Surgical Outcome of Acute Type A Aortic Dissection Requiring Preoperative Cardiopulmonary Resuscitation without Patient Selection

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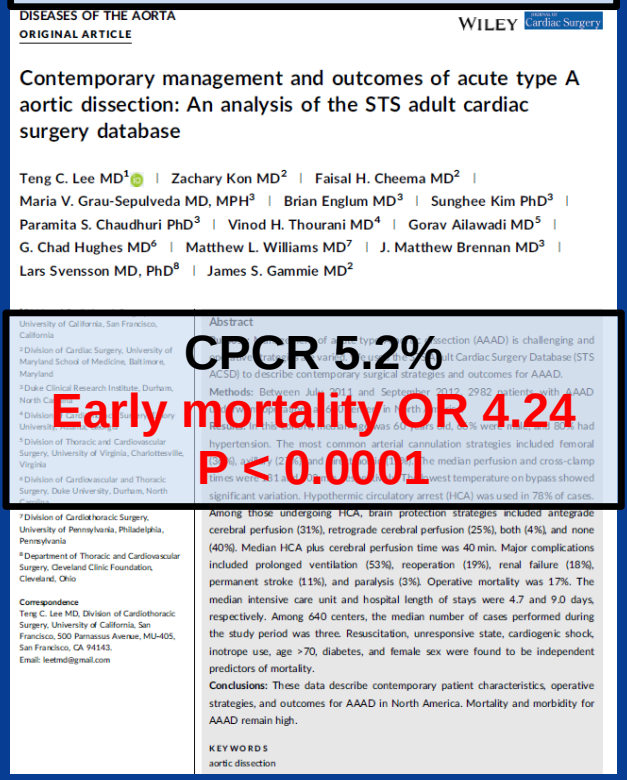
Objective

Acute aortic dissection (AD) type A requiring preoperative cardiopulmonary resuscitation (CPR) – multicenter databases

STS



DISEASES OF THE AORTA
ORIGINAL ARTICLE

WILEY Cardiac Surgery

Contemporary management and outcomes of acute type A aortic dissection: An analysis of the STS adult cardiac surgery database

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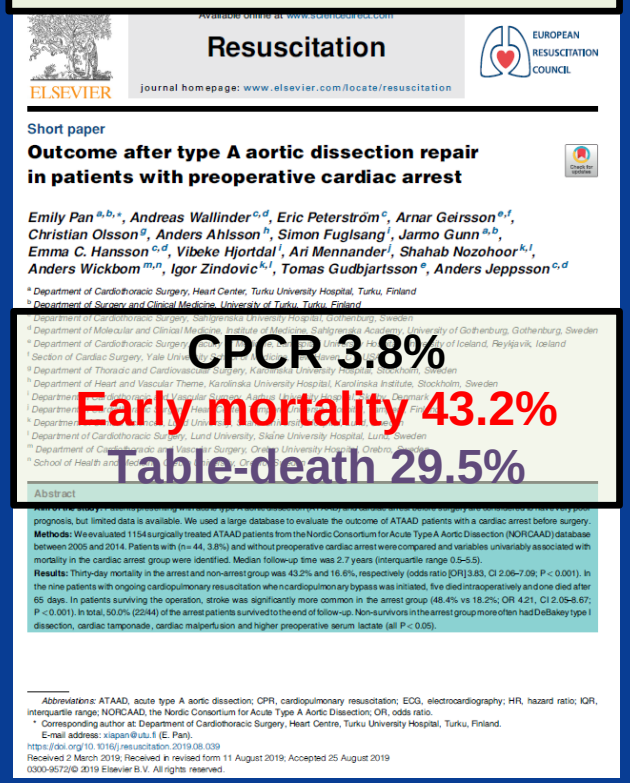
CPCR 5.2%

Early mortality OR 4.24

P < 0.0001

NORCAAD



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Short paper

Outcome after type A aortic dissection repair in patients with preoperative cardiac arrest

