

Valve-sparing Root Replacement: How Old is Too Old?

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Disclosures: No Relevant Disclosures



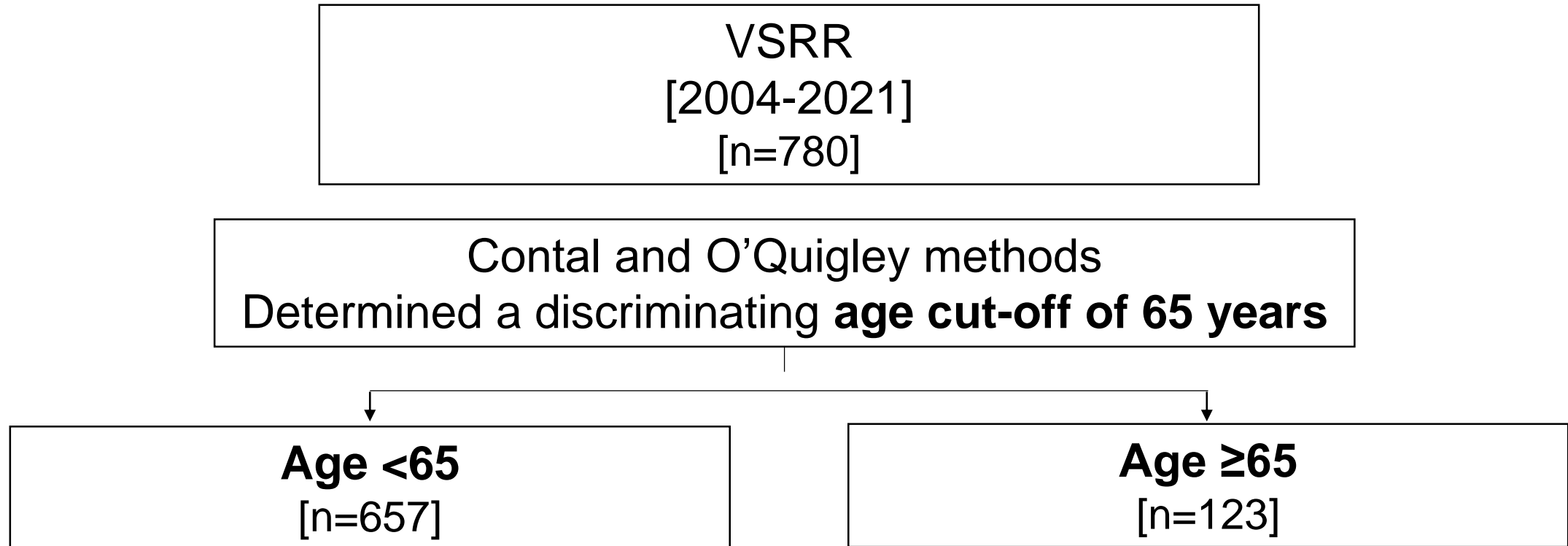
Aortic
Symposium

Background

- Valve-sparing root replacement has been shown to have excellent short- and long-term outcomes and is performed among a wide age range into the 8th decade of life, although more often in young patients
- The specific clinical factors that limit the advantages of a VSRR have been understudied
- Therefore, this study analyzed the impact of age and preoperative comorbidities on reoperation and survival following VSRR



