TEE-Guided Hemodynamic Management of a Series of Patients with Mechanical Hemodynamic Support

Christopher Y. Kang, MD, Nicholas C. Cavarocchi, MD, Hitose Hirose, MD, Harrison Pitcher, MD, Harold Hastings, PhD

Department of Surgery, Division of Cardiothoracic Surgery, Thomas Jefferson University Hospital, Philadelphia, PA, United States

Introduction

Fluid and hemodynamic management are fundamental in critical care. Cardiac function and volume status are critical components to patient care. Intravascular volume status is difficult to establish. Current modalities use indirect methods to gather data which can misdirect patient care. Conventional TTE and TEE are unsuitable for continuous and effective hemodynamic assessment

ImaCor ClariTEE probe

A miniaturized hTEE probe that can lay indwelling for 72 hours.

Allows direct visualization of intravascular volume and cardiac function

This easy to use probe allows real time visualization of the heart without need of anethesia or sedation.

Design

We retrospectively reviewed 3 patients on mechanical circulatory support. A hTEE probe was used in each patient.

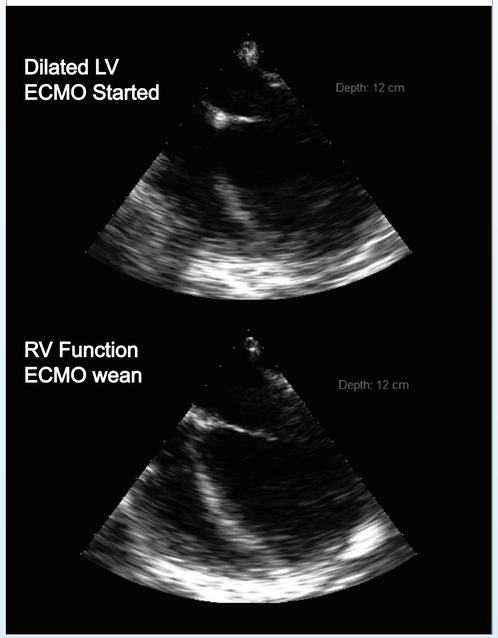
Case 1

A 55 y/o female presenting to the hospital for a transplant evaluation. She decompensates into multiple organ failure despite maximum doses of inotropes. Patient was subsequently put on ECMO. Cannula placement confirmed using the hTEE probe.

Weaning protocol was initiated with monitoring of RV and LV function by hTEE

Study repeated next day with standard TEE probe with similar results.

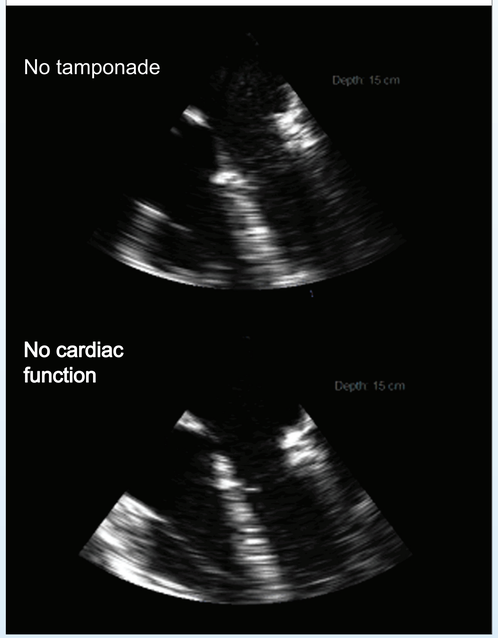
The patient was weaned successfully from ECMO to LVAD without right heart failure as predicted from TEE monitoring



Case 2

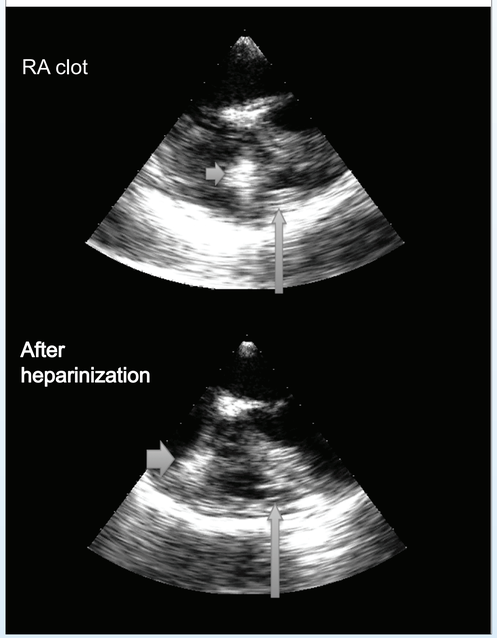
47 y/o male admitted for a redo sternotomy, HeartMate II LVAD explant, and orthotopic heart transplantation. Postoperatively, the patient required an escalation of vasopressors despite good cardiac function. A hTEE probe was placed to help monitor heart function. The patient was taken back to the OR to rule out cardiac tamponade multiple times even though the probe told us otherwise. Sudden decrease in cardiac function was seen with real time monitoring with the hTEE probe

Based on this finding, central ECMO support was established



Case 3

58 y/o female with an anterior ST-elevation MI and a 20% EF. The patient developed a complete AV block and hypotension that resulting in IABP replacement. The patient continued to deteriorate. Patient was transferred to TJUH for VA-ECMO. Anticoagulation was held secondary to a retroperitoneal bleed. The ECMO flow rate suddenly decreased without a change in her PA pressures or CVP. The hTEE probe was used and detected a right atrial clot. The clot resolved after systemic heparinization.



Conclusions

Although more study is needed, hTEE can impact management of patients in the critical care setting.

There are many ways to utilize the hTEE probe to help make clinical decisions.

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Contact

Nicholas Cavarochi MD
Nicholas.Cavarocchi@jefferson.edu