

## BRIDGE TO LUNG TRANSPLANTATION WITH THE NOVEL PUMPLESS INTERVENTIONAL LUNG ASSIST DEVICE NOVALUNG

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### Objective

To test whether interventional Lung Assist Novalung implantation is an effective bridge to lung transplantation strategy in patients with ventilation-refractory hypercapnia (the role of iLA in LTx has not been investigated previously).

### Study Design

Prospective study on lung transplant patients in one university hospital.

### Study Population

Patients with end stage lung failure and high urgency status developing ventilation-refractory hypercapnia with accompanying severe respiratory acidosis while awaiting lung transplantation.

### Methods

Between March 2003 and March 2005, twelve of the high-urgency recipients had severe ventilation-refractory hypercapnia and respiratory acidosis. These patients were connected to the novel pumpless interventional lung assist Novalung for bridge to lung transplantation.

### Results

The length of interventional lung assist Novalung support was 15 +/- 8 days (4-32 days). pH and PaCO<sub>2</sub> levels in arterial blood prior to interventional lung assist Novalung implantation were 7.121 +/- 0.1, and 128 +/- 42 mm Hg, respectively. Six hours after interventional lung assist Novalung implantation, pH, and PaCO<sub>2</sub> levels had changed to 7.344 +/- 0.1 (P < .05), and 52 +/- 5 mm Hg (P < .05), respectively. Oxygenation did not improve significantly. Four patients died of multiorgan failure, 2 patients before and 2 after lung transplantation. Thus, 10 out of 12 patients were successfully bridged to lung transplantation, and 8 are still alive (1-year survival, 80%). Ventilatory peak pressures and PEEP level could be reduced after iLA implantation.

Three patients required replacement of the device for accidental clotting at activated clotting times of less than 150 seconds. None of the patients showed signs of malperfusion of the lower extremities

### Commentary

This study is important for several reasons:

- It demonstrates the applicability of the iLA as a bridge to LTx in patients with end-stage lung failure.
- It compares favourably iLA application to ECMO which is a contraindication in most centers to LTx.
- It shows again that iLA indication is ventilatory failure, it only limitedly improves oxygenation.
- The authors state that interventional lung assist is their favored treatment for patients with ventilation-refractory lung failure with predominant hypercapnia and respiratory acidosis.

