Purpose: Prior studies demonstrated significant outcome disparities in patient undergoing left ventricular assist device (LVAD) implant when stratified by sex and race. Because very few data exist from large experiences, we reviewed the Mechanical Circulatory Support Research Network registry.

Methods: Between May 2004 and September 2014, 719 pt underwent LVAD implantation at our respective institutions. Median age was 57 years (range, 18-82) and there were 577 males (80%). Race included Caucasian (C) in 586 pt (82%), African-American (AA) in 112 (16%), and Other (O) in 21 (3%). Between sexes, significant preop differences included median age (male: 60 vs. female: 57), ischemic etiology (53% vs. 35%), mean INTERMACS profile (2.9 vs. 2.5), and creatinine (1.3 vs. 1.1) (all p < 0.001). Between races, significant preop differences included median age (C: 61 vs. AA: 51 vs. O: 61), ischemic etiology (55% vs. 24% vs. 40%), redo sternotomy (37% vs. 12% vs. 35%), left ventricular ejection fraction (15% vs. 15% vs. 21%) (all p < 0.001).

Results: There were no significant differences in overall survival at 1, 3 or 5 years when stratified by either sex or race (Figure 1). Similarly, there were no differences in freedom from stroke, driveline infection, gastrointestinal bleeding or pump thrombus when stratified by either sex or race (Figure 1). After controlling for differences in baseline characteristics with a multivariate analysis, neither sex nor race significantly affected survival (p = 0.11). GI bleed (p = 0.07), driveline infection (p > 0.18) and pump thrombus (p > 0.9) were reported in 145 patients. Cumulative incidence rate for driveline infections was 8.3% and 12.5% resp. Major bleeding events were seen in 74 patients (0.09 EPPY), resulting in 1- and 2-year cumulative incidence rate of 13.6% and 14.7%. Finally, cerebral events (hemorrhagic or ischemic strokes) occurred in 50 patients (0.11 EPPY) patients, with a cumulative incidence rate of 12.7% and 15.2%.

Conclusion: The HM II LVAD has found broad acceptance during recent years and shows an acceptably low complication rate.

The HeartWare HVAD Pump in Clinical Practice – Results From 1,035 Patients Analyzed in a Retrospective European Multi-Center Study


Purpose: Since 2006 the HeartWare HVAD has become one of the most frequently implanted ventricular assist devices (VAD) in Europe.

Methods: We collected data from all HVAD implantations performed at 4 European centers in 2006-2014. Analyses included patients’ demographics, operative strategies, adverse events according to INTERMACs definitions, length of support and outcomes.

Results: In the study period 1,035 patients received implantation of one or two HVAD pumps.

The majority of patients suffered from idiopathic dilated cardiomyopathy (CM) (46%, n=480), ischemic CM (41%, n=422), other CM (2%, n=26) and myocarditis (2%, n=18). The percentage of patients in INTERMACS class 1, 2, 3 and 4 at implantation was 23.2%, 37.9%, 30.2% and 8.7% respectively. Before implantation 15% of patients had been supported with extracorporeal life assistance and 3.0% required hemodialysis.

In 95% the HVAD was implanted as LVAD (n=984), in 0.5% as RVAD (n=5) and in 4.5% as BVAD (n=46). 77 percent of the operations were carried out with heart-lung machine or on ECMO and 23% off-pump. Whereas 76.3% of the implantations were through a median sternotomy and 16% a minimally invasive thoracotomy and 23% off-pump. Support periods lasted from 1 day to 5.2 years (mean 446 ± 442 days). Termination of VAD support was due to transplantation in 164 patients (15.9%) after a median of 427 ± 333 days and due to recovery allowing VAD explantation in 12 patients (1.2%) after 502 ± 302 days. Thirty-day, 1-year and 2-year survival rates were 86.6%, 65.9% and 56.9%

Pump thrombosis occurred in 99 patients. The cumulative incidence of pump thrombosis was 7.0% after 1 and 10.6% after 2 years. Driveline infections were reported in 145 patients. Cumulative incidence of driveline infections was 10.2% and 14.1% after 1 and 2 years. Major bleeding events were seen in 306 patients, resulting in 1- and 2-year cumulative incidence of those events.