
Preventing Refractory Hypoxemia after Lung Transplantation by Prone Positioning: A New Agenda for Research

Sir,
Preventing postoperative complications following lung transplantation (LT) is one of the important challenges ahead of intensivists.^[1] Primary graft dysfunction (PGD), a syndrome of acute lung injury, which causes severe hypoxemia, occurs

within the first 72 h following LT. It is one of the important complications of LT that is associated with substantial postoperative morbidity and mortality.^[2] Up to 57% of LT recipients experience different grades of PGD-induced hypoxemia from low to refractory.^[3]

Some evidence suggests that lung-protective mechanical ventilation (MV) with low-tidal volume ventilation (LTVV) in addition to positive end-expiratory pressure (PEEP) could prevent PGD-induced hypoxemia in the recipients of LT. Nevertheless, these suggestions require further validation in prospective clinical studies.^[3] In addition, these strategies of MV could not provide sufficient gas exchange in the episode of refractory hypoxemia. Therefore, because of a lack of clear evidence on how to optimally ventilate and manage patients, the current practices of MV strategy following LT are not based on rigorous evidence^[1] and need further investigation.

In terms of histopathology, it is assumed that PGD and acute respiratory distress syndrome (ARDS) have similar underlying pathophysiology. Hence, theoretically, any preventive and/or therapeutic approaches that diminish the rates of ARDS might be applicable to improve outcomes of PGD for recipients of LT.^[3] In this regard, the efficacy of some of the interventions that have beneficial effects in ARDS were evaluated in PGD. Prone positioning (PP) is one of those interventions that has shown some beneficial effects in improving outcomes in patients with ARDS.^[4]

Recently, the results of a single-center nonrandomized trial by Riera *et al.* have provided promising evidence for using PP during postoperative period for recipients of LT who have suffered from PGD-induced refractory hypoxemia.^[5] Before this study, the concern about possible complications of PP was a major obstacle to its application in patient undergoing major thoracic surgery. However, Riera's study showed no complications by using PP.

Given results of Riera's study, PP maneuver is a low-cost intervention, and there is no convincing evidence of harm from application of PP in mechanically ventilated adults with hypoxemia. Therefore, its effectiveness in preventing and/or treating postoperative refractory hypoxia in recipients of LT needs to be more verified in well-designed randomized trials. In addition, future researches could further explore the effectiveness of adding a noninvasive inspiratory support or lung-protective strategies with LTVV or PEEP to the prone position maneuver to confirm or refute these possibilities of benefit.

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Conflicts of interest

There are no conflicts of interest.

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