

*Materials of Conferences***MYOCARDIAL REVASCULARIZATION
IN PATIENTS WITH ADVANCED
ATHEROSCLEROSIS: TACTICAL ISSUES**

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In order to assess the efficiency of CABG using nonlinear venous bypass grafts (experimental group) we compared its outcomes with linear venous bypass grafts-only CABG (control group). A total of 272 coronary arteries were bypassed in experimental group vs. 217 arteries in control one. Using sequential venous bypass grafts, we managed to restore blood flow in a total of 145 coronary arteries (53,3%). Most bypassed were left margin artery 48 (33,1%), circumflex artery 33 (22,7%), diagonal artery 28 (19,3%), posterior interventricular artery 17 (11,7%). Using naturally bifurcated venous bypass grafts, we restored blood flow in 68 (25%) coronary arteries. Most bypassed were CA 18 (26,4%), left margin artery 16 (23,5%), diagonal artery 15 (22%), and posterior interventricular artery 11 (16,1%). Using composite and combined bypass grafts, we restored blood flow in 12 (4,4%) coronary arteries. The incidence of intraoperative injury to the aorta in both groups differ dramatically: 2% vs. 11,1%, respectively. Such a difference in intraoperative injury to the aorta is due to a lesser number of aortic anastomoses in experimental group where nonlinear versions of venous grafts were used. Acute heart failure was also notably higher in the control group: 14,8% vs. 3,9%. Acute heart failure caused death in four (7,4%) control patients. Acute cerebrovascular event rate was higher in controls: 14,8% vs. 2%. One patient in the control group succumbed to acute cerebrovascular event. Also, there was reported high rate of respiratory failure (25,9%) among controls compared to experimental group (11,7%). Infective complications as represented by mediastinitis in all cases were noted in 3,9% of experimental cases, which was almost twice as less than in controls (9,2%). Postop hemorrhage mandating resternotomy was almost equal in both groups (3,9% vs. 3,7%). Significant difference in the rates of acute heart failure, acute cerebrovascular events, respiratory insufficiency, and infections is secondary to the length of pump and aorta cross-clamping times in both experimental, and control groups: 116/71 minutes vs. 138/85 minutes, respectively.

So, using the algorithm developed for nonlinear venous bypass graft CABG in multivessel

coronary lesions, combined with atherosclerosis of the ascending aorta, we managed to reduce the number of aortic anastomoses and achieve complete myocardial revascularization, reduce pump time and aorta cross clamping time.

The work is submitted to the International Scientific Conference "Fundamental research", CRO-ATIA (Istria) 23 July–30 July 2015, came to the editorial office on 20.07.2015.

**RESULTS OF APPLYING A NEW
TECHNOLOGY FOR MEASURING
THE LEFT ATRIUM VOLUME
DURING ATRIOPLASTY**

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Johnson Jetal, 1967, Barnhorst D.A. et al. 1975., Deeg P. et al. 1977, Kawazoe J. et al, 1983). Piccoh G.P. et al. (1984) made a comparative analysis of outcomes of surgically treated patients who underwent mitral valve replacement. They found total mortality at 8,5%, with mortality in a group of patients with giant left atrium (GLA) being as high as 20%. Many researchers were able to demonstrate that the repair of atriomegaly would have positive effect on both early, and late postoperative period with improved life expectancy in such patients.

The purpose of the study was to reliably measure the LA volume and specify indications for atrioplasty. To achieve this goal, the following tasks were set:

1. Develop a new method for measuring the LA volume.
2. Compare the obtained data with those in the control group where measurements were made using echocardiography.

Material and methods. From 2005 to 2014, 176 patients suffering from mitral valve diseases complicated with atriomegaly and atrial fibrillation were operated upon at the cardiac surgery unit, National Scientific Center of Surgery. Seventy-three were male (41.5%) and 103 were female (58,5%), with median age of $41,5 \pm 27,5$ years. The breakdown of patients by the degree of heart failure was as follows: 124 (70,4%) patients were in NYHA Class III, the remaining 52 (29,5%) in NYHA Class IV; 119 patients (67,6%) were in ACC 2 stage with remaining 57 (32,3%) in ACC 3 stage. All patients had the history of atrial fibrillation in excess of three years. The LA sizes were obtained using the heart ultrasound (see Table).

