

Long-term Outcomes of Mini-sternotomy versus Full Sternotomy Valve-sparing Aortic Root Replacement

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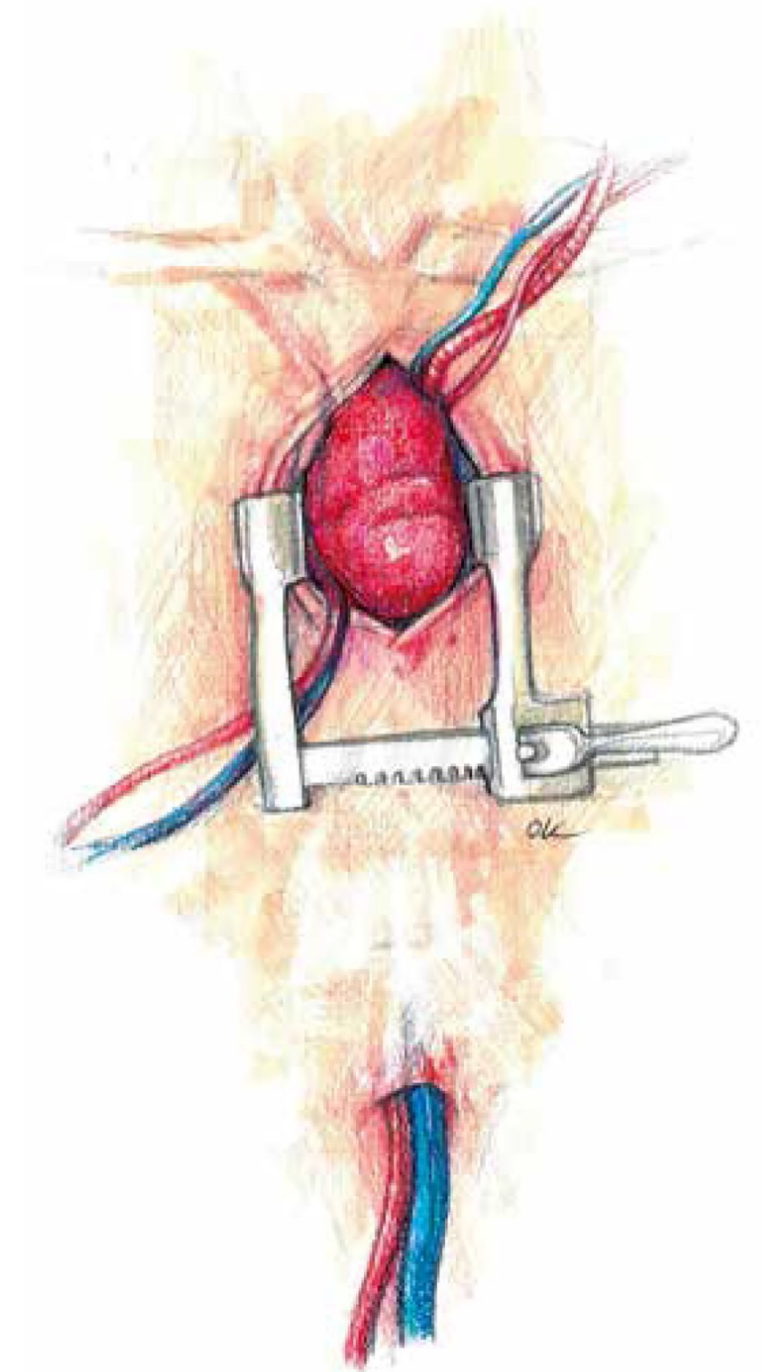
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Valve-sparing aortic root replacement (VSARR) is a favored method for repairing aortic root aneurysms in patients with suitable anatomy and a reasonable life expectancy. Numerous studies have demonstrated its excellent long-term outcomes. Despite the increasing use of minimally invasive techniques in cardiac surgery, there is limited data on minimally invasive VSARR. This study aimed to compare the long-term survival and durability of repairs between VSARR performed via full sternotomy (sternotomy-VSARR) or ministernotomy (mini-VSARR).

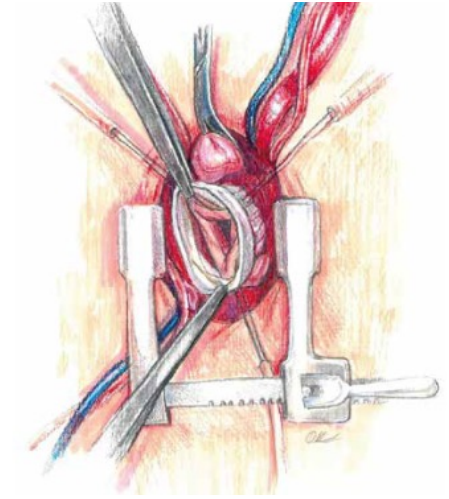




We gathered data prospectively of all VSARR procedures at two high-volume tertiary centers.



