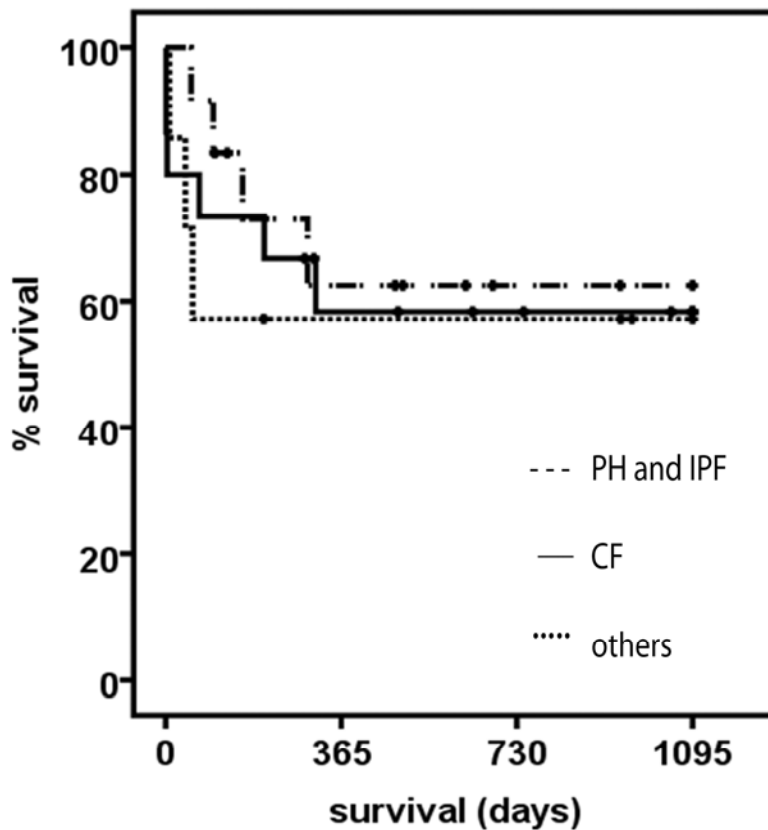


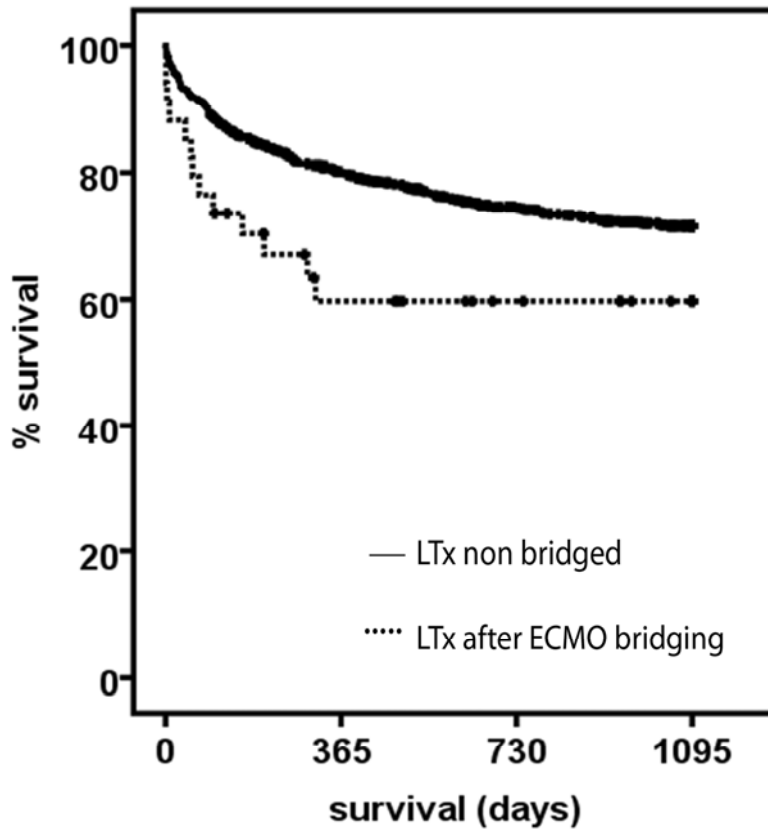
## SUPPLEMENTAL DIGITAL CONTENT 1 (COMBINED SDC)



