber, mitral commissural, two-chamber, and long-axis views. The mitral valve can also be assessed, in both long axis and short axis, from the transgastric position. The use of continuous wave/pulsed wave Doppler is advised in the mid-esophageal four-chamber and/or long-axis views.

Mitral valve annulus

The major axis mitral annular diameter should be measured in the mid-esophageal commissural view, and the minor axis in the mid-esophageal long-axis view. Both measurements should be taken at end-diastole and end-systole. Surgeons find these measurements useful when planning mitral valve repair.

Mitral valve leaflets

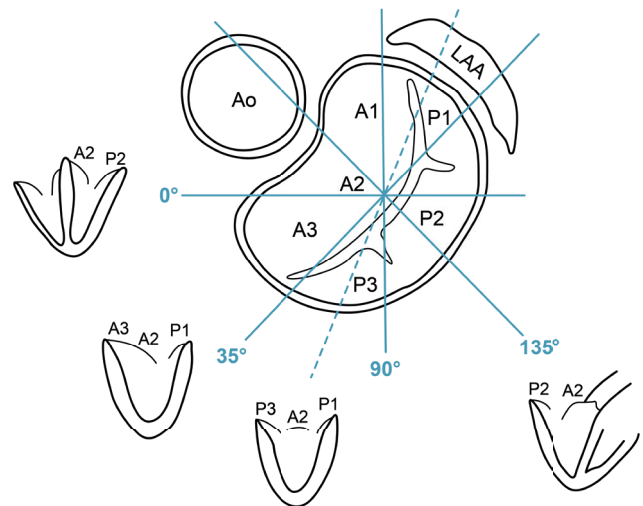
The anterior mitral leaflet occupies one-third of the mitral annulus circumference and consists of three segments (scallops), named A1, A2, and A3 (from lateral to medial). The posterior mitral leaflet occupies two-thirds of the mitral annulus circumference and also consists of three segments (scallops), named P1, P2, and P3 (from lateral to medial). In each view, careful consideration needs to be given to which mitral valve segments are visible (e.g., when assessing prolapse).

TOP TIP

The A1 and P1 segments are located closest to the left atrial appendage (LAA)—if you can identify the LAA, this can help orient you and help with naming of the mitral valve segments.

Subvalvular apparatus

The anterolateral papillary muscle supplies chordae tendineae to the lateral halves of both mitral valve leaflets, and the posteromedial papillary muscle supplies chordae tendineae to the medial halves.



Further reading

Ender J, Sgouropoulou S. 2013. Value of transesophageal echocardiography (TEE) guidance in minimally invasive mitral valve surgery. *Ann Cardiothorac Surg.* 2: 796–802.