
Re: Retrograde in situ versus antegrade pulmonary preservation in clinical lung transplantation: a single-centre experience

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Historically, grafts were preserved by means of autoperfusion with extracorporeal circulation, topical cooling or donor core cooling. In the 1980s, the standard lung preservation method was single pulmonary artery flush perfusion, using modified Euro-Collins solution at 4°C [1]. However, reperfusion injury remained a significant factor for morbidity and early mortality after lung transplant. Since the early years of lung preservation strategies, some advances have emerged in transplant teams, such as adding prostaglandin E2 to prevent countercurrent temperature and potassium-induced vasoconstriction. The use of low potassium dextran glucose solutions shows better overall lung function, superior early oxygenation, higher lung compliance, lower incidence of severe primary graft dysfunction and 30-day mortality [2].

As Gohrbandt et al. point out, the route to administer the preservation solution may also have an impact on early lung graft performance [3]. Antegrade flush initiating the infusion through the pulmonary artery with pulmonary vein drainage was the traditional approach for many years [4]. This technique, however, presents a number of limitations. Flushing the pulmonary artery leaves the bronchial tissue to be preserved by topical cooling alone, raising the complication from the bronchial suture. Also, clots and fat or brain tissue emboli, especially in donors with major trauma and

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multiple bone fractures, may hamper uniform flushing and cooling and, therefore, impair graft function upon reperfusion.

Adding a retrograde flush, whereby the preservation solution is administered via the left atrial appendage or four pulmonary veins into the pulmonary venous system and drained through the pulmonary artery, has the potential to flush not only pulmonary vessels, but also the bronchial network, contributing to the adequate perfusion of the tracheobronchial submucosa tissue, and also limiting the effect of hypothermic pulmonary arterial vasoconstriction. On the other hand, less ventilated areas, such as the posterior segments of lower lobes, are better flushed. Also residual blood and harmful constituents and any possible microthrombi that may obstruct the pulmonary vessels are washed out.

The evidence from clinical series of this technique is limited [5], authors such as Gohrbandt et al. show us that there are no clinical benefits of retrograde lung preservation alone and that it may cause or prolong mechanical ventilation and primary graft dysfunction at 72 h and prolong ICU stay [3].

On the other hand, some evidence has been published, showing that biphasic lung preservation is not only clinically feasible [6], but also related with better early oxygenation ratio, lower mean airway pressure and chest radiography score [7, 8]. Many transplant teams have now adopted a biphasic technique with an antegrade flush through the pulmonary artery followed by a retrograde flush through each of the pulmonary veins after heart excision with the lung still ventilated inside the cadaver. However, there is lack of controlled randomized studies.

REFERENCES