



Minimally Invasive versus Conventional Approach for Aortic Root Surgery: Propensity Score Matching Analysis

Anastasiia Karadzha, Alexander Bogachev-Prokophiev, Ravil Sharifulin, Alexander Chernyavsky
E. Meshalkin National Medical Research Center, Novosibirsk, Russian Federation

Objective:

The **aim of the study** was to compare the safety and efficacy of aortic root surgery through minimally invasive and conventional approach

Methods:

Adult patients underwent aortic root surgery 2017-2022 (n = 302)

Partial upper ministernotomy (MS) (n=47)

Conventional sternotomy (CS) (n=198)

Propensity score matching

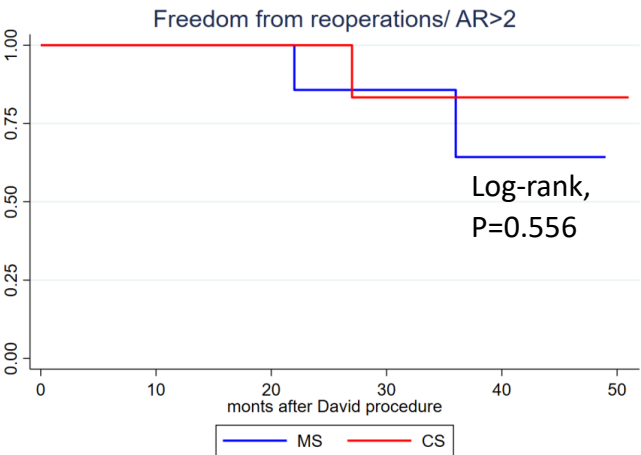
**by age, sex, BMI, aortic valve anatomy, NYHA functional class, type of procedure, concomitant procedures*

MS (n=41)

CS (n=41)

Results:

	Before matching			After matching		
	MS (n=47)	CS (n=198)	P	MS (n=41)	CS (n=41)	P
Postoperative blood loss, mean ± SD (kg/sm ²)	242.0±127.3	341.4±178.6	<0.001	233.5±124.7	353.9±217.5	0.004
Blood transfusion, n (%)	8 (17.0)	55 (27.8)	<0.001	8 (19.5)	10 (24.4)	0.814
Blood transfusion, mean ± SD (ml)	481.2±184.9	730.2±666.3	0.300	481.3±184.8	733.4±609.4	0.278
Plasma transfusion, n (%)	17 (41.5)	82 (41.4)	<0.001	6 (14.6)	17 (41.5)	0.037
Plasma transfusion, mean ± SD (ml)	1037.3±184.6	1335.8±610.7	0.158	1056.7±184.8	1335.4±609.4	0.536
Re-exploration for bleeding, n (%)	0	23 (11.6)	0.006	0	4 (9.7)	0.134
Cellsaver use, n (%)	9 (19.1)	105 (53.1)	<0.001	8 (19.5)	16 (39.0)	0.153
Drainage removing, mean ± SD (days)	2.4±0.9	2.4±1.3	0.871	2.4±0.9	2.6±1.4	0.795
Inotropic therapy, mean ± SD (hours)	6.8±12.8	18.7±48.5	0.122	7.3±16.7	17.7±28.9	0.047
Ventilation, mean ± SD (hours)	8.6±9.6	17.6±39.8	0.152	8.6±9.6	10.5±12.2	0.202
Bypass time, mean ± SD (min)	164.3±58.2	179.8±62.3	0.777	167.6±43.3	166.1±42.9	0.867
Cross-clamp time, mean ± SD (min)	136.9±35.6	147.7±39.8	0.425	140.2±33.0	131.4±31.1	0.867
ICU stay, mean ± SD (days)	1.9±2.9	3.1±1.4	0.015	1.9±1.4	2.7±2.2	0.089



	Before matching			After matching		
	MS (n=47)	CS (n=198)	P	MS (n=41)	CS (n=41)	P
Early mortality, n (%)	1 (2.1)	0	0.192	0	0	1.0
Late mortality, n (%)	0	2 (1.0)	1.0	0	0	1.0

Conclusions:

- Aortic root surgery can be performed through a minimally invasive approach as safely as through a standard access
- Mini J sternotomy has the advantages over the conventional median sternotomy in terms of blood loss outcomes during early postoperative period
- Minimally invasive approach does not compromise results of valve-sparing root replacement at mid-term follow-up