

Normalization of High Pulmonary Vascular Resistance with HeartMate II LVAD Support

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Objective: Pulmonary hypertension (PHT) and elevated pulmonary vascular resistance (PVR) lead to poor outcome after heart transplantation due to postoperative failure of the donor right ventricle. As such, patients with PHT and elevated PVR are considered high risk for transplantation. The use of left ventricular assist device (LVAD) to reduce PHT has been suggested to convert those patients to be good transplant candidates.

Methods and Results: We describe 4 patients with ischemic cardiomyopathy who deteriorated and required support. Three had previous CABG. All patients had PHT and elevated PVR despite maximum medical therapy. HeartMate II Lvad was implanted in all 4 patients. The patients experienced clinical improvement and was sent home. Systolic pulmonary pressure was measured preoperatively and between 3 – 15 months postoperatively (table). Pulmonary pressures came down in all patients.

| Patient | Preop pulmonary pressure (mmHg) | Postop pulmonary pressure (mmHg) | Time between studies (months) |
|---------|---------------------------------|----------------------------------|-------------------------------|
| 1 | 70 | 30 | 11 |
| 2 | 80 | 30 | 15 |
| 3 | 95 | 48 | 7 |
| 4 | 90 | 40 | 3 |

Conclusions: Elevated PVR and severe PHT were both previously considered as contraindication for heart transplantation. A period of LVAD pumping leads to a progressive decrease of PVR and normalization of pulmonary pressures, making these patients amenable for heart transplantation.