Comparing Quality Of Life And Postoperative Pain After Limited Access And Conventional Aortic Valve Replacement: A Randomized Clinical Trial

I.D.G. Klop, B.P. v Putte, G.T.L. Kloppenburg, M.A.G Sprangers, P.T. Nieuwkerk, P. Klein

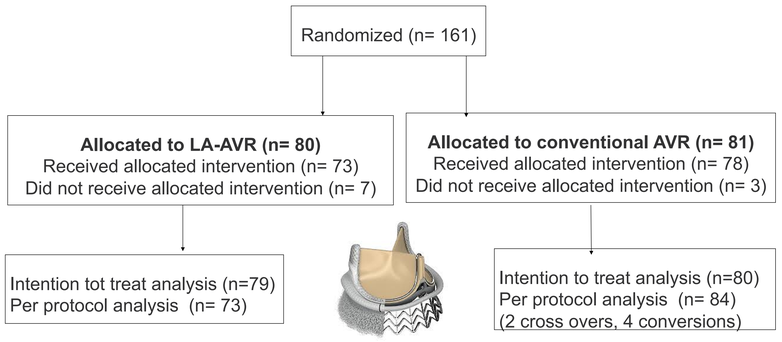
Cardio-Thoracic Surgery Department, St. Antonius Hospital, Nieuwegein, The Netherlands

Background

Limited access aortic valve replacement (LA-AVR) yields excellent results as an alternative to conventional surgical aortic valve replacement by full median sternotomy (C-AVR). However, robust data on quality of life (QoL) improvements and the differences in postoperative QoL and pain compared to C-AVR are lacking. We report the one-year results of the LImited access Aortic valve Replacement (LIAR) Trial.

Methods

The LIAR-Trial is an investigator initiated, single center, single blind randomized controlled trial (1:1). Patients suffering from severe and/or symptomatic aortic valve stenosis were included. Patients were randomized to undergo either partial upper hemisternotomy (LA-AVR) or full median sternotomy (C-AVR). It was intended to treat all patients with an Intuity rapid deployment bioprosthesis.



Primary outcome:
Cardiac specific QoL, measured with the Kansas City Cardiomyopathy Questionnaire (KCCQ) at one, three, six and twelve months postoperatively;
Postoperative pain, measured by VAS during hospital stay.

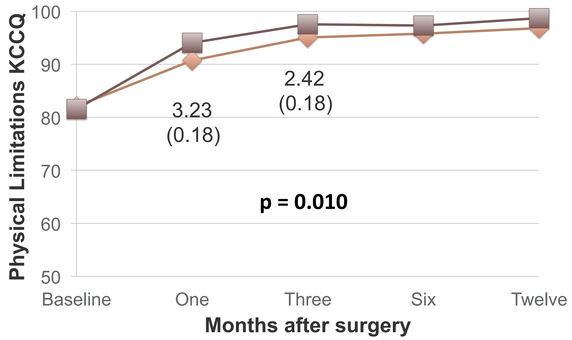
Secondary outcome:
General QoL, measured with the Short Form at one, three, six and twelve months postoperatively;
Surgical outcome.

