

SCA 49

EVALUATION OF PULMONARY VEIN ANASTOMOSIS WITH INTRAOPERATIVE TRANSESOPHAGEAL ECHOCARDIOGRAPHY (TEE) FOR DOUBLE-LUNG TRANSPLANT.

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Introduction: Thrombus or stenosis of pulmonary vein (PV) anastomosis may result in catastrophic complication such as graft failure. There is no literature comparing intraoperative assessment of PV anastomosis with TEE and postoperative course in double-lung transplant patients.

Methods: Following ethics board approval, we retrospectively reviewed intraoperative TEE findings of pulmonary venous blood flow in 15 double lung transplant patients operated in our institute between July 2002 and July 2003. Five (33.3%) patients had cystic fibrosis, five (33.3%) had pulmonary fibrosis, three (20%) had emphysema, and one was redo-lung transplant patient. All patients received sequential double-lung transplant with clamshell thoracotomy. Cardiopulmonary bypass was used in five (33.3%) patients. Six patients showed turbulent flow across the PV anastomosis and were assigned to Group A. No turbulent flow was detected in 9 patients and they were assigned to Group B. One patient in Group A developed myocardial infarction and died from multiple organ failure. This patient was excluded from further comparison between groups. Average cold ischemic time, warm ischemic time, total ischemic time, PaO₂/FiO₂ ratio at the arrival at ICU on the day of surgery were compared between two groups.

Result: In Group A: Turbulent blood flow was always detected in the left PV anastomosis (6/6). Pressure gradient across the anastomosis site ranged from 8 to 22mmHg. One of the patients developed significant deterioration of oxygenation and TEE showed thrombus in left lower pulmonary vein. The patient was diagnosed as left lung graft infarction and received left pneumonectomy on

postoperative day 12. Left-side dominant pulmonary consolidation was noted in 2 patients. Five of 6 (83%) patients of the group failed to be extubated and needed long-term ventilatory support.

In Group B patients, one patient died of heart failure. Six out of 9 (64%) patients in this group were extubated within 24hours and 2 patients were extubated within 72 hours postoperatively. Average PaO₂/FiO₂ ratio at the arrival at the ICU was lower in Group A than that in Group B but not statistically significant (196 vs.349, p=0.0693#). Average cold ischemic time of left donor lung was significantly longer in Group A than Group B (352min vs. 242min, p= 0.0276#). Average hospital stay was significantly longer in Group A than Group B (103.8 days vs. 20.3 days).(# Unpaired t-test)

Discussion: Patients who showed turbulent flow at PV anastomosis on TEE needed longer postoperative ventilatory support and longer hospital stay. Even though the mean ischemic time of the left donor lung was significantly longer in that group, we consider that abnormal blood flow across the anastomosis may have had significant impact on the postoperative clinical outcome. Intraoperative TEE may have an important role in evaluating the vascular anastomosis in lung transplantation. Further prospective investigation is indicated.

Comparison between the groups

	Group A (n=5)	Group B (n=8)	p value
AGE (year)	46.5+/-16.5	42.4+/-17.8	
Use of CPB	2(40%)	1(12.5%)	
Cold Ischemic Time, Lt(min)	352+/-87	242+/-92	0.0289
Cold Ischemic Time, Rt (min)	288+/-118	225+/-87	0.146
Total Ischemic Time, Lt(min)	363+/-113	292+/-88	0.134
Total Ischemic Time, Rt(min)	434+/-102	305+/-89	0.0178
Postoperative P/F Ratio	196	349	0.0693
Extubation within 72hours	1 (20%)	8 (100%)	
Postoperative Tracheostomy	5 (86%)	0 (0%)	
Postoperative Hospital Stay (days)	103.8	20.3	

Mean +/- S.D.