### SDC 2 – FIGURE 1.

Kaplan-Meier 3-year survival in patients supported by extracorporeal membrane oxygenation before primary lung transplantation according to different indications. CF=cystic fibrosis, PH=pulmonary hypertension, IPF= idiopathic pulmonary fibrosis (others versus CF:  $p= 0,837$ , others versus PH and IPF:  $p=0,519$ , CF versus PH and IPF:  $p=0,738$ , respectively)

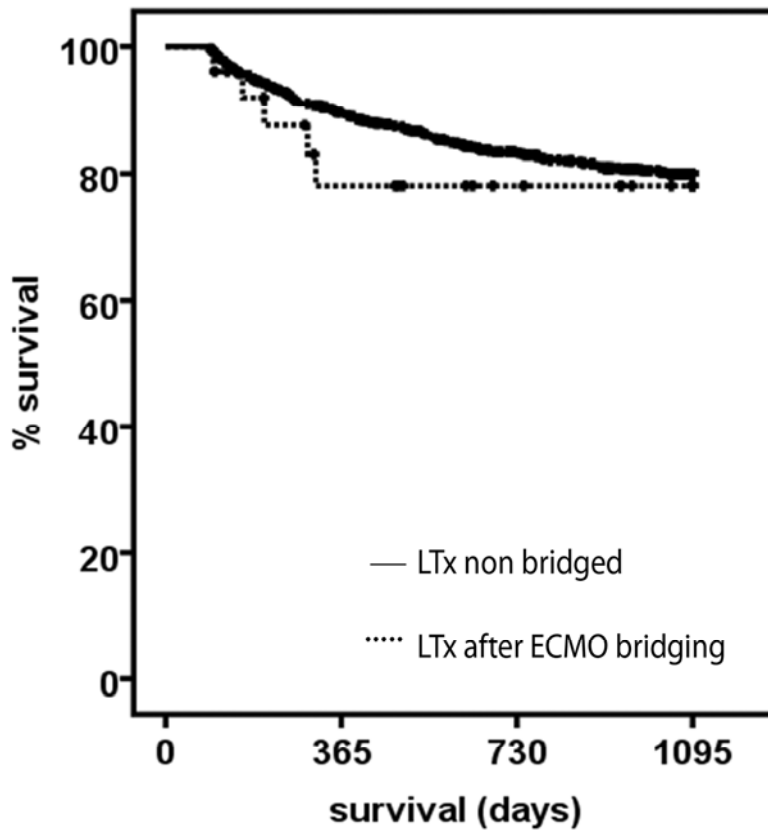
**SUPPLEMENTAL DIGITAL CONTENT 1 (COMBINED SDC)**



**SDC 3 – FIGURE 2**

Kaplan-Meier 3-year survival in patients supported by extracorporeal membrane oxygenation before primary lung transplantation versus patients not supported by ECMO

## SUPPLEMENTAL DIGITAL CONTENT 1 (COMBINED SDC)



### SDC 4 – FIGURE 3

Kaplan-Meier 3-year survival conditional on 3 months survival in patients supported by extracorporeal membrane oxygenation before primary lung transplantation (ecmobridge) versus patients not supported by ECMO before lung transplantation (p=0,505)

## **SUPPLEMENTAL DIGITAL CONTENT 1 (COMBINED SDC)**

### **SDC 5 -DEMOGRAPHICS**

Between 1998 and 2011, 38 patients (25 female) (median age 30,1 range 13-66 y) underwent ECMO support with intention to bridge to primary LTX. Underlying diseases of the patients were CF (n=17), PH (n=4), IPF (n=9), ARDS (n=4; in one patient as sequel of H1N1 infection), hemosiderosis (n=1), BO (n=1), sarcoidosis (n=1) and bronchiectasis (n=1).

Patients had a number of relevant co-morbidities, including Type 1 diabetes (n=1), Crohn's disease (n=1), epilepsy (n=1) and cholestasis (n=1), together with other additional risk factors consisting of bilateral talc pleurodesis (n=1), tracheostomy (n=4), severe cachexia (n=2), HIT (n=2), 100% PRAS level (n=1), temporary need for hemofiltration (n=4), and prolonged high dose steroid medication (n=5).

V/V ECMO was used as a bridge modality in 18 patients, in 2 of them in combination with DLC (Avalon) cannulation. V/A ECMO was used in 15 other patients. One patient was bridged with the pumpless Novalung device alone. The remaining four patients needed a stepwise increase in their support modality with switch from V/V to V/A ECMO (n=2), from Novalung to V/V ECMO (n=1) and from Novalung to V/A ECMO (n=1) respectively.