Starting in 2014, one center adopted a mini-sternotomy approach for aortic root aneurysms below 65 mm.



Propensity score matching was applied to balance possible confounding between the 2 study groups

The primary endpoint was long-term mortality, while the secondary endpoint involved repair durability, measured by the degree of aortic insufficiency at the longest follow-up, perioperative complications, and the need for further intervention.

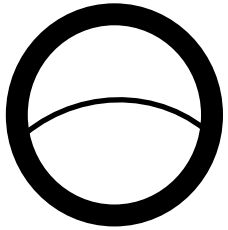


	mini-VSARR		sternotomy-VSARR	P-value
Aortic Arch	33.0 [28.0, 36.0]		32.5 [29.5, 35.1]	0.723
Ascending Aorta	52.5 [46.5, 59.3]		47.0 [40.0, 54.0]	0.039
STJ	55.0 [37.0, 60.0]		40.0 [33.0, 57.0]	<0.001
Sinus of Valsalva	60.0 [55.0, 65.0]		51.0 [46.8, 54.3]	<0.001
Aortic Annulus	25.0 [23.0, 26.8]		28.0 [27.0, 32.0]	<0.001

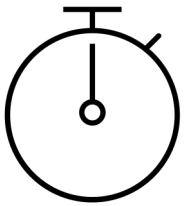
Aortic dimensions. Data are reported as median and [IQR-interquartile ranges]; VSARR, valve sparing aortic root reimplantation; STJ, sinotubular junction



Eighty-four patients were included in the study (22 in the mini-VSARR group and 62 in the sternotomy-VSARR group). The median EuroSCORE II was 2.48 without significant differences between groups.



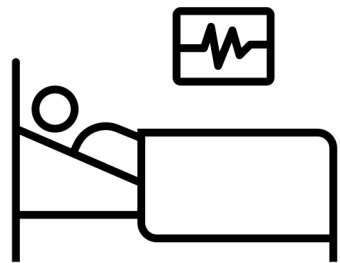
Patients in the mini-VSARR were older (64 years vs 39 years, $p < 0.001$) and less often presented with a bileaflet aortic valve (4.5% vs 43.5% , $p = 0.001$).



After PS matching the aortic cross clamp time was 20 minutes longer in the mini-VSARR group (160 minutes vs 140 minutes) whereas cardiopulmonary bypass time was 60 minutes longer (226 minutes vs 166 minutes, both $p < 0.001$).



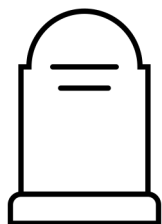
Post-operative bleeding which required re-sternotomy and total volume of post-operative drainage were numerically lower in the mini-VSARR group, without statistical significance.