Study Design



Study Population

	Total (n=780)	<65 years (n=657)	≥65 years (n=123)	p-value
Sex, male	652 (83.59%)	552 (84.02%)	100 (81.30%)	0.46
Diabetes	62 (7.95%)	47 (7.15%)	15 (12.20%)	0.06
Dyslipidemia	352 (45.89%)	270 (41.86%)	82 (67.21%)	<0.001
Hypertension	536 (68.72%)	432 (65.75%)	104 (84.55%)	<0.001
CKD	81 (10.42%)	54 (8.26%)	27 (21.95%)	<0.001
Renal Failure on Dialysis	8 (1.03%)	8 (1.22%)	0 (0.00%)	0.62
PVD	39 (5.01%)	32 (4.88%)	7 (5.69%)	0.70
CVA	12 (1.57%)	11 (1.70%)	1 (0.85%)	0.70
LVEF	55 (54, 60)	55 (55, 60)	55 (53, 58)	0.05
Moderate-severe AI	367 (47.11%)	294 (44.82%)	73 (59.35%)	0.003
Moderate-severe AS	2 (0.50%)	1 (0.32%)	1 (1.12%)	0.40
Connective Tissue Disorder	77 (9.87%)	76 (11.57%)	1 (0.81%)	<0.001
Bicuspid Aortic Valve	179 (22.95%)	174 (26.48%)	5 (4.07%)	<0.001
Prior Cardiac Surgery	81 (10.38%)	74 (11.26%)	7 (5.69%)	0.06
AV Surgery	21 (2.69%)	20 (3.04%)	1 (0.81%)	0.23
Prior Root	16 (2.05%)	16 (2.44%)	0 (0.00%)	0.09
Prior Ascending	23 (2.95%)	21 (3.20%)	2 (1.63%)	0.56
Prior Arch	6 (0.77%)	6 (0.91%)	0 (0.00%)	0.60
Prior CABG	10 (1.28%)	5 (0.76%)	5 (4.07%)	0.01

Intraoperative Data

	VSRR (n=780)	<65 years (n=657)	≥65years (n=123)	p-value
Status				0.01
Elective	522 (66.92%)	428 (65.14%)	94 (76.42%)	
Urgent	178 (22.82%)	163 (24.81%)	15 (12.20%)	
Emergent	80 (10.26%)	66 (10.05%)	14 (11.38)	
Concomitant Procedure				
Ascending Replacement	271 (34.74%)	224 (34.09%)	47 (38.21%)	0.38
Hemiarch Replacement	270 (34.62%)	224 (34.09%)	46 (37.40%)	0.48
Partial/Total Arch	82 (10.51%)	59 (8.98%)	23 (18.70%)	0.001
Mitral Valve Procedure	31 (3.97%)	26 (3.96%)	5 (4.07%)	0.99
CABG	94 (12.05%)	61 (9.28%)	33 (26.83%)	<0.001
CPB time (min)	196 (145, 239)	200 (153, 244)	169 (127, 223)	0.002
Cross-clamp time (min)	169 (121, 213)	175 (126, 216)	135 (103,189)	<0.001

