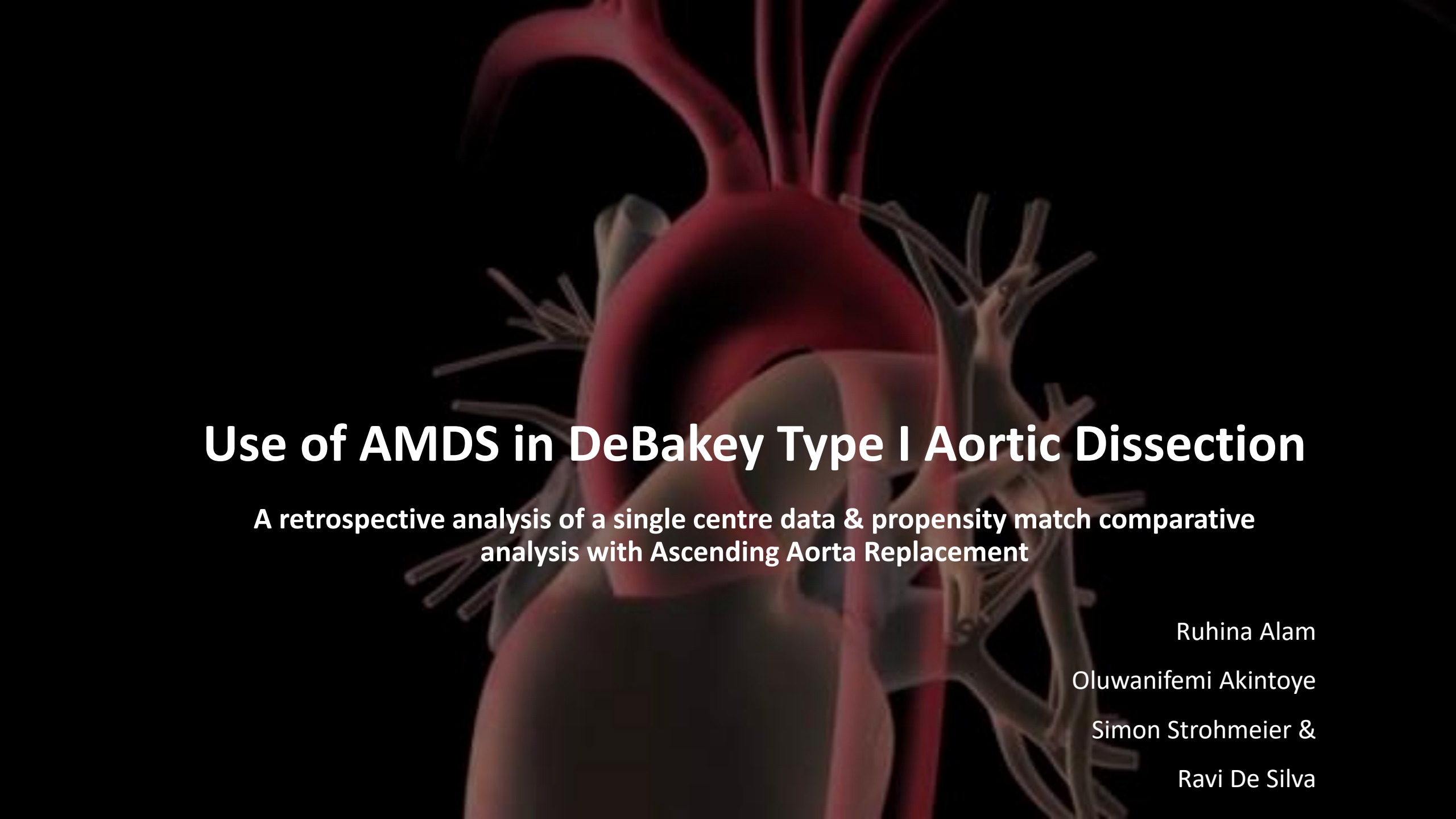


Use of AMDS in DeBakey Type I Aortic Dissection

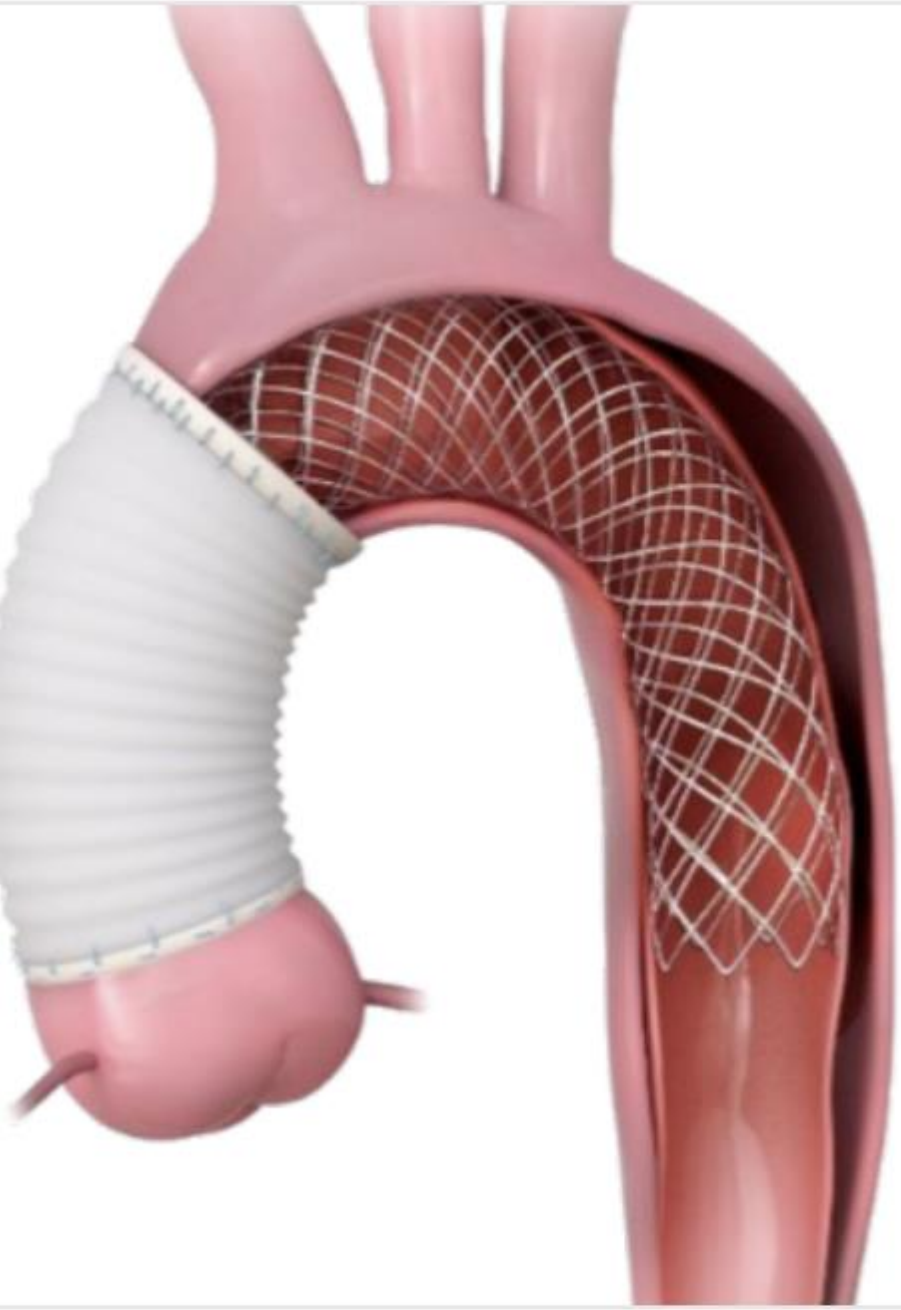
A retrospective analysis of a single centre data & propensity match comparative analysis with Ascending Aorta Replacement

Ruhina Alam

Oluwanifemi Akintoye

Simon Strohmeier &

Ravi De Silva



TAAD – Life threatening event

If the aortic arch is involved, either a **hemiarch replacement (HAR)** or a total replacement of the aortic arch (TAR) with implantation of a stent into the descending aorta **(frozen elephant trunk -FET**) is performed.

FET – complex surgery, requires experienced team

HAR – Concern for DANE/Repeat intervention

Is AMDS the answer?

AMDS – Baseline Data

Parameters	
Age (years)	61.8 +/- 13.8
Male	14 (70%)
Smoker	7 (35%)
Co-Morbidities	
Hypertension	14 (70%)
AF	2 (10%)
SVT	2 (10%)
Respiratory: Asthma, COPD, Idiopathic pulmonary fibrosis	5 (25%)
Hyperlipidaemia	2 (10%)
Peripheral vascular disease	1 (5%)
