

The Impact of Malperfusion Following Aortic Dissection Repair with the AMDS Hybrid Prosthesis: A Post-hoc Analysis of the DARTS Trial

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Disclosures

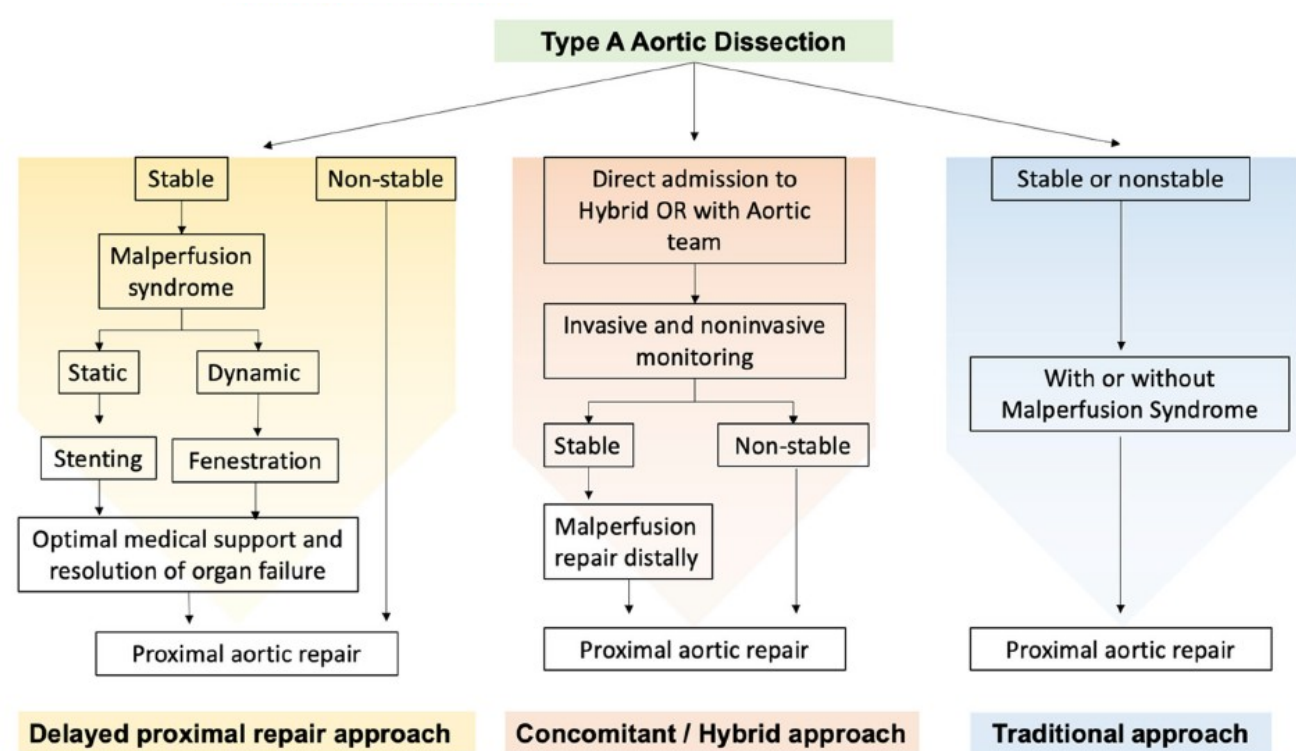
- None

Introduction

- Malperfusion at the time of acute type A aortic dissection (ATAAD) occurs in $\sim 1/3$ of patients and is known to be associated with elevated rates of mortality and adverse outcomes.
 - **Okita 2020**: Preoperative malperfusion associated with 29-50% in-hospital mortality.
 - **Bayamin 2022**: Mortality up to 43% in patients presenting with malperfusion from the GERAADA, IRAD, and NORCAAD registries.
 - Malperfusion identified as an independent predictor of mortality in these registries.
 - **Goel 2025**: Review of the STS database with 9,958 patients identified incidence of malperfusion of 28% associated with 27% mortality.
 - **Chandiramani 2025**: Systematic review of the literature with 36,361 patients. Identified rates of mortality in patients with malperfusion ranging from 18-36%.

