The implantation of a left ventricular assist device (LVAD) poses several challenges to the anesthesiologist. 
Indications for LVAD use include: 
• Post-cardiopulmonary bypass low output syndrome 
• As a bridge to heart transplant 
• As destination therapy in patients with end-stage cardiomyopathy who are not candidates for transplant. 
There are several types of LVAD designs including: 
• Extracorporeal nonpulsatile centrifugal-flow pumps 
• Extracorporeal pulsatile pumps 
• Implantable pulsatile pumps 
Intraoperative monitoring with Transesophageal Echocardiography (TEE) is valuable in these cases. TEE not only monitors ventricular function and volume status, but also provides a tool for evaluation of atrial septal defects. If present, these may cause right to left shunting as the left-sided filling pressures are decreased when LVAD support begins. 
TEE is also used to evaluate possible valvular abnormalities, which may affect LVAD performance. These abnormalities, if detected, should be repaired before placement of the device. 
Separation from CPB requires considerable care in these patients. 
These patients often have a history of prior heart surgeries and are at additional risk for massive, blood loss and transfusion and its related issues. 
Placement of a LVAD is well-established in cardiovascular practice. There are many indications for the use of these devices, and perioperative management of these patients involves a lot of preparation. It is important for the clinician to have a thorough understanding of the basic principles of LVAD management.