TRANSMITRAL APPROACH IN THE SURGERY OF HYPERTROPHIC OBSTRUCTIVE CARDIOMYOPATHY VIA RIGHT-SIDED MINITHORACOTOMY

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The background: Surgical treatment of hypertrophic obstructive cardiomyopathy remains the most difficult problem of modern cardiac surgery. Along with the classical transaortic access from median longitudinal sternotomy, the transmitral surgical approach from right-sided mini-thoracotomy using endovideosurgical assistance has been actively developed.

The methods: From 2019 to 2025, 69 people with obstructive hypertrophic cardiomyopathy aged 35 to 82 years were operated on at the Department of Cardiovascular Surgery City Hospital 40. The operation was performed with transmitral access from a right-sided minithoracotomy. Baseline characteristics are summarized in Table 1.

Table 1. Baseline characteristics.

Age, years	59.5±14.5
NYHA functional class	
I/II, n (%)	3 (4.3)
III/IV, n (%)	66 (95.7)
IVS wall thickness (mm ± SD)	21.1±3.3
Peak LVOT gradient (mm Hg ± SD)	70.2±18.6
Left ventricular ejection fraction (% ± SD)	66.5±7.6
SAM, n (%)	65 (94.2)
Mitral regurgitation	
Mild, n (%)	3 (4.3)
Moderate, n (%)	55 (79.7)
Severe, n (%)	11 (15.9)

Echo examination confirmed that the majority of patients had asymmetric subaortic septal hypertrophy. 94.2 per cent of patients had elongated and enlarged anterior mitral leaflet with SAM. The left ventricular outflow track gradient at exertion was 70 mm.Hg. More than 79.7 % of patients had moderate mitral regurgitation Fig 1.

Results: All patients underwent septal myectomy (Fig.2). In addition to myectomy 66 patients received mitral subvalvular procedures including: false secondary cords cutting, retracted chords cutting (Fig.3). In 10 cases a pericardial patch was used to reattach the anterior mitral leaflet to its annulus and then reinforced with an annular ring. Clinical outcomes and follow-up data are summarized in Table 2.

Table 2. Clinical outcomes and follow-up data

CPB time (minutes ± SD)	133±24.2
Myocardial ischemic time (minutes ± SD)	73.6±16.3
Septal myectomy, n (%)	69 (100)
Mitral valve repair, n (%)	66 (95.7)
Mitral valve replacement, n (%)	3 (4.3)
AML patch augmentation, n (%)	10 (14.5)
False and retracted cords cutting, n (%)	69 (100)
Mitral annuloplasty, n (%)	10 (4.3)
Intensive care unit stay (days ± SD)	1.4±0.7
Postoperative hospital stay (days ± SD)	6.7±3.2
Iatrogenic septal perforation, n (%)	1 (1.4)
New pacemaker implantation, n (%)	2 (2.8)
Clinical and TEEFollow-up data	
NYHA functional class	
I, n (%)	66 (95.7)
II, n (%)	3 (4.3)
Peak LVOT gradient (mm Hg ± SD)	11.5±6.6
Interventricular septal wall thickness (mm ± SD)	16.2±1.8
Left ventricular ejection fraction (% ± SD)	63.5±7.6
Residual obstruction n (%)	0 (0)
SAM, n (%)	0
Moderate MR n (%)	3 (1.4)
Survival, n (%)	69 (100)

Conclusion:

The transmitral surgical approach with endovideosurgical assistance in the surgery of HOCM via right-sided mini-thoracotomy provides optimal visualization of anatomical structures ensures high efficiency and safety of the intervention, and minimal injury contributes to the early return to daily life with optimal cosmetic effect.

Fig. 1. Echocardiogram for a severe subvalvular aortic outflow track muscular obstruction (hypertrophied IVS (A), systolic anterior motion of the mitral valve) (B); Color flow Doppler echocardiogramm for a moderate mitral regurgitation (C)

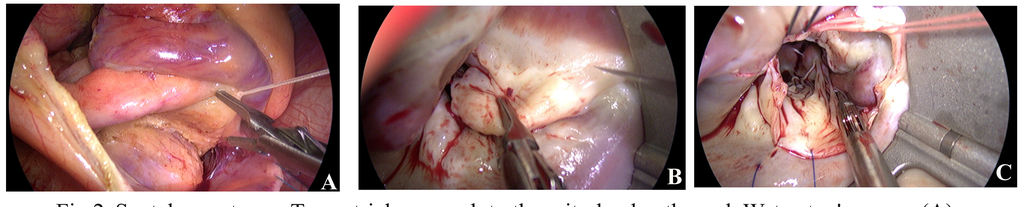

Fig 2. Septal myectomy: Transatrial approach to the mitral valve through Waterston's groove(A), transatrial approach to the interventricular septum and submitral structures of the left ventricle (B), the interventricular septum exposure through transatrial access (C)

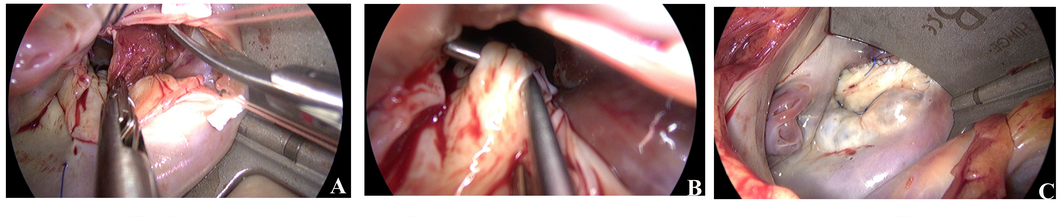

Fig 3. Septal myectomy (A), Resection of secondary chordae to the mitral valve (B), Reattached anterior mitral valve leaflet to annulus (C)

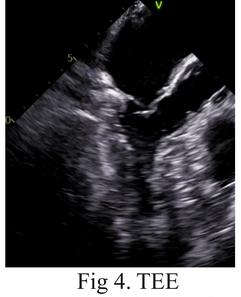

Fig 4. TEE postoperative result

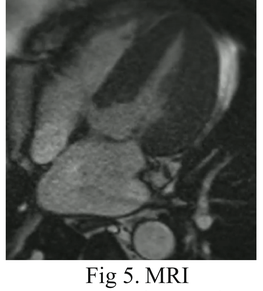

Fig 5. MRI postoperative result

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