Introduction

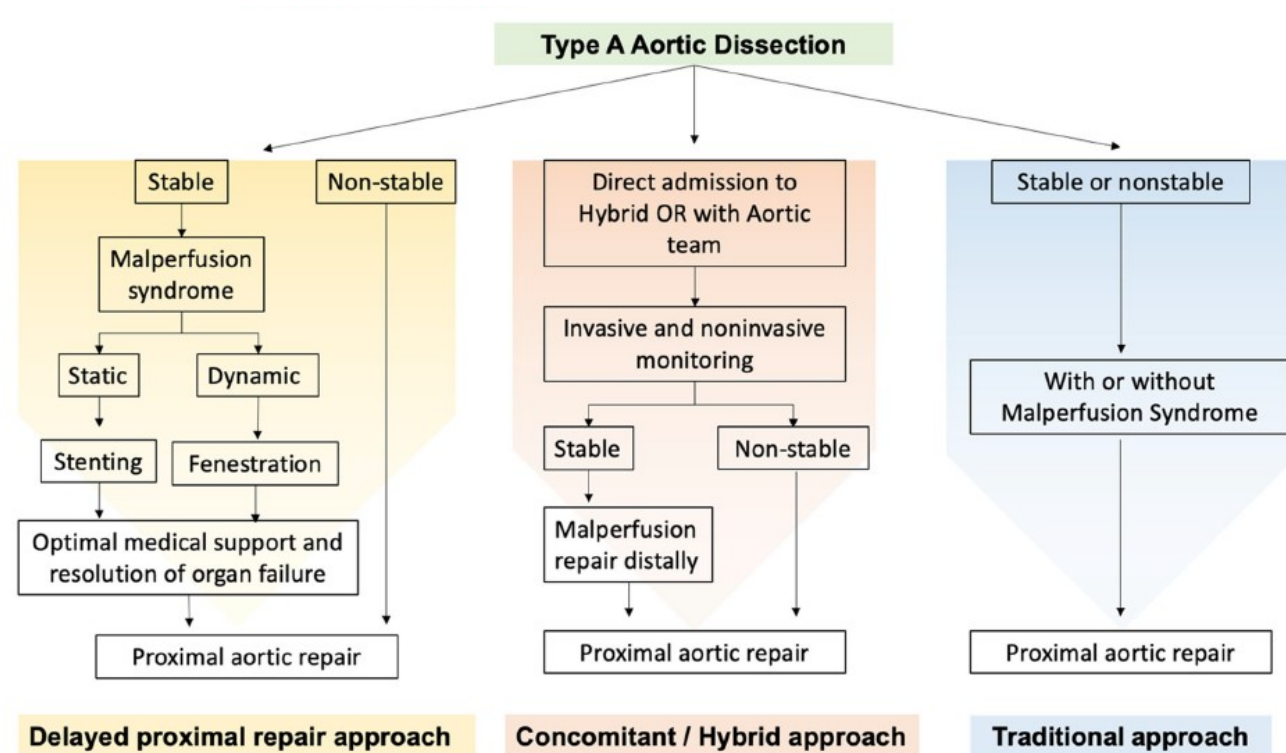
- Improvements in the management of patients with malperfusion.
 - Traditional approach
 - Hybrid repairs with concomitant endovascular therapy and open repair
 - Pre-ATAAD repair treatment of malperfusion and delayed open repair (Michigan)
 - Extended arch repairs
 - AMDS



Bayamin et al, 2022.

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Introduction

- A direct comparison between patients with and without malperfusion in those who received the AMDS has not been performed.
- Herein, we perform a post-hoc analysis of the DARTS trial comparing the outcomes of patients with and without malperfusion over a 5-year follow-up period.