Echocardiographic indicators

Parameters	EDS, cm	ESS, cm	EDV, ml	ESV, ml	LA, cm	EF, %
Before operation	6,7 ± 0,1	4,9 ± 0,5	258 ± 30	127 ± 1,5	7,8 ± 0,3	50,8 ± 1
After operation	5,9 ± 0,5	4,1 ± 0,3	173 ± 48,5	72 ± 10,5	4,8 ± 1,0	58 ± 1

Note: EDS – end-diastolic size, ESS – end-systolic size, EDV – end-diastolic volume, EDV – end-systolic volume, LA – left atrium, EF – ejection fraction.

We performed mitral valve replacement with suture ligation of the left atrial appendage in 111 patients (63%), Another 62 patients (35,2%) received the Kawazoe atrioplasty, three patients (1,7%) had Mercedes type atrioplasty, and in five cases, we performed additionally the maze procedure. The LA cavity was measured in 27 control patients (41,5%) using echocardiography: LA volume was 270 ± 60 mL preoperatively, and 140 ± 25 mL postoperatively.

Intraoperatively, we measured the left atrial volume in 38 (58,5%) patients in Group 2 using the methodology developed in our clinic: 520 ± 50 mL before and 175 ± 20 mL after the operation. We would question the reliability of the echocardiographic measurement of the LA volume when the preoperative reading had been 265 ± 40 vs. 140 ± 15 mL postoperatively.

The method we developed is as simple as that: a surgical glove would be placed into the left atrium preoperatively, then filled with saline, and the volume of fluid instilled would be accurately measured. The same manipulation would be done after the completion of atrioplasty.

Results: Left atrioplasty resulted in shrinkage of the left atrium from 8,6 cm to 5,4 cm, on average (Group 1). In immediate postoperative period, only 87 (49,3%) patients required inotropic support with Dopamine up 5 mg per kg body weight per minute. The remaining patients did not need any cardiotoxic agents. Atrial fibrillation disappeared in 94 (53,4%) patients.

Conclusions: 1. Left atrioplasty does result in a marked reduction in the LA size, resolves the left postero-basal left ventricular compression syndrome, reduces the tracheal bifurcation angle, and decompresses the left main bronchus and the lower lobes of the right lung. This explains the drop in frequency and duration of acute heart failure early postoperatively.

2. Secondary to decompression of the left main bronchus and the lower lobes of the right lung, the length of postoperative lung ventilation would shorten, the lungs would spread better; hence, the incidence of postoperative pulmonary atelectasis, pneumonia and tracheobronchitis would drop. As a result, the patients would have a shorter stay in the ICU, rehab quicker and generally, have a shorter length of stay in the hospital.

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THORACOTOMY APPROACH IN REPLACEMENT OF TRICUSPID VALVE: TACTICS AND OUTCOMES

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Objective of the research: define surgical tactics for replacement of tricuspid valve.

Material and methods: From 2007 to 2014, eighteen patients underwent tricuspid-valve replacement (TVR) at the National Scientific Center of Surgery named after A.N. Syzganov. In half (nine patients), TVR followed prior operations on repair of acquired heart diseases. Six patients (33,3%) had Ebstein anomaly, two were drug addicts with infective endocarditis, and another one had traumatic tricuspid regurgitation. Four were male, 14 female (22,2% vs. 77,7%). Two (11,11%) were in ACC stage B, with remaining sixteen (88,9%) in ACC stage 3. Four (22,2%) patients were in NYHA class III, while 14 (77,7%) were in NYHA class IV. Fourteen had regurgitation Grade 3 to 4, two patients had combined heart disease, while two had stenotic tricuspid valve with calcified cusps.

Results: All eighteen patients underwent tricuspid-valve replacement: four (22,2%) were implanted with *MedInge-2* 33 sized prosthesis (Russia), while fourteen (77,8%) were implanted with bioprostheses (*Pericor*, *Comcor*, Russia). In nine patients (50%) who previously underwent mitral and aortic valve replacement and were on continuous anticoagulation, the following tactics was chosen: right sided thoracotomy approach through the 4th intercostal space was attempted in 6 (66,7%) patients, CPB was initiated in a standard way, though a 9-size cuffed intubation tubes were used instead of venous cannulae through the pericardium, without any cardiolysis. This helped us avoid circumventing the venae cavae, thus considerably reducing the bleeding. In three patients, the heart prostheses were implanted under parallel perfusion, using continuous Prolene 2/0 suture, with 2 or 3 mattress sutures in the bundle of His area.