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EARLY TEVAR AS MANAGEMENT OF RESIDUAL DISSECTION FOLLOWING DEBAKEY I DISSECTION

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BACKGROUND

- Patients with DeBakey I dissections often require reintervention to address pathology arising from residual dissection in the distal arch and descending thoracic aorta (DTA)
- **Current Aortic guidelines do not discuss management of residual dissection in the DTA following Type A repair**
- TEVAR has been shown to promote aortic of dissected descending aorta in the setting of acute Type B dissections¹
- **Early endovascular repair of residual dissection may improve overall survival, promote aortic remodeling and mitigate the need for future interventions**

METHODS

- Patients with Type A DeBakey I dissections were queried from a single institution from 1999-2023 (n = 832)

Cohorts were created based on timing of completion TEVAR following Type A ascending repair

Early:
TEVAR done < 6 months after index repair
(n = 71)

Late:
TEVAR done > 6 months after index repair
(n = 111)

Never:
DeBakey I patients who never received TEVAR
(n = 674)

- Patients who received urgent/emergent TEVARs for malperfusion, bleeding, or other complications during Type A index admission were excluded
- Clinical Characteristics such as maximum pre-TEVAR DTA diameter, medical co-morbidities and demographic factors as well as outcomes related to operative complications and post-operative hospital course were studied and compared between early and late stenting cohorts
- Post-discharge outcomes such as reintervention, readmission, and long-term survival were collected and compared between Early and Late stenting cohorts as well as Early vs All Other DeBakey I Dissections (Late + Never)

THE QUESTION:

Should early completion stenting of residual dissections be performed after acute ascending repair of DeBakey type I dissections?

Table 1

Clinical Characteristics

	Early TEVAR (< 6 months) (n = 71)	Late TEVAR (> 6 months) (n = 111)	Odds Ratio (95% Confidence Interval)	P-value
Clinical Characteristics				
Age at Type A (years)	61.1 ± 9.29	56.7 ± 11.19	-4.35 (-7.49 to -1.20) [†]	0.007
Extent of Initial Arch Repair				
<i>Ascending</i>	2 (2.8)	31 (27.9)		
<i>Hemi-Arch</i>	23 (32.4)	59 (52.3)	-	<0.0001
<i>Zone 2</i>	40 (56.3)	14 (12.6)		
<i>Total</i>	6 (8.5)	7 (6.3)		
FET during Index Repair	6 (8.5)	6 (5.4)	0.62 (0.18 - 2.09)	0.54
Days between Type A repair and TEVAR	51 [18 - 94]	1750 [616 - 3005]	1699 (1164 - 2207)*	<0.0001
Sex	F: 18 (25) M: 53 (75)	F: 27 (24) M: 84 (76)	1.06 (0.51 - 2.05)	>0.99
Current Smoker	13 (18.6)	19 (17.6)	0.94 (0.43 - 2.02)	>0.99
Hypertension	67 (94.4)	104 (93.7)	0.89 (0.28 - 2.94)	>0.99
CHF	23 (12.6)	31 (17.0)	0.81 (0.42 - 1.53)	0.62
Diabetes	8 (4.4)	14 (7.7)	1.15 (0.44 - 2.8)	0.82
Cerebrovascular Disease	11 (15.5)	33 (29.7)	2.31 (1.09 - 5.14)	0.03
Chronic Lung Disease	6 (8.5)	21 (18.9)	2.53 (1.01 - 6.39)	0.06
Connective Tissue Disease	1 (1.4)	7 (6.3)	4.71 (0.79 - 53.77)	0.15

