How to Resolve Large Atelectasis in Ex Vivo Lung Perfusion?  
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Purpose: Donor lung atelectasis, especially if it is large, is sometimes resistant to standard recruitment maneuvers during donor management or procurement resulting in a persistently low P/F ratio. This results from the atelectatic area having a significantly lower compliance and higher critical opening pressure. Such difficulties can persist during ex vivo lung perfusion (EVL) decreasing the rate of conversion to transplantable lungs. The aim of this study was to investigate the rate of atelectasis in donors and the optimal protocol of lung recruitment of large atelectasis in the context of EVLP.

Methods: The size of atelectasis during lung procurement was recorded in standard donors (n = 22) and rejected donors (n = 23). Rejected donor lungs with large atelectasis (average percent of atelectasis in lower lobe > 50%) were procured for research use and perfused in Swedish EVL (n = 16). In the bagging group (n = 8), bagging technique was utilized to eliminate atelectasis in EVLP, if the conventional recruitment maneuver was unsuccessful.

In the selective ventilation group (n = 12), selective lobe recruitment was performed in the back table of donor hospital, using a pediatric tracheal tube placed in lower lobe and delivering maximum 30 cmH2O of PEEP to lower lobe. ABG, physiological parameters and transplant suitability of each lung were evaluated at 2 hour of EVLP.

Results: The average percentage of atelectasis was significantly higher in rejected donors than in standard donors (p < 0.05, 75.0 ± 5.2 vs. 22.0 ± 3.9%). There was a significant correlation between the size of atelectasis and P/F ratio of donor (R = -0.75, p = 0.0001) as well as with body mass index (BMI) and P/F ratio of donor (R = -0.50, p < 0.001).

In all cases of the bagging group, atelectasis was not eliminated by conventional recruitment maneuver in EVLP and bagging maneuver resolved atelectasis, whereas all atelectasis was eliminated in the selective ventilation group. The selective ventilation group was associated with significantly higher rate of transplant suitability (p < 0.01, 83% (20/24) vs. 25% (2/8)) and better P/F ratio (338 ± 24 vs. 266 ± 81 mmHg) than the bagging group.

Conclusion: Donors with elevated BMI might have larger atelectasis, resulting in lower P/F ratio, compared with donor with normal BMI. Selective lobe recruitment in the back table is a safe and effective method of eliminating large lobar atelectasis before EVLP.

Lung Transplant From Donors After Previous Cardiac Surgery: Ideal Gift Is Marginal Donor?  
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Purpose: Lung transplant (Tx) has become the definitive therapeutic option for patients with end-stage lung disease, but the number of available donor limits this option. Despite the efforts to expand donor criteria, previous cardiac surgery (CS) is still considered a contraindication from large part of Tx centers. Previous CS could be a real risk factor for graft retrieval; thus, intrinsic technical challenges are expected. However, previous CS might not have necessarily damaged the lungs; on the other hand, the underlying cardiac disease could not have impaired lung function.

Methods: We report 4 cases of successful bilateral lung Tx from donors who had previous major CS. We review all donor data, procurement and Tx details, and features and outcomes of recipients. Two donors had valve replacement and 2 had coronary artery bypass. To note, the donors had one or more extended criteria but all were never-smokers. The first case required EVLP evaluation because assisted with VA-ECMO.

Results: Despite technical challenge (Figure 1); all procurements were uneventful, without lung damages or waste of abdominal organs related to possible catastrophic events. Two recipients required ECMO bridge to Tx. Table 1 shows the early and long-term courses.

Conclusion: Our experience showed that lung procurement from donor who had previous CS is feasible and those grafts demonstrated good short and long term functions. Technical and anatomical problems are not necessarily related to quality and function of the lung. Therefore, it would be more accurate to consider the graft rather than the donor, being possible to find an ideal lung in this category of marginal donor.