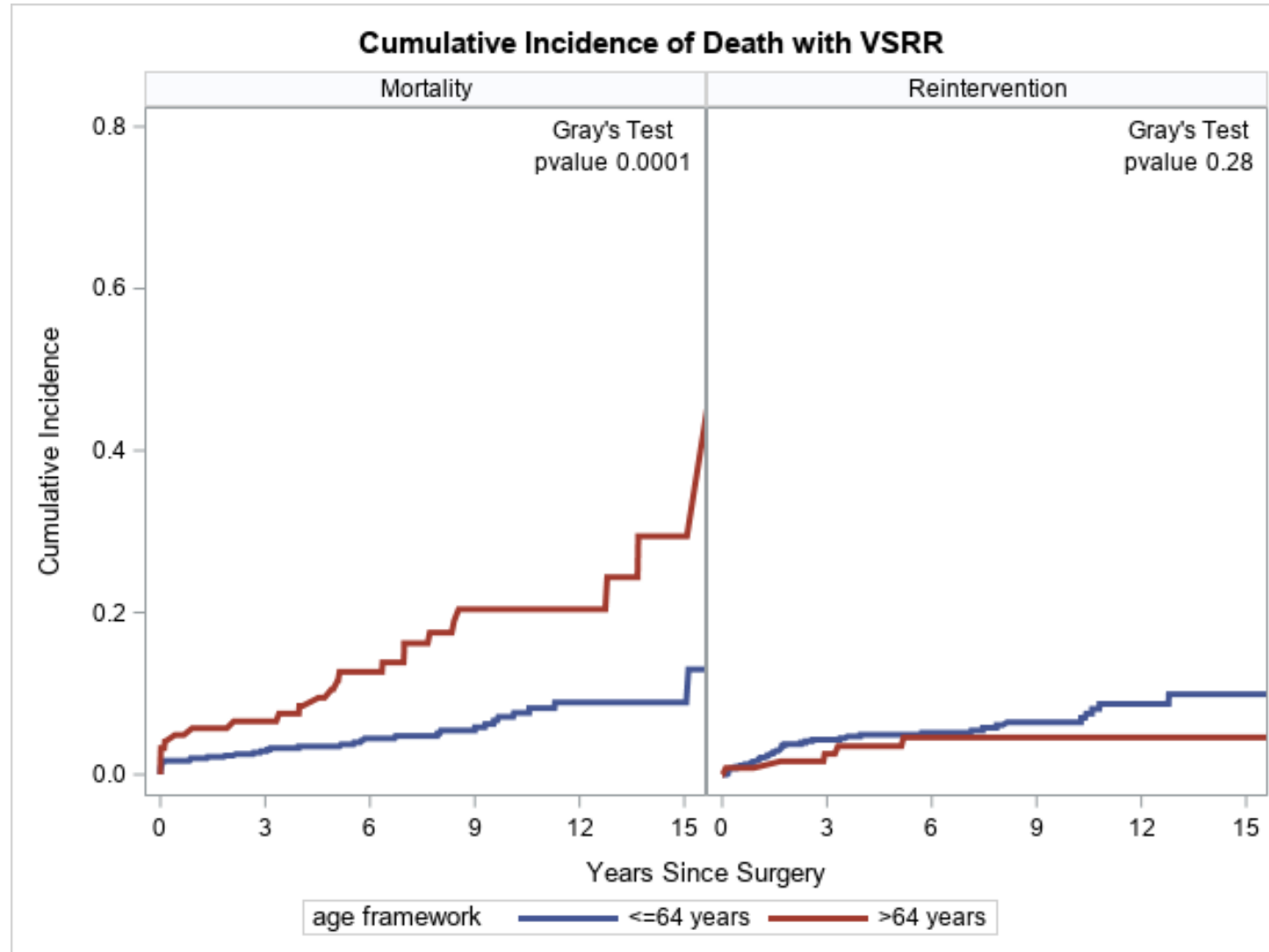
Postoperative Outcomes

	VSRR (n=780)	<65 years (n=657)	≥65years (n=123)	p-value
Stroke	15 (1.92%)	12 (1.83%)	3 (2.44%)	0.72
Acute Renal Failure	29 (3.72%)	21 (3.20%)	8 (6.50%)	0.11
Requiring Dialysis	17 (2.18%)	14 (2.13%)	3 (2.44%)	0.74
Prolonged Ventilation	88 (11.28%)	73 (11.11%)	15 (12.20%)	0.73
Reoperation for Bleeding	36 (4.62%)	31 (4.72%)	5 (4.07%)	0.75
Atrial Fibrillation	222 (28.46%)	164 (24.96%)	58 (47.15%)	<0.001
Permanent Pacemaker/ICD	14 (1.79%)	11 (1.67%)	3 (2.44%)	0.47
Hospital LOS (days)	7 (5, 9)	6 (5, 9)	8 (6, 11)	0.02
In-hospital Mortality	12 (1.54%)	7 (1.07%)	5 (4.07%)	0.03