* Mann Whitney-U Test, difference between medians

† T-Test, difference between means

Table 2

Dissection Characteristics at Time of TEVAR

	Early TEVAR (< 6 months) (n = 71)	Late TEVAR (> 6 months) (n = 111)	Odds Ratio (95% Confidence Interval)	P-value
Clinical Characteristics				
Max Aortic Diameter (mm)	41 [35 - 47]	57 [51 - 64]	1.60 (1.30 - 1.90)*	<0.0001
Symptomatic	20 (28.7)	32 (28.8)	1.03 (0.53 – 1.99)	>0.99
Ruptured Aorta	2 (2.8)	6 (5.4)	1.97 (0.47 - 9.80)	0.49
Malperfusion	5 (7.0)	0 (0)	0 (0.00 - 0.42)	0.008
Non-Elective Procedure	11 (15.5)	11 (9.9)	0.60 (0.25 - 1.44)	0.35
TEVAR Landing in Dacron	54 (76.1)	75 (67.6)	0.66 (0.34 - 1.29)	0.24

* Mann Whitney-U Test, difference between medians

Figure 1: Significant aortic dilation occurs by the time of late stenting

Maximum Diameter of Descending Thoracic Aorta at Time of TEVAR

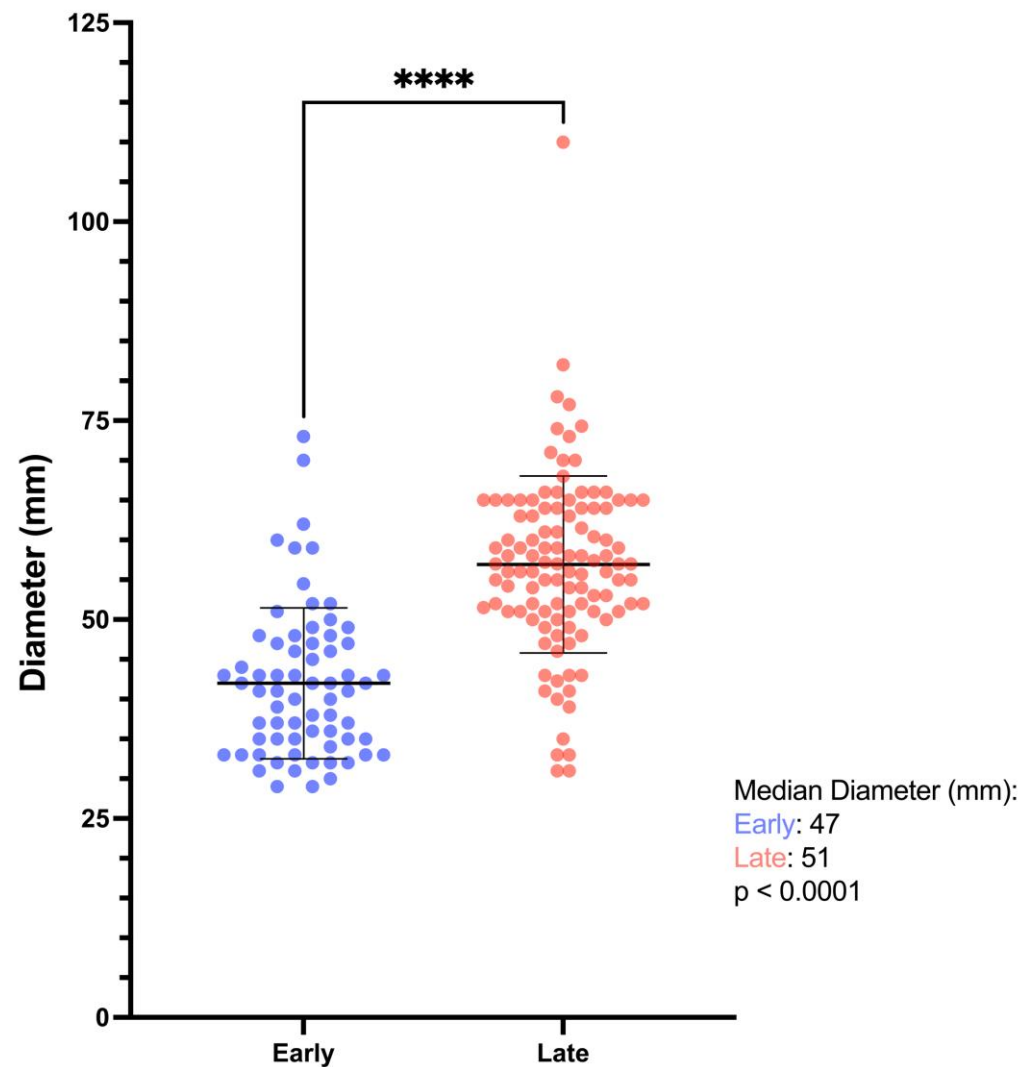


Table 3

Operative and Post-Operative Characteristics/Complications

	Early TEVAR (< 6 months) (n = 71)	Late TEVAR (> 6 months) (n = 111)	Relative Risk (Confidence Interval)	P-value
Operative/Post Operative Outcomes				
Mean Length of Stay (days)	8.14	8.67	-	0.70
Operative Complications	9 (12.7)	22 (19.8)	1.70 (0.74 - 4.14)	0.23
30 Day Aortic Reintervention	2 (2.8)	3 (2.7)	0.99 (0.93 - 1.06)	>0.99
Prolonged Ventilation	2 (2.8)	2 (2.2)	0.99 (0.92 - 1.06)	>0.99
Stroke	1 (1.4)	9 (8.1)	1.07 (0.99 - 1.16)	0.09
Spinal Cord Ischemia	3 (4.2)	7 (7.6)	1.04 (0.95 - 1.13)	0.52
Limb Ischemia	1 (1.4)	2 (1.8)	1.00 (0.94 - 1.06)	>0.99
Discharge Home	58 (81.7)	101 (91.0)	2.03 (0.96 - 4.31)	0.07
30 Day Readmission	12 (16.9)	18 (16.4)	0.99 (0.86 - 1.13)	>0.99

