First-Time Use of Driving Eligibility Study to Safely Improve Quality of Life for LVAD Patients

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Background: Increasing numbers of patients are receiving left ventricular assist devices (LVADs) as treatment for end-stage heart failure. As indications for this therapy expand, patients are experiencing increasing durations of support and levels of independence. To improve quality of life, we have selectively allowed patients to drive after completing careful preparation.

Methods: A driving eligibility study was designed that simulates LVAD pump failure for three minutes and assesses a patient’s ability to enact emergency procedures during that time. After instituting anticoagulation, the Thoratec HeartMate LVAD (Thoratec Corporation, Pleasanton, CA) is turned off. Hand pumping once every 10 seconds is done to avoid blood stasis while minimizing pump contribution to cardiac output. Blood pressure, heart rate, and rhythms are monitored in the supine, sitting, and standing positions while the patient is evaluated for symptoms of inadequate cardiac output. Results: Thirty-one patients being supported by HeartMate VE or XVE (Thoratec Corporation, Pleasanton, CA) LVADs have participated in the driving eligibility study. Twenty-nine patients (94%) were approved to drive. An average of 122 days (range 11-430) elapsed between hospital discharge following LVAD implantation to successful completion of driving study. Of all patients newly discharged from the hospital on LVAD support during this time, 49% resumed driving. These patients have experienced 2 or 6 patient-years of driving with an average of 309 days per patient. No adverse events have been reported while driving.

Conclusion: Based on our experience and utilizing careful precautions, we have found driving to be safe, emotionally beneficial, and necessary for a high quality of life as LVAD patients resume their traditional lifestyle.