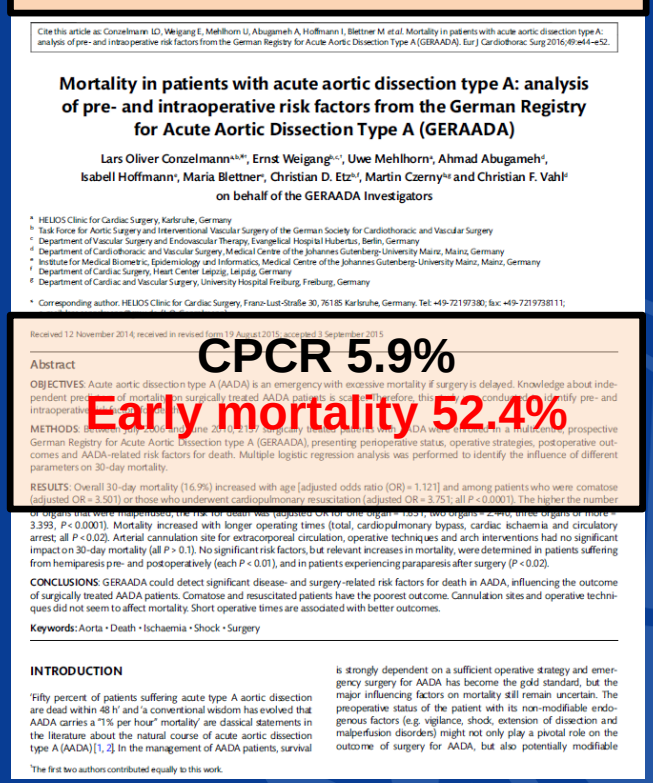
Emily Pan[a,b,*], Andreas Wallinder[c,d], Eric Peterström[c], Arnar Geirsson[e,f], Christian Olsson[g], Anders Ahlsson[h], Simon Fuglsang[i], Jarmo Gunn[a,b], Emma C. Hansson[c,d], Vibeke Hjortdal[i], Ari Mennander[j], Shahab Nozohoor[k,l], Anders Wickbom[m,n], Igor Zindovic[k,l], Tomas Gudbjartsson[e], Anders Jeppsson[c,d]

CPCR 3.8%

Early mortality 43.2%

Table-death 29.5%

GERAADA



Cite this article as: Conzelmann LO, Weigang E, Mehlhorn U, Abugameh A, Hoffmann I, Blettner M et al. Mortality in patients with acute aortic dissection type A: analysis of pre- and intraoperative risk factors from the German Registry for Acute Aortic Dissection Type A (GERAADA). Eur J Cardiothorac Surg 2016;49:e44–e52.

Mortality in patients with acute aortic dissection type A: analysis of pre- and intraoperative risk factors from the German Registry for Acute Aortic Dissection Type A (GERAADA)

Lars Oliver Conzelmann[a,b,*], Ernst Weigang[b,c], Uwe Mehlhorn[a], Ahmad Abugameh[d], Isabell Hoffmann[e], Maria Blettner[e], Christian D. Etz[b,f], Martin Czerny[b,g] and Christian F. Vahl[d] on behalf of the GERAADA Investigators

CPCR 5.9%

Early mortality 52.4%

Objective

- Surgical indication for acute type A aortic dissection with preoperative cardiopulmonary resuscitation remain controversial
- Surgical outcomes for these patients shows dismal outcomes and consequently often the surgery is regarded as futile
- We report our surgical outcomes without abandonment in the setting

