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Clinical application of an extracellular phosphate-buffered solution (Ep4) for lung preservation

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【Background and Objective】Successful experimental lung preservation by extracellular phosphate-buffered solution (Ep4) was introduced by us and a modified form (LPD) has currently been applied to clinical lung preservation. We present Japanese experiences with Ep4 solution in clinical settings. 【Methods】Ep4 solution was applied to lung preservation in 2 single and 7 bilateral lung transplantations by 3 of 4 lung transplant centers in Japan. Ischemic time ranged from 279 minutes to 714 minutes (average: 495 minutes) with 9 grafts preserved over 8 hours mostly because of severe pleural adhesion in the recipient surgery. The early postoperative outcome was evaluated by quantitative chest roentgenogram score (CRS, grade 0 to 4), graft oxygenation (PaO2/FiO2), and 1 month survival. 【Results】CRS ranged from 0 to 2 in the first 3 postoperative days (average: 0.9 at day 0, 0.7 at day 1 and 0.6 at day 3). PaO2/FiO2 (Torr) varied from 180 to 512 in the first 3 postoperative days (average: 394 at day 0, 357 at day 1 and 370 at day 3). Eight of 9 recipients survived 1 month and no death attributed to primary graft failure was recorded. 【Conclusion】Ep4 lung preservation solution provided an excellent postoperative graft function in Japanese series including grafts preserved for long periods of time over 8 hours.