No significant differences in operative complications between cohorts

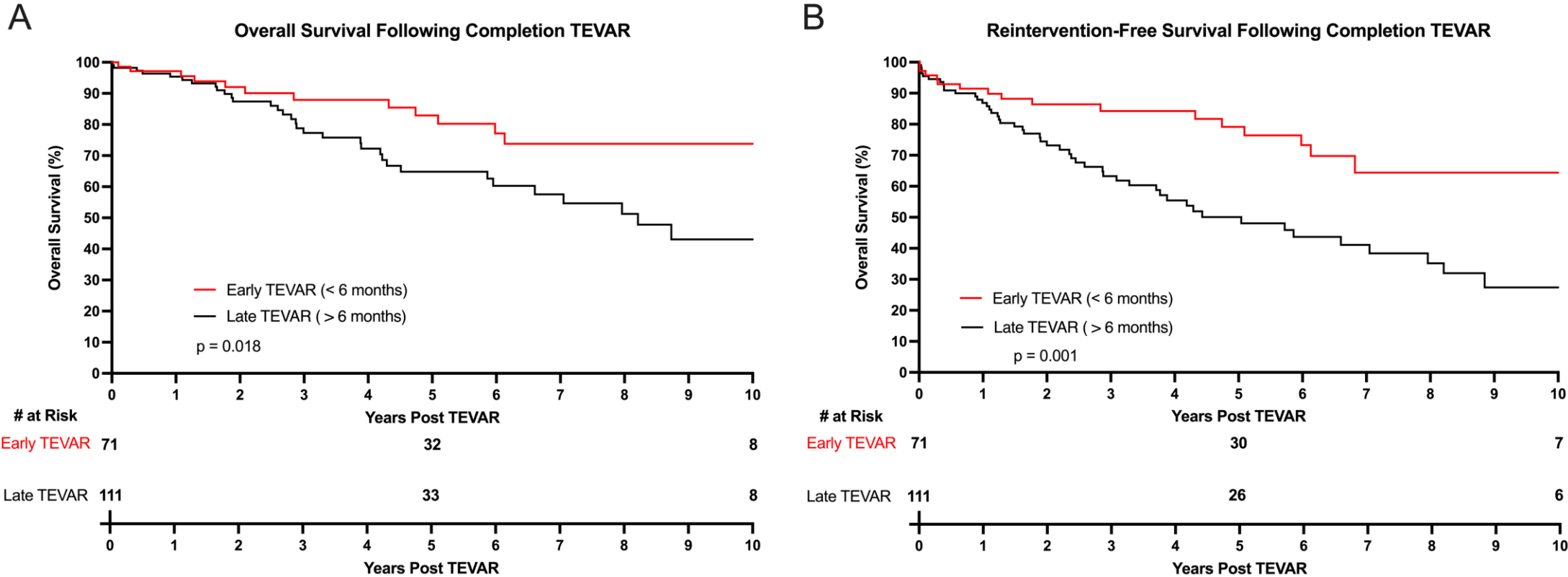
Table 4

Reinterventions of Descending Thoracic Aorta Following Completion TEVAR

	Early TEVAR (< 6 months) (n = 71)	Late TEVAR (> 6 months) (n = 111)	Relative Risk (Confidence Interval)	P-value
Operative/Post Operative Outcomes				