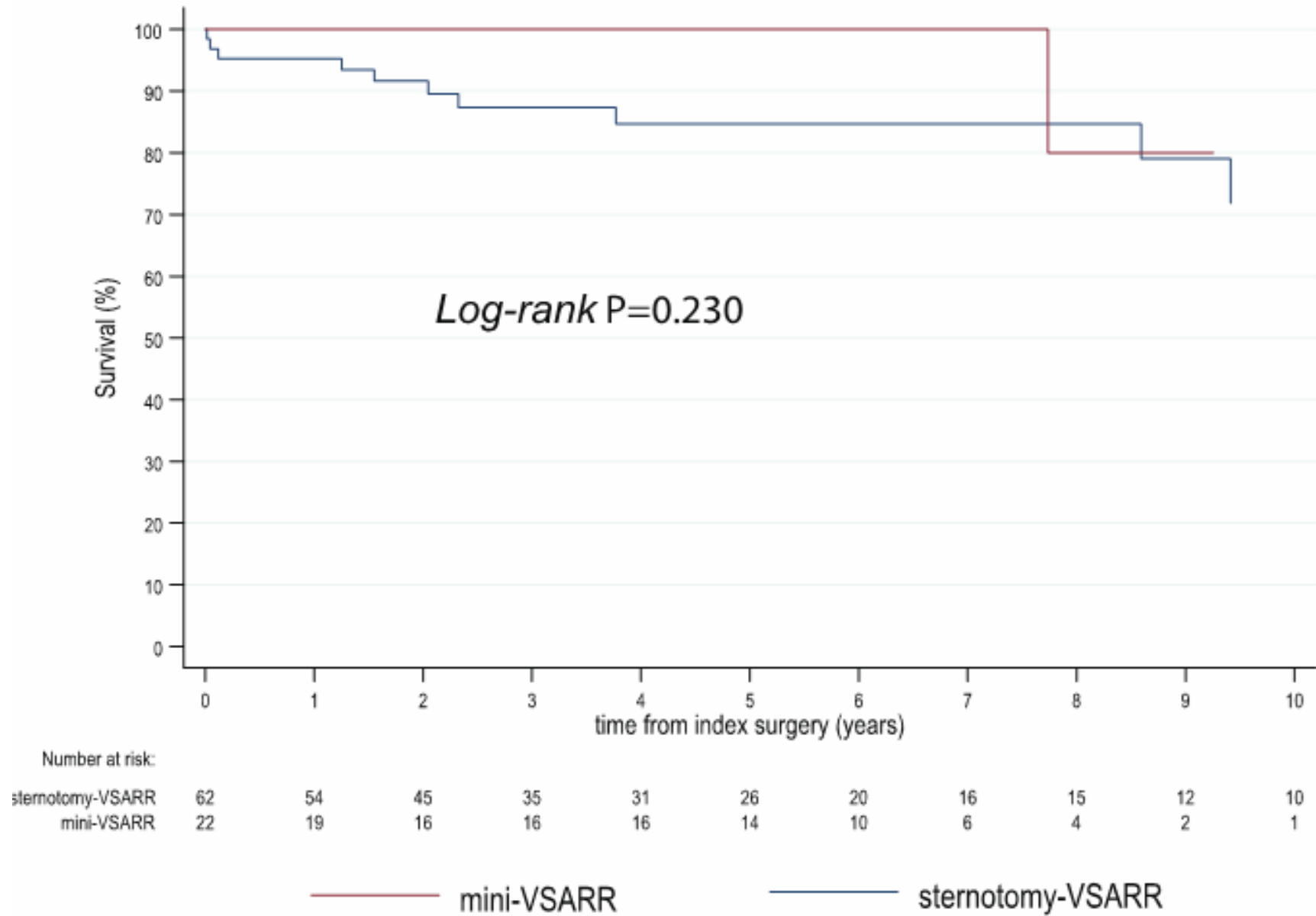
After PS matching the median hospital length of stay was three days shorter in the mini-VSARR group (6.5 days vs 9.5 days, $p=0.031$)



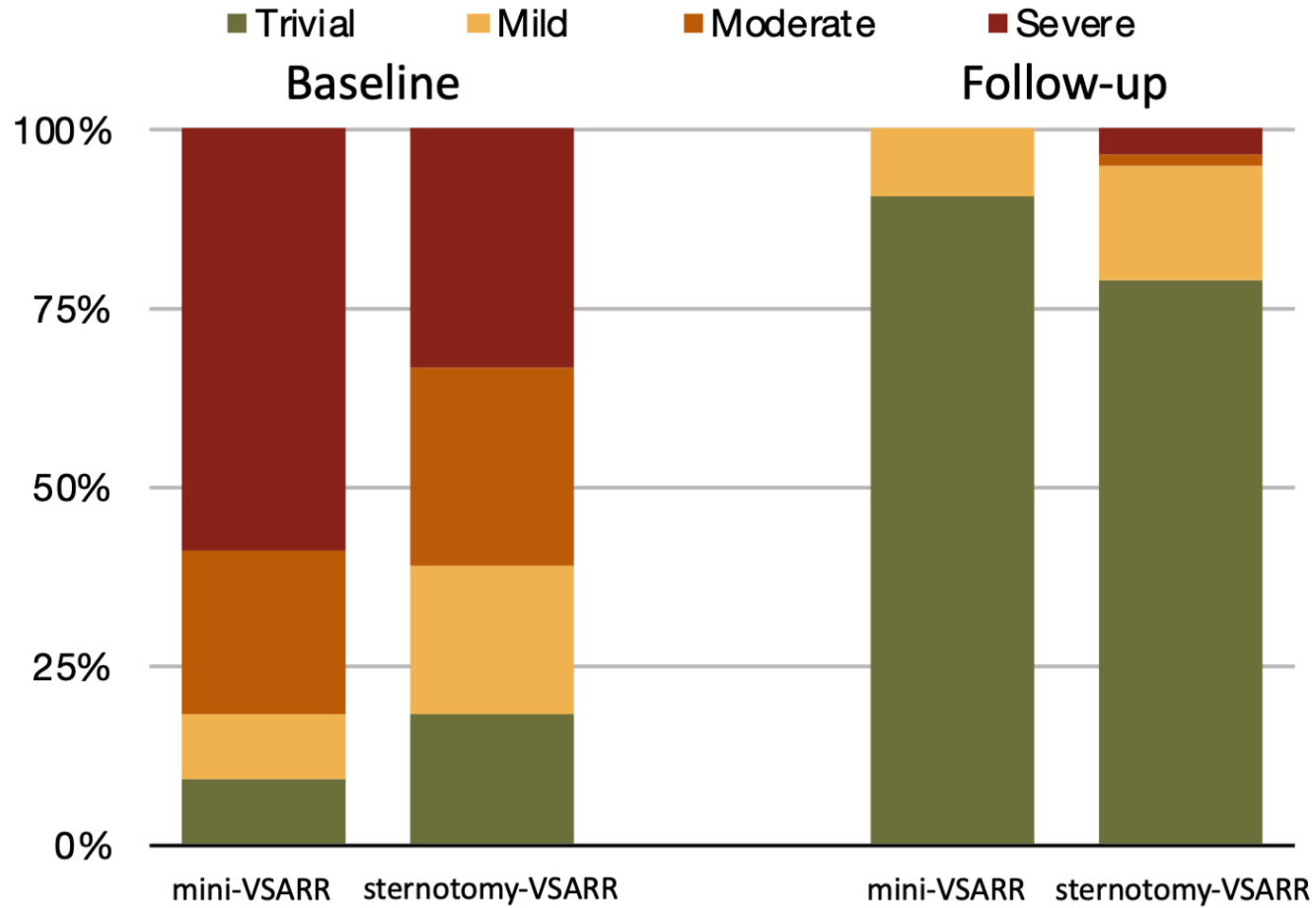
Two patients (6.4% in the sternotomy-VSARR group and no patients in the mini-VSARR group) required re-intervention during follow-up ($p=0.333$). Similarly, in a median echocardiographic follow-up of 2.0 years, there were no differences in the occurrence of aortic regurgitation between the groups.



