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INVITED COMMENTARY

Are three patients better than one?*

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Lung transplantation represents the only effective strategy for treatment of end stage respiratory failure. Nevertheless its clinical application remains quite limited and a significant discrepancy between the number of LTx performed and its real need still remains evident [1]. Therefore patients wait for LTx for a long period with a high mortality rate while on the waiting list. For this reason we wrote a review with a provocative title in which we wondered if LTx was a clinical reality or should be conversely considered an experimental procedure [2]. In the recent period, we are witnessing epochal changes at different levels in the field of lung transplantation. On the side of donor management, application of particular ventilatory strategies may be effective in increasing the rate of lung suitability [3]. After the initial experience published by Steen [4], very recently an important article from the Toronto Lung Transplant Program showed how initially rejected or sub-optimal grafts can be successfully transplanted after the recovery of a normal pulmonary function, obtained by *ex-vivo* lung perfusion [5]. ECMO and interventional lung assist devices have been introduced in the clinical armamentarium for the management of lung transplant recipients suffering from severe deterioration of pulmonary function. As it happens for heart and kidney recipients, novel technological advances of the devices nowadays available allow their applications as a bridge to transplant also for LTx. These technologies not only increase the life expectancy of patients in the waiting list but also avoid the necessity of mechanical ventilation and lead these patients to LTx in better conditions even without the need of an intensive care unit stay [6–8]. Waiting time for LTx is highly dependent from somatic characteristics of recipients and very small patients may wait for a suitable graft for a longer period. For these patients, living lobar lung transplant may be one of the possible strategies to overcome this issue. Chen *et al.* describe excellent results regarding pulmonary function on living lobar lung transplant donors. This is an important message but a word of caution is mandatory. In comparison with other solid transplant performed using living donor graft (e.g. kidney), living lobar lung transplant is a highly demanding procedure performed on 'healthy' patients (the donor). In fact, the procedure

on donors may be impaired by heavy morbidity. The expertise is crucial to reduce the procedure-related complications. Chen *et al.* [9] show a very low morbidity rate with very good early- and medium-term results but a concern regarding the reproducibility of the technique with the same results arises. Another ethical issue is related with very long-term results of LTx. Sub-optimal long-term survival of lung-transplanted patients imposes the question if a highly demanding and potentially risky operation is justified on healthy individuals who may become patients. One may argue that lung recipients would be otherwise condemned to death and that LTx is, nowadays, the only therapeutic option to gain a significant survival benefit. The final choice relies on the clinicians and their confidence with the techniques in their hands. However, the data presented by Chen *et al.* are remarkable and represent another important effort to improve the results of the management of patients suffering from end stage pulmonary disease.

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