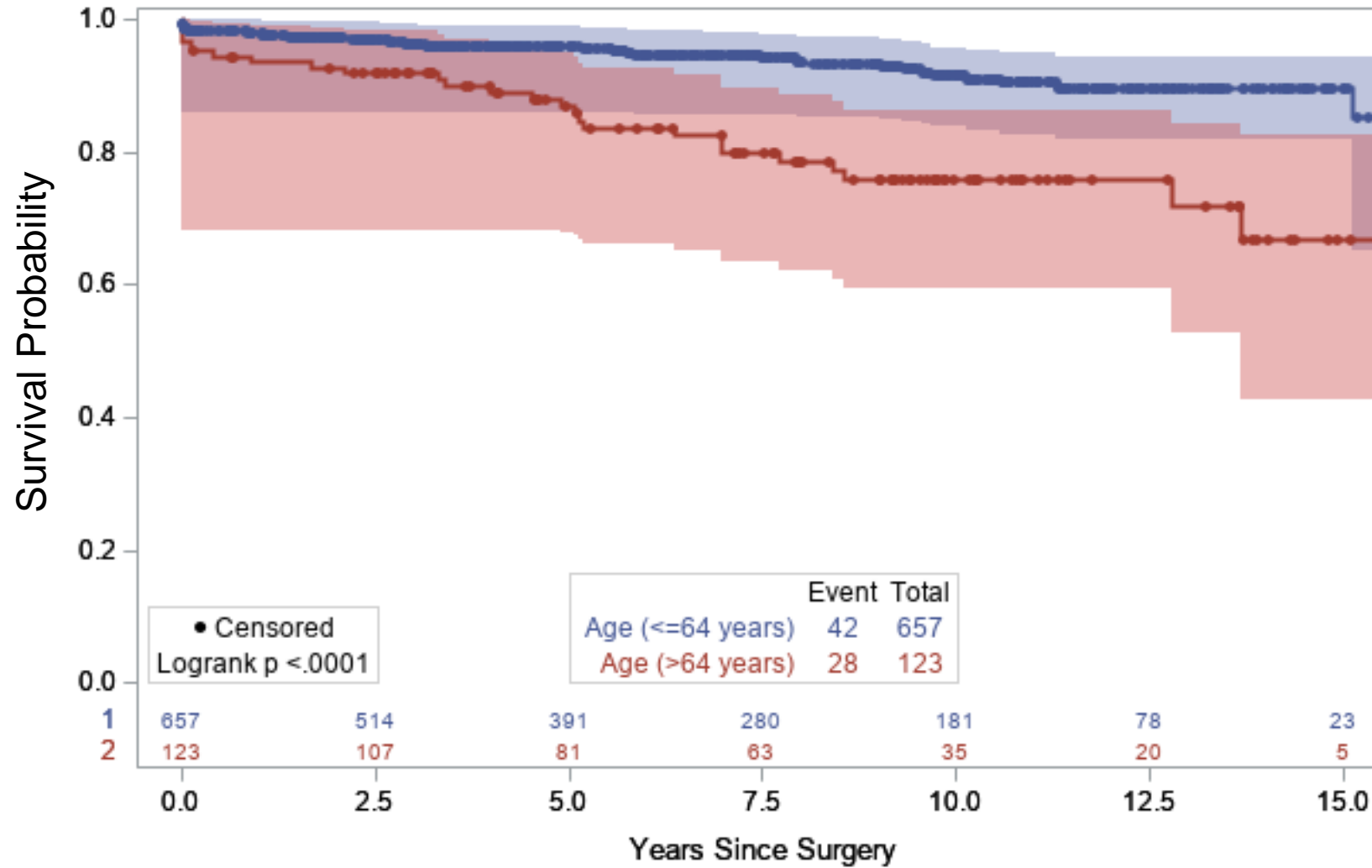
Reoperation

	VSRR (n=780)	<65 years (n=657)	≥65years (n=123)	p-value
Reoperation of Proximal Aorta or Aortic Valve	44 (5.64%)	39 (5.94%)	5 (4.07%)	0.41
Time to Reoperation (years)	3.31 ± 3.51	3.39 ± 3.68	2.65 ± 1.90	0.66
Aortic Valve	27 (61.36%)	24 (61.54%)	3 (60.00%)	0.99
Root	13 (30.95%)	12 (32.43%)	1 (20.00%)	0.99
Ascending	12 (28.57%)	10 (27.03%)	2 (40.00%)	0.61
Arch	9 (21.43%)	7 (18.92%)	2 (40.00%)	0.29
Reoperative Indication				0.74
AS	9 (22.5%)	8 (22.22%)	1 (25%)	
AI	16 (40%)	15 (41.67%)	1 (25%)	
Endocarditis	11 (27.5%)	10 (27.78%)	1 (25%)	
TAA	4 (10%)	3 (8.33%)	1 (25%)	
Time to follow-up Echo (years)	4.10 ± 4.34	4.09 ± 4.32	4.14 ± 4.46	0.94
Moderate-to-severe AI				0.32*
Moderate	62 (9.25%)	48 (8.51%)	14 (13.21%)	
Severe	14 (2.09%)	13 (2.30%)	1 (0.94%)	
Moderate-to-severe AS				0.74*
Moderate	8 (1.42%)	5 (1.08%)	3 (3.03%)	
Severe	7 (1.24%)	7 (1.51%)	0 (0%)	

Long-term Survival



Long-term Survival



Conclusion

- Valve-sparing root replacement can be performed with low operative mortality and excellent freedom from reoperation across age groups
- In patients ≥ 65 , aortic root replacement with a composite valve-graft conduit should be considered due to complexity of VSRR outcomes as well as worse short- and long-term survival outcomes