Methods

From May 2019 through Aug. 2023

174 consecutive patients underwent ATAAD repair

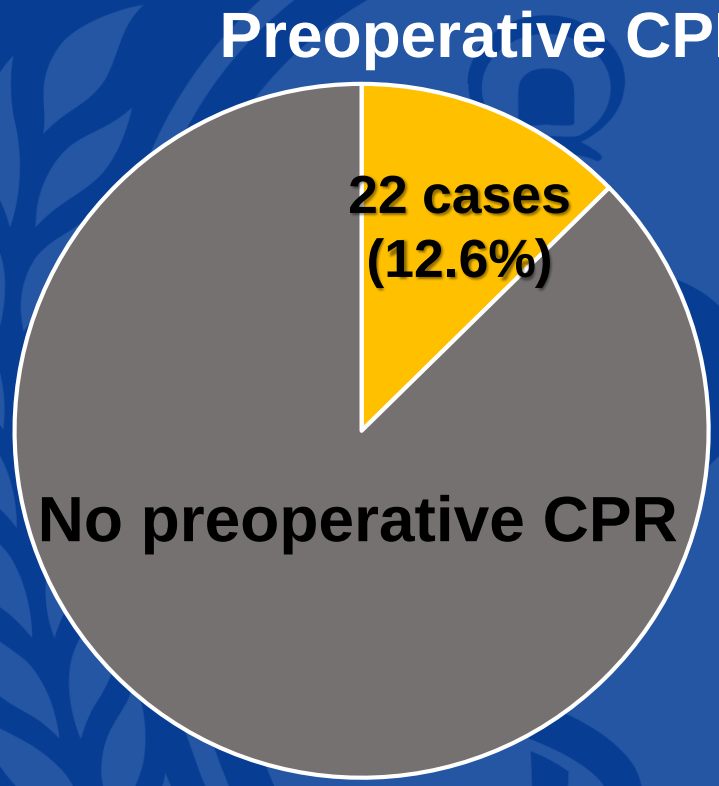
Exclusion, N=152

Surgery without preoperative CPR

N = 22 (12.6%)

Survival
N = 13

Non-survival
N = 9



- Proceed surgery regardless of ROSC
- ECMO was actively applied in patients without ROSC (31.8%)

Methods

- **Comparison of preoperative demographics**
- **Clinical outcomes**
  - **Major adverse events**
  - **Cause of death**
  - **Discharge place**
  - **Cerebral performance category scale* at discharge**

*** Cerebral performance category**

	Cerebral Performance Category (CPC)	
Positive Outcomes	*CPC 1*	*Good cerebral performance*
	CPC 2	*Moderate cerebral disability*
Negative Outcomes	*CPC 3*	*Severe cerebral disability*
	CPC 4	*Coma or vegetative state*
	CPC 5	*Brain death*

J Neurol Neurol Sci Disord 4(1): 001-007

Results

Table 1. Baseline summary

Variables	Overall n=22	Survival n=13	Non-survival n=9	P value
Age (year)	65.3 ± 13.9	64.5 ± 14.5	66.3 ± 13.7	0.773
Female gender, n(%)	15 (68.2)	10 (76.9)	5 (55.6)	0.554
Diabetes, n(%)	6 (27.3)	4 (30.8)	2 (22.2)	1.000
Hypertension, n(%)	14 (63.6)	9 (69.2)	5 (55.6)	0.838
Creatinine clearance	52.7 ± 34.0	52.7 ± 40.3	52.7 ± 24.4	0.999
CKD stage ≥ 4, n (%)	5 (22.7)	3 (23.1)	2 (22.2)	1.000

Results

Table2. CPR-related profile

Variables	Overall n=22	Survival n=13	Non-survival n=9	P value
Time from ER to OR (hr)	84.0 [60.0;187.0]	103.0 [83.0;187.0]	60.0 [59.0;83.0]	0.133
CPR at ER	14 (63.6)	7 (53.8)	7 (77.8)	0.486
CPR duration (min)	5.0 [4.0;9.0]	5.0 [4.0;6.5]	7.0 [4.5;10.0]	0.453
Preoperative ECMO	7 (31.8)	5 (38.5)	2 (22.2)	0.735
Arterial blood analysis				
Lactic acid (mmol/L)	9.6 ± 3.8	10.1 ± 3.0	9.0 ± 4.9	0.520
pH	7.2 ± 2.0	7.2 ± 0.2	7.2 ± 0.2	0.627
Base excess	-12.5 ± 7.6	-11.8 ± 7.5	-13.6 ± 8.1	0.601
EuroSCORE II	67.0 [43.9;80.9]	65.2 [30.5;74.5]	74.7 [51.8;83.1]	0.385
Preoperative neurologic deficit	3	0	3 (33.3)	0.081