Aortic Reintervention	5 (7.0)	28 (25.7)	1.25 (1.10 - 1.44)	0.001
# of Reinterventions (mean)	0.08 ± 0.33	0.35 ± 0.66	0.27 (0.12 – 0.41)*	<0.001

Patients receiving early completion stenting have significantly lower rates of aortic reintervention

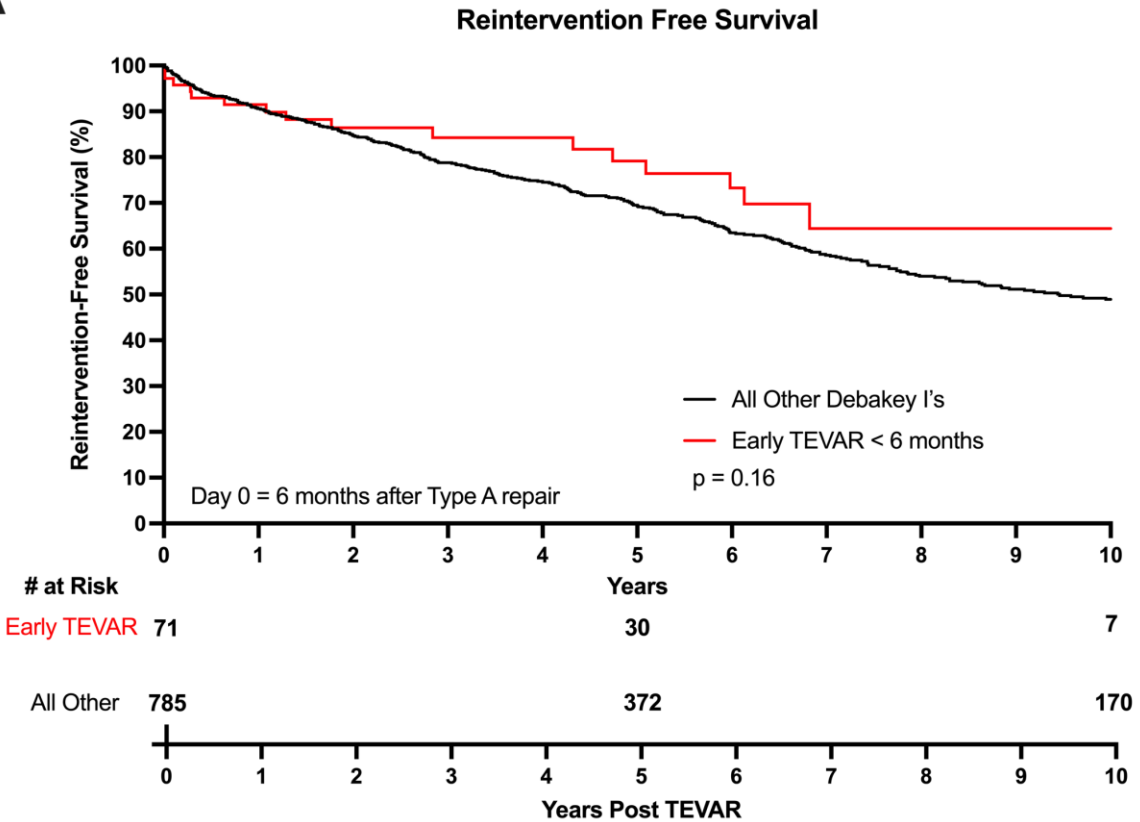
Figure 2:
Overall and Re-intervention Free Survival Following Completion TEVAR