The 30-day mortality was 3.2% (2 out of 62) in the sternotomy-VSARR group and 0% in the mini-VSARR group ($p>0.999$). In a median clinical follow-up of 5.1 years, there were no differences in survival between the groups (logrank test, $p=0.260$). The PS analysis confirmed those results.



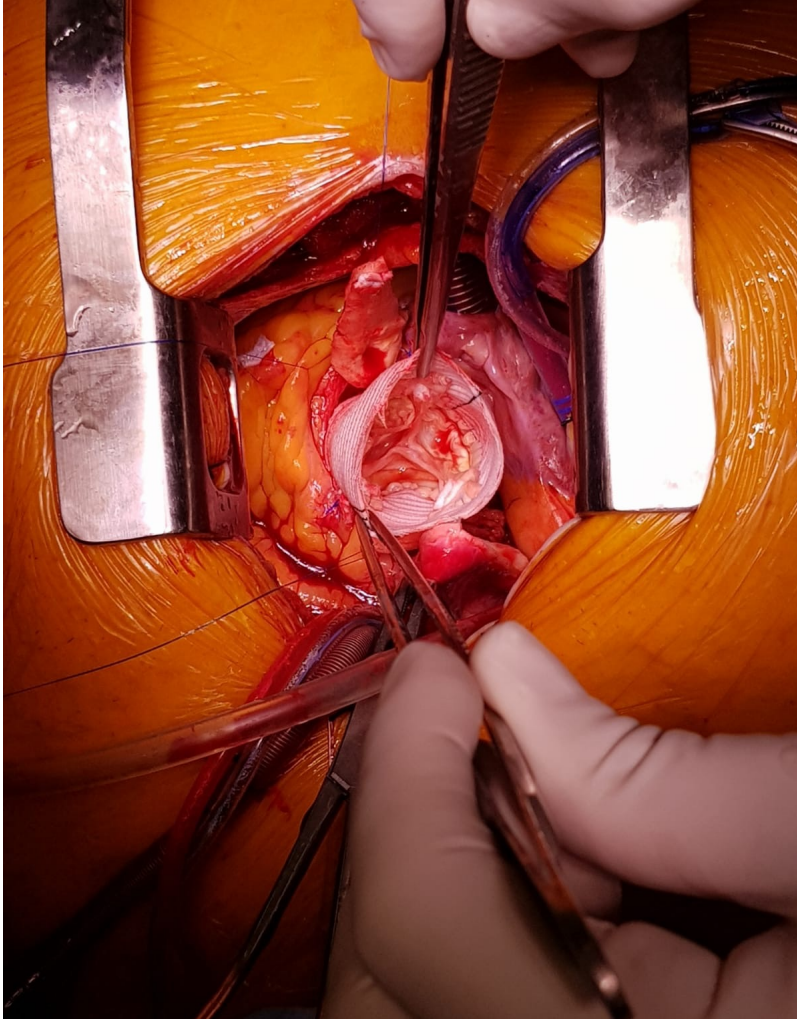
Kaplan-Meier survival curves for mini-VSARR and sternotomy-VSARR.



Echo follow-up with a median follow-up of 4.8 years in the mini-VSARR group and 1.8 years in the sternotomy VSARR group



CONCLUSIONS



Minimally invasive VSARR appears to be safe and shows comparable survival and durability to the full sternotomy approach among patients with aortic root aneurysms below 65 mm

Thank you for your attention