Results

Table3. Operative profile

Variables	Overall n=22	Survival n=13	Non-survival n=9	P value
Procedure, n (%)				
Root replacement	8 (36.4)	4 (30.8)	4 (44.4)	0.838
Total arch replacement	7 (31.8)	4 (30.8)	3 (33.3)	1.000
Hemiarch replacement	15 (68.0)	9 (69.2)	6 (66.7)	
Cabrol patch apply	8 (36.4)	4 (30.8)	4 (44.4)	0.838
Cardiopulmonary bypass time	146.5 [107.0;241.0]	119.0 [104.0;247.0]	149.0 [136.0;172.0]	0.764
Aortic cross clamp time	99.0 [71.0;150.0]	85.0 [69.0;161.0]	100.0 [90.0;121.0]	1.000
Total circulatory arrest	17 (77.3)	11 (84.6)	6 (66.7)	0.638

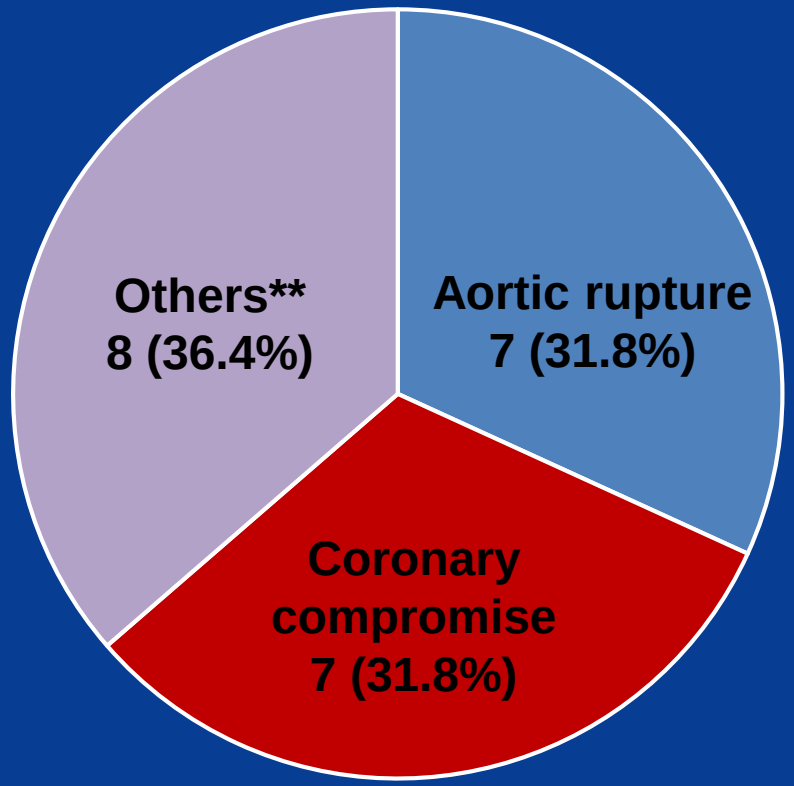
Results

