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The implantable left ventricular assist device: A bridge to a destination

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Abstract

The Implantable Left Ventricular Assist Device (LVAD) has been in clinical use for several decades, serving originally as a therapy for bridging patients to heart transplantation (BTT). For the past fifteen years, the implantable LVAD has also served as a permanent device in patients who are not eligible for cardiac transplantation—Destination Therapy (DT). Although early results were markedly superior to optimal medical management (OMM), device durability was limited. In response, improvements in patient selection and pump design have translated into improved outcomes. As such, a broader acceptance of LVAD therapy for end-stage heart failure has been observed. At present, second and third generation implantable LVADs are commercially available. The second generation units are beginning to overcome the limited durability issues—in fact, there are over 1900 patients currently on support for greater than 2 years and nearly 1000 patients on support for greater than 3 years. The third generation units, with their magnetically-levitated technology, may be even more rewarding. Finally, for the first time in artificial heart history, the annual number of long-term LVADs implants has exceeded the number of transplantation, raising the question of whether they (i.e. the implantable LVAD) will one day replace transplantation as a therapy for end-stage heart failure.

Biography

Louis Samuels graduated Medical School from Hahnemann University (Philadelphia, PA) in 1987 and completed his Cardiothoracic Surgical training in 1995. He joined the faculty of Drexel University as the Surgical Director of Cardiac Transplantation. In 2001, Samuels and his team implanted the world's 5th totally implantable electric artificial heart (AbioCor™). In 2003, he joined the Main Line Health System as the Surgical Director of Heart Failure. In addition to cardiac transplantation and LVAD implantation, Samuels performs CABG and Aortic Valve surgery. In 2012, Samuels became Professor of Surgery at Thomas Jefferson University School of Medicine.