Hypertrophic cardiomyopathy	1 (5%)
CKD	1 (5%)
Previous DVT/PE	2 (10%)
Acute coronary syndrome	1 (5%)
Diabetes mellitus type 2	1 (5%)
Other: Osteoarthritis, Depression, BPH, GORD, Hypothyroidism, Fatty liver, previous cancer	9 (45%)
Presentation	
Aortic Regurgitation	9 (45%)
Bicuspid Aortic Valve	2 (10%)
Pericardial Tamponade	3 (15%)
Predicted Mortality	
ES II	7.76 +/- 7.69
Logistic ES	24.55 +/-17.61

AMDS - Retrospective analysis of Single Centre Data

- DeBakey Type 1 Aortic Dissection
- March 1, 2022 – March 31, 2023
- 20 patients

AMDS – Intra-operative Data

Parameters	
Operative Times (mins)	
CPB time +/- SD	226.6 +/- 87.2
Myocardial ischaemia time +/-SD	107.4+/- 48.7
Circulatory arrest +/- SD	30.6 +/- 6.9
Procedure	
AAR+AMDS	10 (50%)
AVR+AAR+AMDS	6 (30%)
ARR+AAR + AMDS	3(15%)
AAR + AMDS+CABG	1 (5%)

The 30-day mortality was 10% (n=2). This was comparable to the overall 30-day mortality of all dissection patients (N=66) during this time (13.64%, n=9).