Table4. Early clinical outcomes

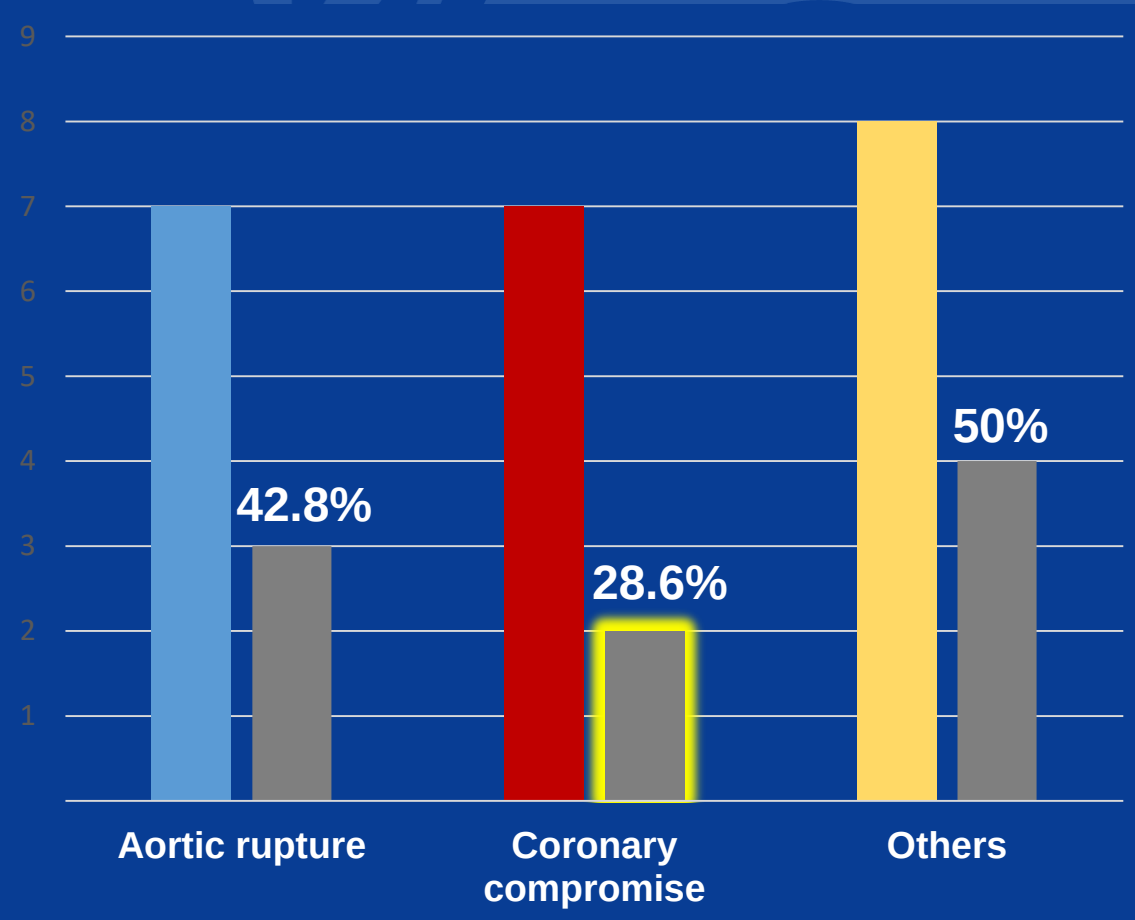
Variables	Overall n=22	Survival n=13	Non-survival n=9	P value
Renal failure	7 (31.8)	1 (7.7)	6 (66.7)	0.014
Re-exploration for bleeding	3 (13.6)	1 (7.7)	2 (22.2)	0.730
Need for postoperative ECMO	2 (9.1)	1 (7.7)	1 (11.1)	1.000
ICU stay (hr)	108.0 [51.0;552.0]	93.0 [47.5;575.5]	148.0 [51.0;552.0]	0.972
Hospital stay (days)	10.0 [7.0;23.0]	15.0 [9.0;22.0]	6.0 [3.0;23.0]	0.133
Cause of mortality				
Myocardial failure	3 (13.6)	0	3 (30.0)	
Brain stem failure	2 (9.1)	0	2 (22.2)	
Sepsis	2 (9.1)	0	2 (22.2)	
Bowel necrosis	2 (9.1)	0	2 (22.2)	

