Efficacy of miniaturized ImaCor trans-esophageal echocardiogram (TEE) probe in mechanical circulatory support*

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Introduction

Ventricular assist devices (VAD) and extracorporeal membrane oxygenator (ECMO) are utilized in cardiac surgical care units to provide mechanical circulatory support. The hTEE probe (ImaCor) allows real time visualization of cardiac function. It can immediately reveal the effect of changes in support, diagnose the cause of hemodynamic instability, and more definitively determine the need and timing for operative intervention.

Methods

A retrospective review of 24 patients in which the hTEE probe was used. Patients were divided into one of three groups; LVAD; ECMO; Post-cardiac Surgery. Post-cardiac surgery patients include those status post coronary artery bypass grafting, valve replacements, and heart transplants.

Results

The results of using the hTEE probe in LVAD, ECMO patients are shown.

	Pre-hTEE Diagnosis	**Post-hTEE Diagnosis**	**Intervention**
LVAD (n=5)	Hemodynamic Instability (n=1)	RV Failure (n=2) Inadequate Flow (n=1) LVAD Clot (n=1)	Increased Inotrope Increased Flow Heparin Administration
	Device Malfunction (n=1)	No LVAD thrombus (n=1)	Observation
ECMO (n=12)	Hemodynamic Instability(n=1)	Myocardial Hematoma without perforation (n=1)	Observation
	ECMO Wean (n=6)	Recoverable RV function (n=3)	LVAD
		Biventricular Failure (n=3)	Contraindication of LVAD, Withdraw of Care
	Low Flow (n=4)	Cannula Malposition (n=3)	Emergent Operative Repair
		Venuous Cannula Clot (n=1)	Reposition
Post Cardiac Surgery (n=7)	Hemodynamic Instabilitiy (n=9)	RV Failure (n=4)	Increased Fluids, Inotrope management
		Tamponade (n=1)	Operative Evacuation
		No Tamponade (n=2)	Medical Management

Conclusions

From our experience, the hTEE probe is a cost-saving, readily accessible point-of-care device that directs clinical management of patients with artificial devices and can determine the need for alterations in therapy.

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