AMDS – Post-operative Data

Parameters	
30-day mortality	2 (10%)
Prolonged ITU stay (>4 days)	8(40%)
Respiratory support – V-V ECMO, High Flow Nasal Oxygen, CPAP	4 (20%)
Dialysis/Haemofiltration	5 (25%)
CVA/Stroke	3 (15%)

AMDS Vs Ascending Aorta Replacement +/- HAR, without AMDS (Control Group) - Propensity Matched comparative analysis

- Jan 1, 2018 – March 31, 2023
- Ascending Aorta +/- Hemiarch replacement
- 103 patients
- Retrospective data collection

	Total - 122	AMDS group (20)n(%)/mean±SD	Control group (102) ~~n(~~n (%)/mean ±SD	p-value
Age	64.52 ± 13.17	61.74 ± 13.82	65.06 ± 13.03	0.3306
Logistic Euroscore	28.74 ± 16.90	22.96 ± 18.33	29.42 ± 16.69	0.423
Euroscore II	9.05 ± 9.49	8.36 ± 7.61	9.53 ± 10.49	0.668
Hypertension	74 (60.7%)	15 (12.3%)	59 (48.4%)	0.236
Diabetes Mellitus	2 (1.6%)	1 (0.8%)	1 (0.8%)	0.302
Smoking history	53 (43.4%)	10 (8.2%)	43 (35.2%)	0.689
Chronic kidney disease	13 (10.7%)	1 (0.8%)	12 (9.8%)	0.397
Atrial fibrillation	11 (9.0%)	1 (0.8%)	10 (8.2%)	0.386
COPD/Asthma	16 (13.1%)	4 (3.3%)	12 (9.8%)	0.297

Intra-operative Data

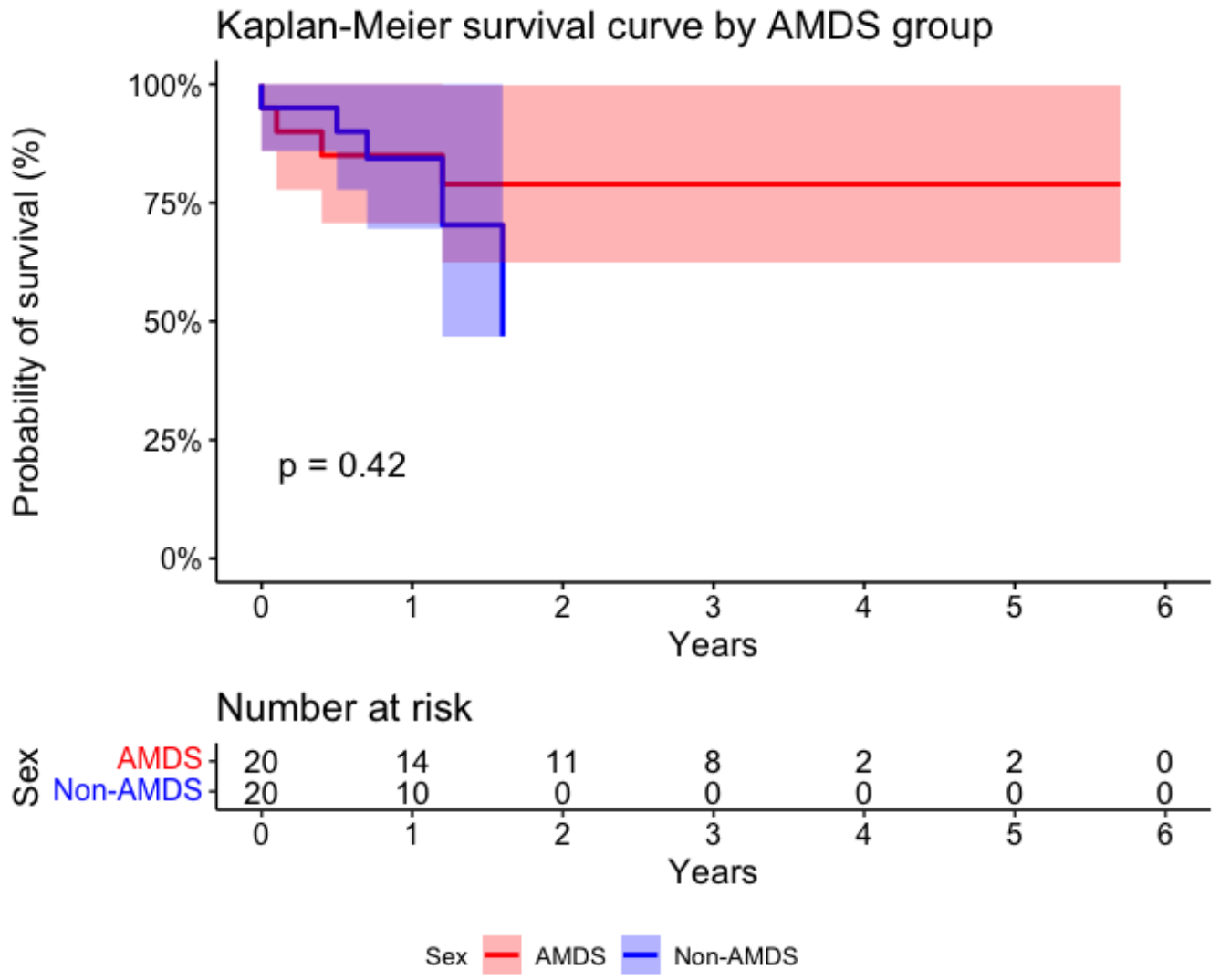
	Total - 122	AMDS group (20)n(%)/mean ±SD	Control group (102) n (%)/mean±SD	p-value
CPB time	228.90 ± 80.53	226.6 ± 87.17	229.4 ± 79.61	0.897
Cross clamp time	109.0 ± 50.48	107.45 ± 48.64	109.30 ± 51.07	0.879
Cerebral Perfusion	28.06 ± 12.42	30.86 ± 7.60	27.27 ± 13.44	0.207
Lower body ischemia time	32.16 ± 13.95	30.43 ± 7.09	32.47 ± 14.92	0.578
Circulatory arrest	20.81 ± 13.09	31.00 ± 8.72	20.37 ± 13.11	0.159