Results

- **Cause of preoperative cardiac arrest**



- **Mortality rate by cause of arrest**

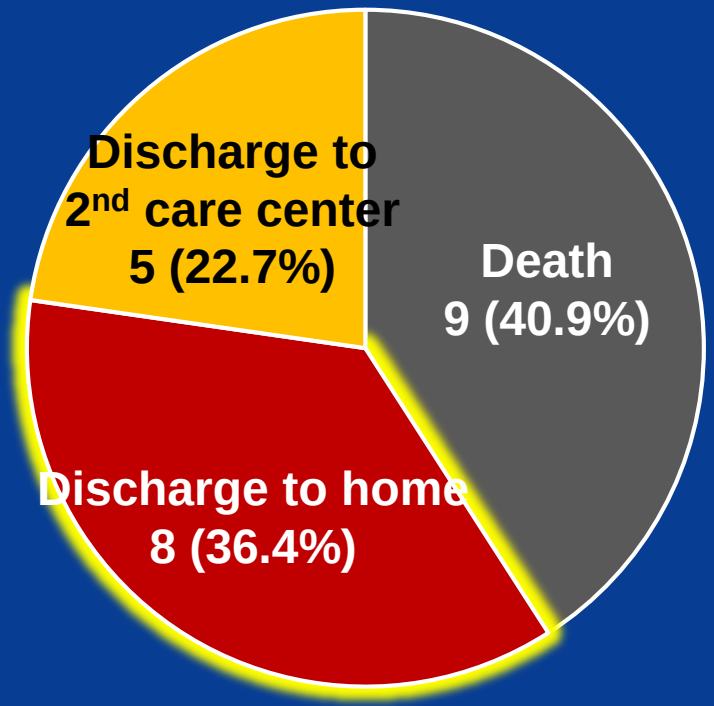


Others**

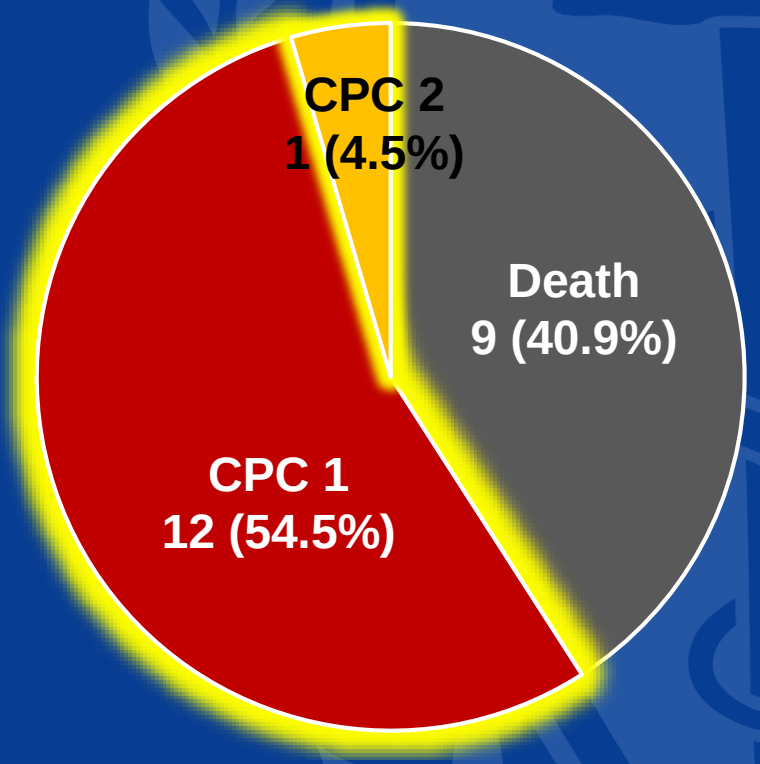
- Acute pulmonary thromboembolism combined with acute AD (N = 1)
- Cardiac tamponade (N = 5)
- Massive cerebrovascular accident due to carotid mal-perfusion (N = 2)

Results

- Discharge place



- CPC scale at discharge



Conclusion

- More than half of the patients with ATAAD requiring preoperative CPR survived and discharged home with full cerebral performance
- Predicting post-surgery survival solely from preoperative conditions seems challenging especially in preoperative CPR
- More aggressive operation are needed