

First Swedish Experience with the HeartMate II Left Ventricular Assist Device (LVAD) as bridge to heart transplant.

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Objectives

Patients with terminal chronic progressive heart failure are candidates for heart transplantation. There are only few individuals who can benefit from this, due to donor organ shortage. The development of LVAD started many years ago, used initially most as bridge to transplant. The technical development has improved with time and the axial flow pumps have been introduced.

Material and methods

Eight patients, 6 male with a mean age of 49,5 years (range, 28 to 60 years) were diagnosed with ischemic heart disease (IHD) n=5, dilated cardiomyopathy n=3. Five patients were implanted elective and 3 patients acutely due to rapid irreversible deterioration of the disease. Four patients (50%) had prior heart surgery and 6 (75%) had previous myocardial infarction. Two patients (25%) were on mechanical ventilation and LVAD preoperatively. Mean P-Creatinine was 132 mmol/L (range, 76 to 329 mmol/L), cardiac output was 3,3 L/min (range, 2,4 to 4,2 L/min), pulmonary pressure was 34 mmHg (range, 29 to 39 mmHg) preoperatively.

Results

All patients were implanted with the HM-II connected with the left ventricular apex to the ascending aorta. Mean cardiopulmonary bypass (CPB) time was 109 minutes (range, 93 to 152 minutes). Two patients had additional tricuspid valve plasty. No patient was in the need of a right ventricular assist. Four (50%) patients were reoperated within 24 hours due to bleeding. ICU-stay was in average 17 days (range, 6 to 30 days).

All (100%) received low molecular weight heparin (LMWH) until therapeutic INR, Coumadine and acetylsalicylic acid (ASA). One patient suffered from transient ischemic attack (TIA) and the antitrombotic treatment was complemented with Clopidogrel. Two (25%) patients had minor hemorrhagic events. Four patients (50%) were diagnosed with drive-line infections according to wound cultures and treated with iv. antibiotics.

Six patients (75%) were discharged to home after 48 days (range, 27 to 105 days) and 5 patients were transplanted after 132 days (range, 104 to 158 days). No mortality was recorded prior to transplant. One patient (12,5%) died shortly after the transplant. No mechanical errors. There was one pump-stop, probably due to battery change error caused by the patient.

Conclusion

Eight patients have been implanted with the HeartMate-II axial flow LVAD since September 2005 at two Swedish non-transplanting hospital facilities. The device has been easy and safe to use. Five patients have been successfully bridged to heart transplantation after mean 132 days, 3 patients are still ongoing.