



Intraoperative transesophageal echocardiogram evaluation for liver transplantation

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Transesophageal echocardiography (TEE) is a powerful tool for diagnosis and management in both cardiac and noncardiac surgeries. TEE is especially relevant during liver transplantation as patients often have underlying cardiac or pulmonary diseases, large volume shifts are anticipated, and patients are prone to thrombotic complications. The American Society of Echocardiography Guidelines assigned a grade B2 to TEE as a hemodynamic monitoring tool in this context [1].

We present a TEE protocol developed at London Health Science Centre for use during liver transplantation (Table 1) based on recent literature [2–5]. This protocol includes a comprehensive baseline examination during the dissection phase, followed by a more focused assessment during the anhepatic and neohepatic phases. We emphasize the importance of labeling the TEE loops during the different phases for quality of reporting, as well as for education and research purposes. During the anhepatic phase, we limit TEE probe manipulation and focus predominantly on midesophageal views. During the neohepatic phase, we aim for windows through the inferior vena cava and perform hepatic vein evaluation if the quality of the images permits. Although these views are not yet standardized in liver transplantation, there is increasing interest in the literature in this regard, and we try to include them as part of our global evaluation.

Table 1. Protocol for Transesophageal Echocardiogram in Liver Transplantation

Dissection phase
Chamber sizes
Hypertrophy
Biventricular function
Valvular function. If tricuspid regurgitation is present, assess pulmonary artery systolic pressure
Rule out patent foramen ovale, assess risk of paradoxical embolization, distinguish intracardiac vs. transpulmonary shunts
Verify Swan-Ganz position and/or facilitate placement
Verify guidewire and cannula position in venovenous bypass
Rule out bilateral pleural effusions and pericardial effusion
Anhepatic phase
Biventricular function
Rule out left ventricular outflow tract obstruction
Neohepatic phase
Right ventricular function
Rule out systolic anterior motion of the mitral valve. Measure gradient across the left ventricular outflow tract as required
Rule out intracardiac or pulmonary thromboemboli or air
Assess the inferior vena cava patency: color Doppler if possible
Assess the hepatic veins: color Doppler and pulsed wave Doppler, if possible

We hope to see more literature regarding TEE during liver transplantation and the development of focused guidelines for use of TEE as a perioperative tool for the transplant anesthesiologist.

Conflicts of Interest

No potential conflict of interest relevant to this article was reported.

Author Contributions

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