



Editorial

Future Directions in Lung Transplant[☆]

Direcciones futuras en el trasplante pulmonar

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It has been 30 years since a pioneer group in Toronto brought the lung transplant (LT) into the clinic.¹ It did not take long after that historic moment for LT to become a treatment option in most developed countries. Nowadays it is safe to say that LT is fully established in the collective consciousness of patients and healthcare professionals seeing patients with chronic respiratory failure, sure of the outcomes of the procedure. Survival is one of the most important, since one in two patients are alive after 5 years and one in four survives for up to 10 years.^{2,3} Moreover, between 15% and 40% of LT recipients manage to return to an active working life. On the other hand, only about 4000 patients a year worldwide benefit from LT (about 6% of which are in Spain), so there are still extensive areas in the world where patients have no chance of receiving this treatment. The current standardization of LT means that, in coming years, many countries can be expected to implement their own transplant programs, supported by appropriate legislation and a modern healthcare system. In most developed countries, LT is a standard practice and the potential for growth is more limited. In these countries, if the activity is to grow, it must be based on the exhaustive utilization of donor organs. In this respect, the development of an activity as significant as solid organ transplantation must take into account an awareness of the global phenomenon of increasing life expectancy. This has been the trend for more than 200 years but it is now becoming highly relevant in developed countries. In Spain, for example, in 2012, the percentage of organ donors over the age of 60 years was 50.7%.⁴ This impacts both on the selection of recipients and the availability of donors. Indeed, many LT programs are already confident of the results they can offer their patients with lungs from donors aged 70 years or older, if their lung function is optimal. This rise in donor age involves the use of donor–recipient pairing strategies on an “old-for-old” basis, which must be applied together with prioritization criteria, such as patient severity and, of course, outcomes assessments.

Another potential area for growth in donor numbers is non-beating-heart donation, which is beginning to be used in many centers. All these strategies for obtaining lungs for transplantation go hand-in-hand with improvements in preservation and lung repair techniques. Lungs can now be maintained and improved in the laboratory while decisions are being made about the suitability of implantation in a certain patient. This refinement ensures a constant improvement in the quality of the implanted lungs and opens new avenues.

Another interesting topic is the evolution in the demand for LT. When the data are examined, it is obvious that LT as an activity is growing, since every year more LTs are performed throughout the world.² This demand for LT is observed in patients of all ages, but is greater among patients between 40 and 60 years old. In Spain, the trend is also toward growth, and a goal of 300 LTs per year may well be obtained. Accordingly, although there continues to be a growth in demand, the limited number of donated lungs can only benefit a small percentage of selected patients. Consequently, the concept of recipient selection will continue to be explored in the future. Furthermore, the experience gained worldwide has led to a gradual liberalization of some recipient selection criteria. One of these, the age at which transplantation is possible, is progressively extending toward 60–65 years for double-lung and 65 to 68–70 years for single-lung transplantation candidates, provided the patients' comorbidities and general status are suitable. Pleural scarring, repairable ischemic heart disease and some infections which previously were absolute contraindications for transplantation have now become relative contraindications. In any case, this selection process remains a multidisciplinary clinical exercise which must respond with the utmost certainty possible to the question of whether a certain patient can withstand the waiting period and the procedure with a minimum guarantee that the LT will be useful.

Of course, the best feature of LT, and organ transplantation in general, is that it passes into history, thanks to our knowledge of how to prevent or resolve pulmonary disease without the need for undertaking LT. Many research efforts are directed at this objective, but it is hard to predict when this might come about. In any case, we have seen a whole generation of pulmonologists and chest surgeons who have spent their professional lives with the reality of LT. Those of us who have had the good fortune to take part in this adventure

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are aware of the revolution that LT represents in the treatment of chronic respiratory failure and the understanding of respiratory medicine.

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