### **SDC 6 – BRIDGE TECHNIQUES**

ECMO bridging was performed with the Medtronic portable bypass system (Medtronic Bio-Console 560, Medtronic Inc., Minneapolis, USA) with a hollow fibre oxygenator (Medtronic CPMPCB Affinity BPX-80 or Affinity NT, Medtronic Inc., Minneapolis, USA) or a polymethylpentene membrane oxygenator (Quadrox, Jostra, Hirrlingen, Germany). ECMO support was used both in veno-venous (v/v) and veno-arterial (v/a) settings in this series. For

## **SUPPLEMENTAL DIGITAL CONTENT 1 (COMBINED SDC)**

cannulation of the artery, a Bio-Medicus Cannula 15-17 Fr., and for venous access, a Bio-Medicus Cannula 17-19 Fr were used (all from Medtronic Inc., Minneapolis, USA). An additional limb cannula of 8-10 Fr was used whenever clinically indicated. More recently, the single double lumen cannula (DLC) (Avalon Elite Bi-Caval dual lumen catheter, Avalon Laboratories, LLC. 2610 E. Homestead Place Rancho Dominguez, CA 90220) (28) was used in two patients.

If patients were switched to central cannulation intraoperatively, a Medtronic DLP 22 Fr. Curved Tip cannula was used in the ascending aorta, and a Medtronic MC2X Three Stage 29/37 Fr. venous cannula was used in the right atrium. Both, the cannulae and the circuits were fully heparin coated (Medtronic Carmeda BioActive Surface). Priming solution consisted of 200 ml Ringer's Lactate solution. The flow was set according to clinical needs.

Pumpless ECMO support was performed with the recently described Novalung (iLA, Novalung GmbH, Hechingen, Germany) device (8), which allowed a arterio-venous pulsatile blood flow driven by the cardiac output over a low resistance, protein matrix coated diffusion membrane. Cannulation was performed with Seldingers technique, using a 15F cannula for the left femoral artery and a 17F cannula for the right femoral vein. Priming solution was 0,9% NaCl.

### **SDC 7 - Anticoagulation strategy**

A single bolus dose of 70 IU/kgBW Na-heparin was routinely administered IV immediately before cannulation followed by a continuous IV administration of Na-heparine with the goal to keep ACT between 150-180 sec, or PTT between 55-60 sec. This standard anticoagulation was discontinued immediately before the transplantation, and the further intra- and postoperative heparin management was adapted on an individual basis, according to the risk-

## **SUPPLEMENTAL DIGITAL CONTENT 1 (COMBINED SDC)**

benefit scaling of the surgeon. In most cases continuous heparin was not restarted, even when ECMO was prolonged postoperatively.

### **SDC 8 - Antiinfectious management during the bridging period**

All patients received broadspectrum antibiotic prophylaxis with piperacillin / tazobactam or targeted antibiotic therapy according to the most recent antibiogram. In patients with CF double antibiotic therapy was standard. Fungal prophylaxis with either fluconazol or voriconazol was routine.

### **SDC 9 - Posttransplant Immunosuppression**

All patients were immunosuppressed with a triple therapy consisting of cyclosporine or tacrolimus, mycophenolate mofetil and prednisolone.

In some of the CF patients induction therapy with anti T-cell globuline (n=4) or alemtuzumab (n=1) was performed.

### **SDC 10 - Statistical analysis**

Continuous data is shown as median and corresponding range. In non-parametric distributed data Mann- Whitney U Test was used to detect significant differences between two groups and Kruskal- Wallis Test for more than two groups. Survival was estimated according to the method of Kaplan Meier and the Log Rank Test was used to detect significant survival differences between the corresponding groups. The association of the three groups with clinical characteristics (gender, diagnosis and bridge type) was assessed by the two-sided Chi

## **SUPPLEMENTAL DIGITAL CONTENT 1 (COMBINED SDC)**

Square Test. P values are always given as two-sided and were considered statistically significant below 0.05. All statistical analyses were performed using the PASW Statistics 18.0 package (Predictive Analytics Software, SPSS Inc., Chicago, IL, USA).

## **SUPPLEMENTAL DIGITAL CONTENT 1 (COMBINED SDC)**