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=Abstract=

Open Heart Surgery without Autologous Transfusion

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Background: Mass transfusion after open heart surgery accompanies various complications like allergic reaction, acute respiratory distress, coagulopathy, viral diseases and so on. Currently, we are trying to reduce homologous transfusion to avoid these side effects. **Material and Method:** To avoid the complications of homologous blood transfusion in adult cardiac surgery, we studied the possibility of cardiac surgery with only perioperative autologous transfusion. 126 patients who had underwent open heart surgery between Jan 1996 and Dec 1996 were selected as a study group. Among them, 81 patients were an autotransfusion group and 45 patients were a homologous transfusion group. **Result:** Sex, disease pattern(except aortic disease), operative procedure(except aortic surgery), aortic cross-clamp time, perioperative level of hemoglobin, hematocrit, and protein, postoperative albumin level, amount of autotransfusion and volume expander showed no statistical differences between two groups. Age, patients who had aortic surgery, cardiopulmonary bypass time, postoperatively retrieved blood volume in postoperative period, immediate postoperative level of hemoglobin and hematocrit, preoperative albumin level and postoperative mediastinal shed blood amount showed statistical differences between two groups($p<0.05$). **Conclusion:** Therefore, we concluded that autologous transfusion without homologous transfusion during open heart surgery in the adult is safe in various diseases and operations.

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Key word : 1. Blood Transfusion
2. Open Heart Surgery

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가 (126) . 1) , 2) , 3) 가 (Cell saver apparatus, Electromedics, AT-1000) , 4) , 5) (mediastinal shed blood) , 6) tranexamic acid, aprotinin, vitamine K, protamine sulfate , 7) 가 가 . 가 126 가 81 , 45 () () 1) 가 10 g/dL , 30% , 2) 2 가 8 g/dL , 25% , 3) , 4) , 5) . 43.3 (12-70) , 1 : 1.1(59 : 67) , 8 (6.3%), 26 (20.6%), 92 , 67 (53.2%), 25 (19.8%) . 가 33 , 30 , 4 가 (, , 가) , 가 , 1996 1 12 1 , 301 1) , 2) (redo surgery) 47 (137) 3) , (surgical correction of atrial septal defect, ventricular septal defect and patent ductus

Table 1. Distribution of Age, sex, disease pattern and operative subgroups of each group

	Overall	Autologous Tf	Homologous Tf	p-value
Mean Age	43.3	41	48	0.012*
Sex ratio(M:F)	1:1.14(59:67)	1:1.08(39:42)	1:1.25(20:25)	0.690
Aortic disease	8	2	6	0.024**
Congenital heart disease	26	21	5	0.066
Single valvular disease	67	41	26	0.440
Aortic valvular disease	33	19	14	0.349
Mitral valvular disease	30	19	11	0.901
Tricuspid valvular disease	4	3	1	0.649**
Double or triple valvular disease	25	17	8	0.665
SUM	126	81	4	
Operative Group I	75	53	22	0.070
Operative Group II	42	25	17	0.068
Operative Group III	8	2	6	0.024**

* : by student t-test

** : by Fisher's exact test

other p-values : by Pearson's chi-square test

Operative Group I is simple operative procedure group including congenital heart surgery and single valvular surgery, with additional procedures through single incision.(ASD, VSD, PDA correction ; valve replacement, valvuloplasty, annuloplasty ; + Nick's procedure, abscess patch closure, SBE mass excision, RSCA aneurysm repair, sinus valsalva rupture repair, LAA external obliteration etc)

Operative Group II is complex operative procedure group including double or triple valvular surgery which was done through two or more incision, and mitral valvular surgery with pulmonary vein isolation technique. (double or triple valve procedure ; mitral valve procedure with pulmonary vein isolation ; + LA thrombectomy, atrial reduction plasty, atrial plication, pericardiectomy, etc)

Operative Group III is aortic operative procedure group with graft replacement. (modified Bentall's procedure, Cabrol modification ; Graft interposition of Ascending aorta, descending thoracic aorta, thoracoabdominal aorta)

arteriosus ; valve replacement, valvuloplasty, annuloplasty ;
 () + aortic annular enlargement procedure,
 debridement of aortic root abscess and patch closure, mass
 excision in infective endocarditis, repair of subclavia artery
 aneurysm, repair of ruptured aneurysm of sinus Valsalva, left
 atrial auricular external obliteration etc)

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가 , 가 , 1 7 , protein , 가 , 3 , (Table 1, 2). 1. , , 가 , (p=0.012). , 가 , (p=0.024). , (p=0.024). 2. , () 134 , () 108 (p= 0.008), . () 853 ml , () 629 ml (p=0.009). 3. , 가 3 577 ml, 238 ml, 115 ml , () 1212 ml, 406 ml, 193 ml 가 (p<0.001), 가 () 450 ml () 715 ml (p=0.111), 787 ml 941 ml 가

Table 2. Comparative data profiles of each group

	Autologous Tf	Homologous Tf	p-value
CPB(min)	108	134	0.008
ACC(min)	74	86.7	0.14
Retrieved RBC volume(cc)	629	853	0.009
Autotransfusion amount(cc)	450	715	0.111
Volume expander (cc)	787	941	0.123
Mediastinal shed (cc)			
postoperative day # 1	577	1212	<0.001
postoperative day # 2	238	406	<0.001
postoperative day # 3	115	193	<0.001
Hemoglobin (g/dL)			
preoperative	13.4	12.7	0.056
immediate postoperative	10.2	9.6	0.045
postoperative day # 1	10.3	9.8	0.14
postoperative day # 7	10.9	11.3	0.14
Hematocrit (%)			
preoperative	39.4	37.6	0.057
immediate postoperative	30.5	28.7	0.022
postoperative day # 1	30.6	29.2	0.089
postoperative day # 7	31.7	33.0	0.173
Protein (g/dL)			
preoperative	7.1	6.9	0.239
postoperative	4.9	5.0	0.714
Albumin (g/dL)			
preoperative	4.0	3.8	0.027
postoperative	2.9	2.9	0.614

p-value by student t-test

CPB, Cardiopulmonary bypass; ACC, Aortic cross clamping

(p=0.123). 38 3.2 , 31 6.8 , 10 10 , 6 2.8 . 4. , protein, albumin , , 1 , 7 , protein, albumin 가 g/dL 28.7% , () 10.2 g/dL 30.5% (p=0.045, p=0.022). 1

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