

# Ex-Vivo Lung Perfusion from Donors after Brain and Cardiocirculatory Death: Clinical Experience at the Policlinico of Milano

Dott.ssa ILARIA PROTTI (1), Dott. JACOPO FUMAGALLI (1), Dott.ssa FRANCESCA GORI (1), Dott. ALESSANDRO SANTINI (1), Dott. OSVALDO BIANCOLILLI (1), Dott. MATTIA BUSANA (1), Dott.ssa ELEONORA SCOTTI (1), Prof. LORENZO ROSSO (1), Dott. ALESSANDRO PALLESCHI (1), Prof. FRANCO VALENZA (1), Dott. ALBERTO ZANELLA (1), Prof. ANTONIO PESENTI (1)

(1) IRCCS Ca' Granda Policlinico di Milano, Dipartimento di Fisiopatologia Medico-Chirurgica e dei Trapianti, Università degli Studi di Milano, Via della Commenda, 16, Milano, Italia.

Argomento: Altro

## **Introduction**

Ex-Vivo Lung Perfusion (EVLP) is a valuable technique to expand the lung donor pool. Organs procured from donor after brain death (DBD) are considered for EVLP in case of progressively worsening in lung function. Instead EVLP represents the only option available to evaluate organs function from donors after cardiocirculatory death (DCD).

## **Methods**

In January 2011 an EVLP program started at the IRCCS Ca' Granda Policlinico of Milano. After organ procurement and static cold storage, the grafts are perfused with a dedicated solution added with red blood cells through a cardiopulmonary bypass circuit. The target values of blood flow (40% of estimated donor cardiac output), organ temperature (37°C) and ventilation (tidal volume 7mL/kg) are reached during the first hour of reperfusion, while in the next three hours the graft function is evaluated by monitoring gas exchange, pulmonary mechanics and pulmonary vascular resistances.

## **Results**

From 1/2011 to 1/2018 forty-one EVLP procedures have been performed. Thirty lungs were procured from DBD and 11 lungs from DCD. Twenty-four lungs were successfully transplanted (19 DBD-5 DCD). Seventeen lungs were rejected because of: deterioration of respiratory mechanics and gas exchange (10 cases), signs of infections (3 cases) and parenchymal bleeding (3 cases), see table. Pulmonary vascular resistance and increase in lung weight (end vs. start of EVLP) were similar between eligible and rejected grafts. Post-operative duration of mechanical ventilation was 3 [1-5] days for recipients of DBD lungs and 6 [3-12] days for recipients of DCD lungs. Two and one recipients of respectively DBD and DCD lungs died before intensive care unit discharge.

## **Conclusions**

The EVLP program started at our institution allowed to increase the number of organs available to transplantation including organs both from DBD marginal donors and DCD donors. Criteria of eligibility to transplantation of lungs undergoing EVLP remain to be further explored.