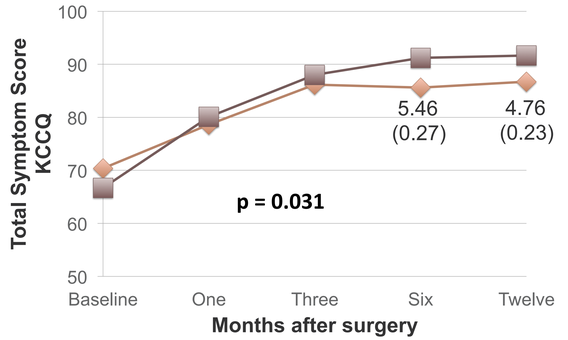
Results

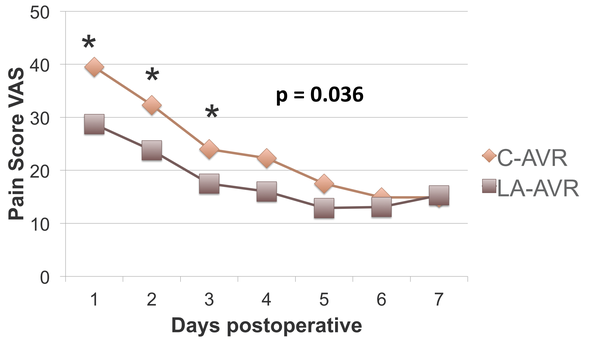
No difference between groups at baseline. LA-AVR showed significant increase of the physical limitations domain of the KCCQ (2.22 points; 95%CI, 0.96 – 3.28; p=0.01), when compared to C-AVR. Additionally a significant increase in total symptom score of the KCCQ was observed in the LA-AVR group (3.31 points; 95%CI, 0.30 – 6.31; p=0.031). Furthermore, LA-AVR was associated with a significant increase in the overall summary score of the KCCQ (2.98 points; 95%CI, 0.31 – 5.64; p=0.029) and reduced postoperative pain (28.6 vs. 39.7 for LA-AVR and C-AVR respectively, p=0.036). This was accompanied by a significantly lower opioid intake. No differences were found with regard to general QoL. Operative times were significantly longer in the LA-AVR group. However, no differences were found in 30-day complications.

Baseline Characteristics	Total (N=161)	LA-AVR (N=80)	Conventional AVR (N=81)	p-value
Age (years), mean ± SD	71.6 ± 6.1	72.1 ± 5.9	71.1 ± 6.4	0.307
Female gender, n (%)	79 (49.1)	42 (52.5)	37 (45.7)	0.390
BMI (kg/m^2), mean ± SD	28.1 ± 3.9	28.1 ± 4.2	28.1 ± 3.7	0.995
Diabetes, n (%)	34 (21.1)	18 (22.5)	16 (19.8)	0.672
Previous stroke, n (%)	2 (1.2)	0 (0)	2 (2.5)	0.159
NYHA III/IV, n (%)	43 (26.7)	21 (26.3)	22 (27.2)	0.876
COPD, n (%)	18 (11.2)	9 (11.3)	9 (11.1)	0.786
LVEF > 50%, n (%)	138 (85.7)	72 (90.0)	66 (81.5)	0.530
Euroscore II	1.38 ± 0.7	1.41 ± 0.8	1.35 ± 0.6	0.596

Perioperative Outcomes	Total, mean ± SD (N = 157)	LA-AVR, mean ± SD (N = 73)	C-AVR, mean ± SD (N = 84)	p-value
30-day mortality, n (%)	3 (1.9)	0 (0)	3 (3.6)	0.082
Stroke, n (%)	3 (1.9)	2 (2.5)	1 (1.2)	0.553
ACC time, min	45.2 ± 14.2	47.8 ± 13.6	42.4 ± 14.4	0.019
CPB time, min	67.3 ± 17.0	71.0 ± 17.0	63.4 ± 16.2	0.006
Total time surgery, min	142.6 ± 36.0	153.9 ± 33.5	131.0 ± 35.0	0.000
Ventilation on ICU, hours	4.6 ± 2.1	4.3 ± 1.7	5.0 ± 2.4	0.041
Blood loss, ml	399 ± 165	364 ± 149	437 ± 174	0.007
Length of stay, days	8.1 ± 2.5	8.1 ± 2.8	8.0 ± 2.3	0.671







Conclusion

LA-AVR trough partial upper hemisternotomy with the use of a rapid deployment stented bioprosthesis is associated with an increased improvement in cardiac related QoL and reduced postoperative pain, when compared to C-AVR. This is accompanied by a reduced intake of opioids postoperatively.

21 ISMICS RE-IMAGINED
18-20 June 2021
www.ISMICS.org