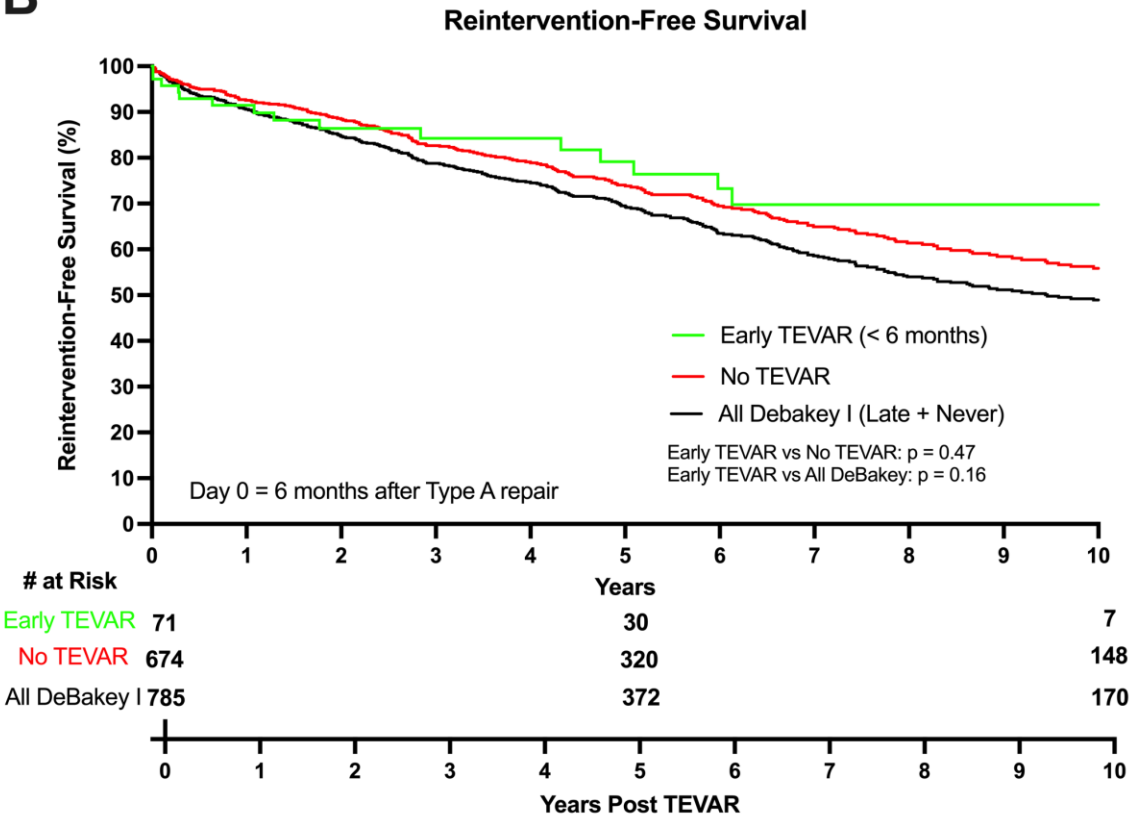
Early Stenting (< 6 months following index dissection repair) is associated with significantly improved OS and RFS

Figure 3:
Re-intervention Free Survival of Early TEVAR Patients vs All Other DeBakey I

A



B



Median RFS was increased in Early stenting patients (10+ years), compared to all other DeBakey I patients (9.5), though not significantly (p = 0.157)

KEY TAKEAWAYS

1. In patients who receive TEVARs, **early TEVAR stenting provides significantly improved overall and re-intervention free survival**
2. Early stenting does not lead to an increased rate of operative complications
3. Completion stenting performed > 6 months after index admission is associated with increased number of descending aortic reinterventions