Methods

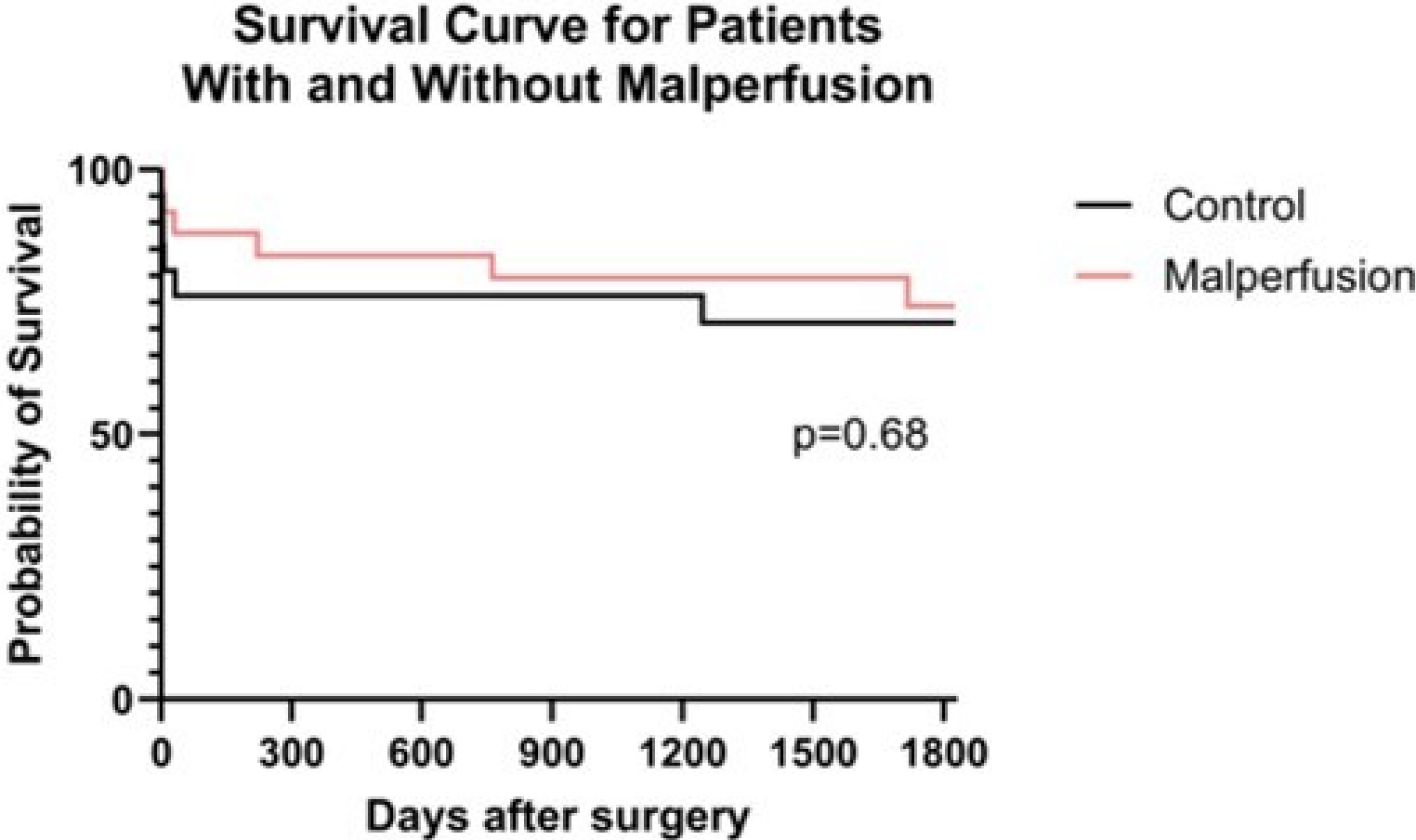
- Patients were grouped based on the presence of preoperative malperfusion.
- Malperfusion was considered either clinical or radiographic.
- The primary outcome of this study was mortality.
 - Secondary outcomes included major morbidity including stroke, major bleeding, acute kidney injury, and delirium.
- A survival analysis was performed comparing 5-year survival between patients with and without malperfusion using the Log-rank test.
- Unpaired two tailed T tests were used to compare differences in the rates of secondary outcomes.
 - All statistical analyses were performed via GraphPad Prism (GraphPad Software, La Jolla, CA, USA).

Baseline Demographics

- 46 patients were included from 2017-2019.
- All follow-ups were completed in June 2024.
- Baseline characteristics were similar between patients with and without malperfusion.

Baseline Demographics	Control n=21 (%)	Malperfusion n=25 (%)	P-value
Mean Age (years, SD)	60.3 ± 13.7	60.6 ± 11.0	0.94
Average BMI (kg/m ²)	30.8 ± 8.8	28.0 ± 4.3	0.18
Male	13 (61.9)	18 (72.0)	0.48
Hypertension	13 (61.9)	14 (56.0)	0.69
Current Smoker	9 (42.9)	7 (28.0)	0.30
Coronary Artery Disease	5 (23.8)	3 (12.0)	0.30
Prior Arrhythmia	3 (14.3)	3 (12.0)	0.82
COPD	3 (14.3)	3 (12.0)	0.82
Diabetes	3 (14.3)	3 (12.0)	0.82
Previous Stroke	3 (14.3)	3 (12.0)	0.82
Chronic Renal Insufficiency	3 (14.3)	1 (4.0)	0.23
Prior MI	2 (9.5)	2 (8.0)	0.86
History of Malignancy	3 (14.3)	1 (4.0)	0.23

Results



	Follow-up Time	Control n=21 (%)	Malperfusion n=25 (%)	P-value
Mortality	<30 day	4 (19.1)	3 (12.0)	0.52
	5 year	6 (28.9)	6 (25.7)	0.68
New Stroke	5 year	1 (4.8)	9 (36.0)	0.03
Major Bleeding	<30 day	3 (14.3)	2 (8.0)	0.50
AKI Requiring	<30 day	3 (14.3)	4 (16.0)	0.88

Discussion

- Previous analyses of the DARTS trial have found high rates of resolution of malperfusion with the AMDS, although outcomes following repair with the AMDS with or without malperfusion have not been compared.
- This study found that patients experienced similar outcomes post-D1AD repair irrespective of malperfusion with no significant differences in mortality at 5 years.
- The AMDS Hybrid Prosthesis appears to be effective in mitigating the negative impact of malperfusion on postoperative outcomes, resulting in similar outcomes regardless of the presence of malperfusion, in contrast to the previous literature.

Questions?

