

Impact of Transfer Time to Experienced Aortic Center on Outcomes of Acute Type A Aortic Dissection

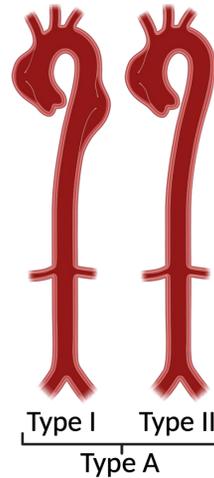


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BACKGROUND

Type A aortic dissection (TAAD) results from a tear in the intimal and medial layers of the ascending aorta. It is a surgical emergency requiring immediate diagnosis and surgical intervention. Timely transfer and intervention are critical to outcomes, as mortality rates as high as 1% per hour have previously been demonstrated. However, care at specialized, high-volume facilities, which may extend transfer time, has been shown to reduce patient mortality.



OBJECTIVE

Assess whether transfer of TAAD to an experienced aortic center, despite longer transfer times, affects patient outcomes.

METHODS

Retrospective cohort study
UWMC TAAD databases

Patients ≥ 18 years old
Acute TAAD repair
2014 - 2025

Demographics
Preoperative Aortic Data
Transfer Data
Intraoperative Data
Perioperative Outcomes
Medium-Term Outcomes

325 patients into terciles based on total transfer time
Analyses performed using R statistical software
Significance set at p<0.05

A 0-5 hours (n=102) **B** 5-10 hours (n=114) **C** >10 hours (n=109)

RESULTS

Variable	Group A [0,5] hours (n=102)	Group B (5,10] hours (n=114)	Group C >10 hours (n=109)	Overall (n=325)	p-value	N
Transfer Characteristics						
Transfer from Outside Institution	85 (83.33%)	108 (94.74%)	102 (93.58%)	295 (90.77%)		
Symptom Onset to Diagnosis (min)	99.00 (73.00, 122.00)	209.50 (159.00, 273.00)	509.00 (231.00, 1,216.00)	190.00 (104.00, 365.00)	<0.001	295
Diagnosis to Transfer Initiation (min)	16.00 (6.00, 29.00)	27.00 (11.00, 54.50)	53.00 (24.00, 124.00)	27.00 (12.00, 60.00)	<0.001	295
Transfer Initiation to Arrival (min)	74.00 (57.00, 106.00)	116.50 (81.50, 116.50)	205.00 (126.00, 326.00)	118.00 (78.00, 194.00)	<0.001	295
Arrival to OR (min)	34.00 (19.00, 44.00)	34.50 (21.50, 54.00)	66.00 (29.00, 573.00)	37.00 (22.00, 63.00)	<0.001	295
Perioperative Outcomes						
Permanent CVA	34 (33.33%)	30 (26.32%)	24 (22.02%)	88 (27.08%)	0.18	325
Prolonged Ventilation	25 (24.75%)	31 (27.19%)	25 (22.94%)	81 (25.00%)	0.76	324
New Dialysis					0.66	324
None	95 (93.14%)	103 (91.15%)	96 (88.07%)	294 (90.74%)		
Temporary	6 (5.88%)	7 (6.19%)	11 (10.09%)	24 (7.41%)		
Prolonged	1 (0.98%)	3 (2.65%)	2 (1.83%)	6 (1.85%)		
Return to OR					0.22	324
None	80 (78.43%)	96 (84.96%)	88 (80.73%)	264 (81.48%)		
Bleeding	5 (4.90%)	3 (2.65%)	7 (6.42%)	15 (4.63%)		
Delayed Chest Closure	3 (2.94%)	6 (5.31%)	3 (2.75%)	12 (3.70%)		
Both	4 (3.92%)	3 (2.65%)	0 (0.00%)	7 (2.16%)		
Other	10 (9.80%)	5 (4.42%)	11 (10.09%)	26 (8.02%)		
ICU LOS (d)	4.00 (3.00, 9.00)	5.00 (2.00, 8.00)	5.00 (3.00, 9.00)	5.00 (3.00, 8.00)	0.61	325
Hospital LOS (d)	10.00 (7.00, 16.00)	10.50 (7.00, 17.00)	12.00 (8.00, 19.00)	11.00 (7.00, 16.00)	0.44	325
30-day Re-admit	18 (17.82%)	13 (11.40%)	10 (9.17%)	41 (12.65%)	0.15	324
30-day Mortality	22 (21.57%)	16 (14.04%)	15 (13.89%)	53 (16.36%)	0.23	324
Medium-Term Outcomes						
Follow-up Time (mo)	48.03 (18.63, 79.93)	38.77 (12.71, 62.23)	35.02 (14.98, 63.18)	39.82 (18.43, 69.88)		325
Stroke	16 (16.49%)	13 (12.26%)	9 (8.82%)	38 (12.46%)	0.26	305
Thrombotic/Embolic Event	11 (11.34%)	6 (5.66%)	7 (6.86%)	24 (7.87%)	0.29	305
1-year Mortality	23 (30.26%)	20 (22.99%)	21 (23.86%)	64 (25.50%)	0.52	251

