

Tri-plane imaging cuts exam time, making it a practical clinical tool for busy echo labs.

St. Francis Hospital, Roslyn, New York

Echocardiography is the most common modality for cardiac imaging; it is non-invasive, portable and widely available.

The ability to accurately measure LV volume and ejection fraction (EF) is essential in the management of patients with heart disease. 4D imaging is less reliant on geometric assumptions, than is 2D imaging, making these measurements even more accurate.

The use of tri-plane imaging provides a simple, easy-to-use LV quantification method while maintaining accuracy of LV volumes and EF. The resulting reduction of exam time makes tri-plane imaging a valuable tool for busy clinical laboratories.



“We found tri-plane imaging from GE Healthcare to be an extremely useful and practical tool for ejection fraction determination.”

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Tri-plane imaging improves workflow in busy clinical laboratory.

In this case study, 30 consecutive patients were evaluated in the echocardiography laboratory at St. Francis Hospital.

Tri-plane imaging was performed on each patient. The GE 3V probe with tri-plane imaging capability was used, allowing the operator to acquire high-quality bi-plane and tri-plane images from the same heartbeat – without moving the probe. This allowed more accurate cardiovascular information in to be acquired in fewer, faster steps.

Fifteen patients were then repositioned, and a duplicate set of tri-plane images was acquired for test-retest variability determination. Tri-plane images were then analyzed offline by two observers who were blind to each other's results using the EchoPAC™ Dimension workstation.

LV volumes and EF generated using the tri-plane image acquisition mode were compared to the LV volumes and EF generated using the 4D full volume acquisition mode utilizing the Pearson correlation, linear regression analysis and Bland Altman analysis. Test-retest variability for tri-plane was computed by comparing the values for two consecutive acquisitions.

It was concluded that tri-plane imaging is a practical tool for EF determination in a busy clinical laboratory:

- Superior image quality for boundary tracing and volume quantification
- No need for ECG gating
- Misregistration is not a concern
- Automatic selection of end-diastole and end-systole
- Minimal underestimation of volumes
- Good agreement with 4D full volume measurements
- Good test-retest reproducibility
- Ease of use

St. Francis Hospital, The Heart Center®
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St. Francis Hospital's mission is to provide the highest quality health care, with an emphasis on the diagnosis, treatment and prevention of heart disease. St. Francis Hospital is committed to serving its community regardless of race, creed, national origin or ability to pay.

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