

Two Views to Save Lives

Transesophageal Echocardiography for Peri-Arrest and Cardiac Arrest Patients

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By:

Maria O'Rourke MD,
Byron Mendenhall MD,
Elisa M. Aponte MD



Although transesophageal echocardiography (TEE) has long been used to help diagnose valvular heart disease, wall-motion abnormalities, strain, and cardiac outflow, it has been recently shown to have significant benefits in the management of emergency department (ED) patients in cardiac arrest.¹ Transthoracic echocardiography during cardiac arrest can be technically difficult and often leads to long interruptions in chest compressions.² By providing an unobstructed view of the heart and the great vessels, TEE allows clinicians to accurately evaluate cardiac function and the quality of chest compressions as well as perform resuscitative measures with the probe still in place. TEE can also be useful in the unstable, intubated ED patient in order to obtain more information about their cardiac function, fluid status, the etiology of their shock state, and previously unknown pathologies (e.g. aortic dissection or pulmonary embolism).³⁻⁴

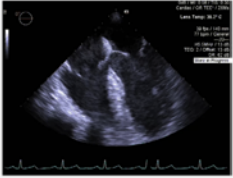




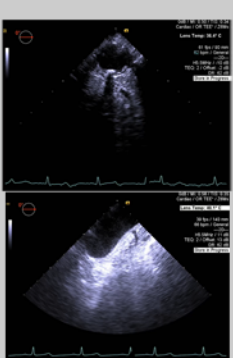
The 2017 ACEP guidelines recommend a four-view limited point of care exam for the patient that presents to the ED in cardiac arrest.⁵ We propose two supplemental views that provide additional information in both the peri-arrest and cardiac arrest patient and can be used in settings beyond the ED.

Quick Six

In addition to the published views related to TEE in cardiac arrest, the two additional views are:⁶

1. Mid Esophageal 2 Chamber View at 90 degrees
2. Descending Aorta and Aortic Arch View at 0 degrees

Quick Six

Name	Views	Clinical Application
Mid-Esophageal 4 Chamber 0-10 degrees		LV/ RV Function Wall Motion Abnormalities Valvular Function Pericardium
Mid-Esophageal 2 Chamber 90 degrees		Mitral Valve Function Left Atrial Appendage Wall Motion Abnormalities
Mid-Esophageal Long Axis 120-140 degrees		Quality CPR LV Function Valvular Function Pericardium
Mid-Esophageal Bicaval 90-120 degrees		Volume Responsiveness Procedural Guidance
Transgastric Mid Papillary Short Axis 0-20 degrees		Quality CPR LV Function Wall Motion Abnormalities Pericardium
Mid-Esophageal Descending Aorta to Upper Esophageal Aortic Arch 0 degrees		Aortic Dissection Aortic Aneurysm

How To Obtain Additional Views

These additional views are easily obtained. The first additional view is the midesophageal 2 chamber view which is obtained by simply increasing the omniplane to 90 degrees from the midesophageal 4 chamber view at 0 degrees. This will afford the examiner views of the anterior and inferior walls of the left ventricle as well as the mitral valve. The second additional view can be obtained by straightening then slightly withdrawing the probe from the trans gastric mid papillary view and rotating the probe to the patient's left until the descending aorta comes into view. One then continues withdrawing the probe while keeping the aorta in view, until the aortic arch is reached in the upper esophagus. To get a more complete view of the aortic arch one must rotate the probe slightly towards the patient's right. These extra views are simple to acquire and add a great deal of information about the aorta while one is removing the probe.

References:

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6. Arntfield R, Pace J, McLeod S, et al. Focused transesophageal echocardiography for emergency physicians-description and results from simulation training of a structured four-view examination. *Crit Ultrasound J.* 2015 Dec; 7(1):27.