Table 1. Transfer Characteristics and Outcomes

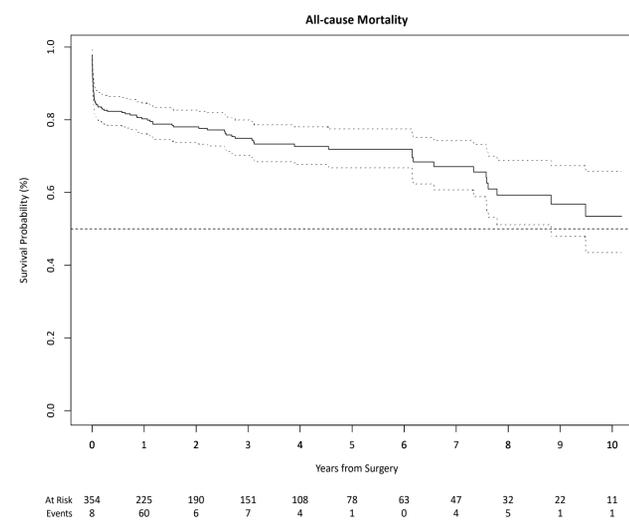


Figure 1. Long-Term Survival of Cohort

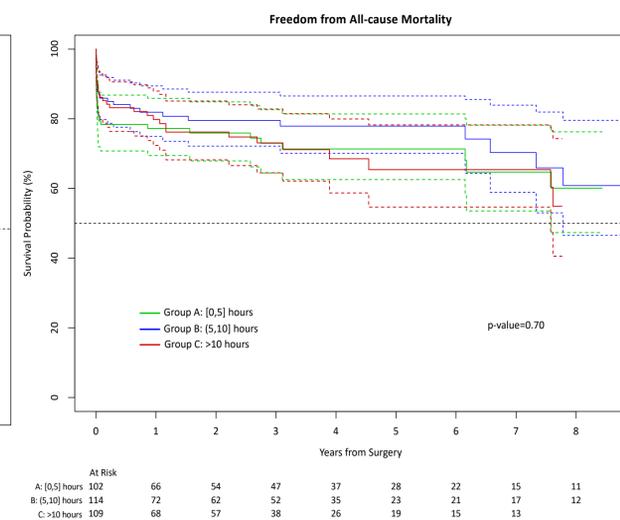


Figure 2. Long-Term Survival Among Terciles

DISCUSSION

Findings

- Terciles were well balanced with regard to demographics, aortic characteristics, and intraoperative data
- All transfer-related variables were significantly different between the groups, such as median time from symptom onset to diagnosis (99.00 vs. 209.50 vs. 509.00, p<0.001)
- Perioperative and medium-term outcomes were similar between groups
- Total transfer time was not significantly associated with increased odds of medium-term stroke, 30-day mortality, or 1-year mortality (p=0.45, p=0.23, p=0.77, respectively)
- Total transfer time was significantly associated with perioperative permanent CVA
 - Comparing two groups differing by 1 hour in total transfer time, patients with the higher total transfer time had 2.9% lower odds of permanent CVA (0.971, 95% CI [0.948, 0.995], p=0.017)
- Hazard of all-cause mortality was similar between two groups differing in transfer time by one hour (p=0.53)
- Long-term survival was similar between groups (p=0.70)

Limitations

- Data was limited to those patients who survived to undergo surgery, so it remains possible that delayed transfer time resulted in increased pre-surgical deaths
- Preliminary analyses did not account for potential confounders, such as preoperative anti-impulse therapy
- Further investigation is necessary to better define the risks and benefits of transfer of TAAD patients to more experienced centers

CONCLUSIONS

Amongst patients with TAAD who survived to surgery, longer transfer times were not associated with worse perioperative or medium-term outcomes.

