

*Academy of Medical Sciences of Ukraine  
Institute of Cardiovascular Surgery  
Kyiv, Ukraine, Eastern Europe*

***SMALL CAVITY OF LEFT  
VENTRICLE DURING MITRAL  
VALVE REPLACEMENT: IS IT  
REALL PROBLEM ?***

*Popov Volodymyr, Knyshev Gennady,  
Trembovetskaya Olena, Zaharova Valentina*

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# AIM.

To determine significance of patient-prosthesis mismatch (PPM) (indexed effective orifice area  $< 1,2 \text{ cm}^2/\text{m}^2$ ) after isolated mitral valve replacement (MVR) in pts with small cavity of left ventricle (SCLV) (end-diastolic volume (EDV)  $\leq 75 \text{ ml}$ ) during hospital period.

# MATERIALS.

- 1811 adult patients (pts) with isolated mitral valve disease were operated by MVR in Institute from 01.01.2000 till 01.01.2007. There were 127 (7,0%) pts with small cavity of left ventricle (SCLV), wich was determined as volume of LV less 75 ml.

# MATERIALS.

- 48(37,8%) males
- 79(62,2%) females
  
- Average BSA was  $1,87 \pm 0,32 \text{ m}^2$ .
  
- Average age was  $53,2 \pm 7,1 \text{ y.o.}$
  
- 110 (86,6%) IV NYHA class
- 17 (13,4%) III class

# Materials

- Previous closed mitral commissurotomy was performed in 31 (24,4%) pts, to 7 pts – twice (closed recommissurotomy by closed method).
- Valve calcinosis 3+ was marked in 33 (25,9 %) cases.
- Thromboses of left atrium was marked at 13 (10,2 %) pts, including massive in 3 pts.
- Systolic pressure in pulmonary artery was  $99,1 \pm 7,1$  mm Hg

# Methods

- All operations were performed with cardiopulmonary bypass and moderate hypothermia with crystalloid cardioplegia.
- Following prostheses were implanted: bileaflet (Saint Jude, Carbomedics, On-X, Edwards-Mira) (n=88) and monodisc as Alcarbon`s type (n=40).
- Average time of cross-clamping was  $62,2 \pm 7,1$  min.
- Following prosthesis sizes were used:

23 mm	n=1	0,8%
25 mm	n=74	68,3%
26 mm	n=3	2,3%
27 mm	n=49	38,6%
Total	n=127	100,0%

# Disturbance of EDV LV in case of $EDV \leq 75$ ml

EDVLV (ml)		
	n	(%)
70-75	36	28,3
65-69	31	24,4
60-64	23	18,1
55-59	17	13,4
50-54	11	8,7
<50	9	<b>7,1</b>
TOTAL	127	100,0 %

# Hospital mortality in case of EDV $\leq$ 75 ml in MVR

EDV LV (ml)	Total	
	n	Hospital mortality (%)
70-75	36	0,0
65-69	31	0,0
60-64	23/1	4,3
55-59	17/1	5,9
50-54	11/2	<b>18,2</b>
<50	9/3	<b>33,3</b>
TOTAL	127/7	5,5



# RESULTS

Hospital mortality (HM) was 5,5% (n=7).

Reasons of deaths:

heart failure – 5

MOF - 2

HM was higher in cases with 27 mm size of implanted prosthesis - 8,2% (n=4/49), than other group - 3,8% (n=3/78) ( $p < 0,01$ ).

# RESULTS

At the hospital period patient-prostheses mismatch were marked in 21 (16,5%) pts only with BSA  $>1,75$  m<sup>2</sup> and size of prosthesis 25 mm.

We did not mark influence of patient-prostheses mismatch on level of hospital mortality in cases with chamber of LV  $> 55$  ml.

Heart failure and patient-prostheses mismatch were marked in 5 (3,9%) pts with BSA  $>1,75$  m<sup>2</sup> with size of prosthesis 25 mm and critically small cavity of LV (EDV  $\leq 50$  ml).

## Risk-factors for PPM SCLV`s group of pts at hospital stage

\*very small cavity of LV (EDV $\leq$ 50 ml) especially in pts with BSA $>$ 1,75 m<sup>2</sup>.

\*previous operation,

\*pulmonary hypertension,

\*mitral valve calcification 3+,

\*duration of rheumatic disease  $\geq$  25 years.

# CONCLUSION

Pts with small cavity of left ventricle are in group of higher risk for operation and increasing risk of patient-prosthesis mismatch.

In these cases implantation of 25 mm prosthesis is expedient, but for pts with  $EDV \leq 50$  ml and  $BSA > 1,75$  m<sup>2</sup> it may lead for significant PPM and heart failure.