There was a statistically significant difference in improvement in false lumen between the AMDS group and non-AMDS group (OR 2.13, 95% CI [0.69 – 3.78], P=0.006). The AMDS group had double the reduction in false lumen compared to the control group

Post-operative Outcome

	Total - 122	AMDS group (20)n(%)/mean±SD	Control group (102) n(%)/mean±SD	Odds ratio (95% CI)	P value
Respiratory support	35 (28.7%)	3 (2.5%)	32 (26.2%)	0.41 (0.08 – 1.86)	0.26
Post op AKI	48 (39.3%)	3 (2.5%)	45 (36.8%)	0.33 (0.06 – 1.43)	0.15
Post op CVVH	29 (23.8%)	5 (4.1%)	24 (19.7%)	1.33 (0.30 – 6.30)	0.70
Post op CVA/Stroke	32 (26.2%)	4 (3.3%)	28 (22.9%)	0.94 (0.19 – 4.62)	0.94
Overall mortality	33 (27.0%)	5 (4.1%)	28 (22.9%)	1.33 (0.30– 6.30)	0.71
30-day mortality	21 (17.2%)	2 (1.6%)	19 (15.6%)	2.11 (0.19 – 47.78)	0.56
Improvement in false lumen	44 (36.1%)	13 (10.7%)	31 (25.4%)	8.45 (1.99 – 43.64)	0.006

The 1-year survival rate in the AMDS group was 84.4% (95% CI 69.5% - 100%) compared to 85.0% (95% CI 70.7%-100%) in the non-AMDS group and this difference was not shown to be statistically significant (p=0.42)



LIMITATIONS

Low sample size and retrospective nature are the two biggest limitations of this study.

We also don’t have the long-term follow-up data yet to comment on long-term outcomes of these patients with AMDS, including device-related complications.

WHAT NEXT ?

LONG TERM FOLLOW-UP OF PATIENTS WITH AMDS WITH SERIAL IMAGING AND COMPARATIVE ANALYSIS IS REQUIRED TO ASSESS THE LONG-TERM OUTCOME OF THESE PATIENTS, INCLUDING ANY SUBSEQUENT PROCEDURES REQUIRED TO TREAT THE REST OF THE AORTA AND DEVICE-RELATED COMPLICATION.

AS AMDS HAS SHOWN TO BE A SAFE PROCEDURE IN SHORT AND MEDIAN TERM, THE NEXT STEP WOULD BE TO PERFORM A COMPARATIVE ANALYSIS OF AMDS VERSUS HEMIARCH PROCEDURE IN DEBAKEY TYPE I AORTIC DISSECTION.

THANK YOU