Minimally invasive sutureless aortic valve replacement with Perceval valve through the right lateral mini-thoracotomy

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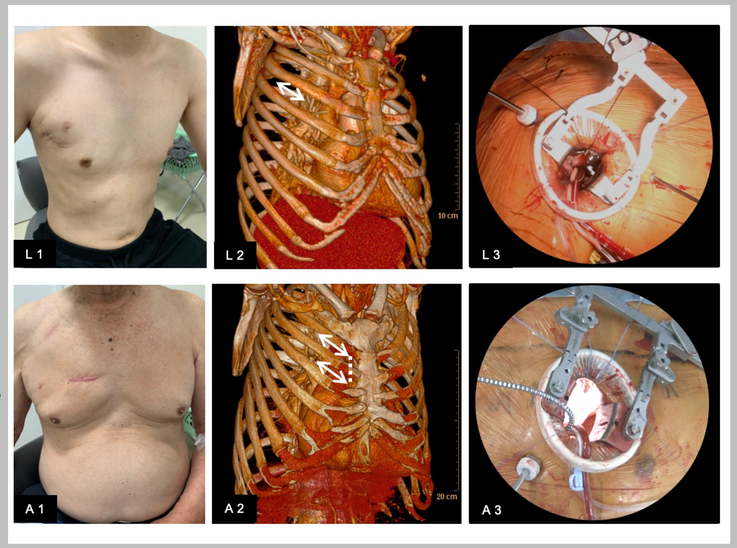
BACKGROUND

Minimally invasive sutureless aortic valve replacement with the Perceval bioprosthetic heart valve (MISUAVR) is commonly performed through a right anterior thoracotomy (AT). However, a lateral thoracotomy (LT) may be superior in not requiring rib and right internal thoracic artery (RITA) cutting.

OBJECTIVE

The aim of this study was to evaluate feasibility and effectiveness of employing an LT in MISUAVR as compared with an AT.

LT vs. AT : Surgical technique



In Group L, the skin incision was made on the right anterior axillary line and 3rd intercostal space, and in group A, on the right anterior chest and 2nd or 3rd intercostal space. All other surgical techniques were the same.

METHOD

We retrospectively reviewed 38 MISUAVRs performed from May 2019 to August 2021, 21 through LT (Group L), and 17 through AT (Group A).

Patients' characteristics

Characteristics	Group L (N=21)	Group A (N=17)	P value
Age (years)	77.1±5.6	77.1±4.6	0.99
Male	9 (42.9)	5 (29.4)	0.39
BSA (m^2)	1.46±0.17	1.52±0.13	0.18
EuroSCORE (%)	2.2±1.6	2.6±2.3	0.52
NYHA (class III or IV)	2 (9.5)	3 (17.6)	0.46
Atrial Fibrillation	2 (9.5)	2 (11.8)	0.82
complete RBBB	0 (0)	2 (11.8)	0.11
complete LBBB	0 (0)	1 (5.9)	0.26
Bicuspid aortic valve	3 (14.3)	2 (11.8)	0.82

RESULTS

Intraoperative data

First attempt success	21 (100)	16 (94.1)	0.26
Final successful cases	21 (100)	17 (100)	-
Rib cutting / Sacrifice of RITA	0 (0)	16 (94.1)	<0.01
-Rib cutting	0 (0)	9 (52.9)	<0.01
-Sacrifice of RITA	0 (0)	16 (94.1)	<0.01
Blood loss (including cell-saver blood)– ml	623±141	838±316	0.02
Blood transfusion	6 (28.6)	5 (29.4)	0.30
Surgical visualization score	1.14±0.36	1.82±0.72	<0.01
CPB time – min	82±19	93±28	0.19
Cross-clamp time – min	57±17	64±23	0.30
First attempt success	21 (100)	16 (94.1)	0.26

Surgical results

Variable	Group L (N=21)	Group A (N=17)	P value
Hospital mortality	0 (0)	0 (0)	-
Re-exploration	0 (0)	0 (0)	-
Neurological Events	0 (0)	0 (0)	-
Acute Kidney Injury	0 (0)	0 (0)	-
Complete AV Block	0 (0)	0 (0)	-
Hospital Stay (days)	10.3±3.1	11.6±4.2	0.30
ICU Stay (days)	2.2±1.0	2.4±1.1	0.74
Duration of Ventilation (hours)	7.4±3.7	7.6±4.9	0.88
Total Drain Output (ml)	472.4±398.8	422.4±351.4	0.68
POD of Drain Removal (days)	1.4±0.8	1.5±0.7	0.72

Postoperative echo data

Variable	Group L (N=21)	Group A (N=17)	P value
LVEF	60.6±12.1	56.8±12.9	0.35
Maximum PG (mmHg)	26.7±7.8	22.7±6.0	0.09
Peak Aortic Jet Velocity (m/s)	2.6±0.4	2.4±0.3	0.05
Mean PG (mmHg)	14.8±4.6	12.3±3.6	0.06
Paravalvular Leak – no. (%)	0 (0)	0 (0)	-

CONCLUSION

MISUAVR through LT is feasible and is superior to AT in amount of injury to the chest wall.

Reference : size of Perceval holder

