COMPARISON OF MEDICAL MANAGEMENT AND TEVAR FOR INTRACTABLE PAIN AND REFRACTORY HYPERTENSION IN ACUTE UNCOMPLICATED TYPE B AORTIC DISSECTION

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Background

Thoracic endovascular aortic repair (TEVAR) has become the treatment of choice for acute Stanford type B aortic dissections complicated by malperfusion or rupture, as it offers less morbidity and mortality compared to open repair. For uncomplicated acute type B aortic dissections (UATBAD), the mainstay of treatment has been medical management (MM) with antihypertensive agents. Optimal treatment for the subset of UATBAD patients with persistent pain or refractory hypertension (HTN) remains controversial. We sought to compare clinical outcomes, cost, and aortic remodeling between UATBAD patients who were treated with MM and TEVAR.

Methods

Retrospective review of consecutive UATBAD patients (74 MM, 27 TEVAR) from a single institution from 2011-2014 was performed. Inclusion criteria were: primary tear distal to left subclavian artery, presentation within 14 days of onset of symptoms, and absence of malperfusion, rupture, or impending rupture. Electronic medical records were reviewed to collect demographics, comorbidities, medications, laboratory data, imaging, procedure-specific details (TEVAR group), reinterventions, complications, and readmission data. Of the TEVAR patients, indication for repair was pain alone in 89% (n = 23) and pain with HTN in 11% (n = 4). Aortic measurements were performed on computed tomograms (CT). using Aquarius workstation (TeraRecon, Inc., San Mateo, CA) for centerline reconstructions. Changes in aortic diameter, true lumen diameter, and false lumen patency from admission to discharge to most recent follow up CT were evaluated as measures of remodeling. Mixed models were employed to determine differences in aortic remodeling. Kaplan-Meier estimates were used for reintervention and survival analysis.

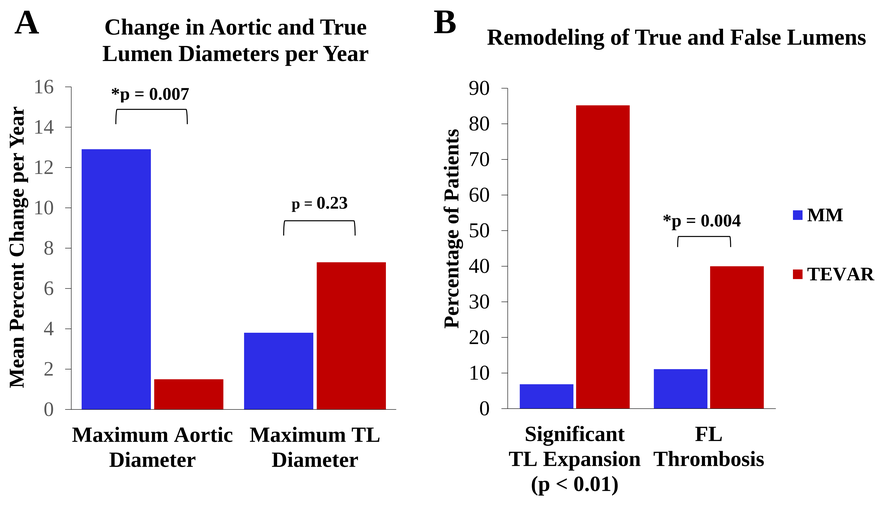
Results

Figure 1. Comparison of Medical Management and TEVAR Outcomes

OUTCOMES AND COMPLICATIONS	MM % (n = 74)	TEVAR % (n = 27)	p value
Pain Medications on Discharge	64	78	0.65
Change in Number of Antihypertensive Medications from Admission to Discharge (mean ± SD)	1.7 ± 1.9	0.7 ± 1.7	**0.03***
Major Complication Rate	24	19	0.53
Postoperative Endoleak	N/A	44	
Total Length of Stay (mean ± SD), days	10.3 ± 7.8	9.6 ± 6.3	0.71
Total ICU Days (mean ± SD)	6.4 ± 7.0	6.6 ± 4.6	0.92
In-hospital Deaths	7	0	0.32
30-Day Mortality	7	0	0.32
Readmission Rate	28	29.6	0.66

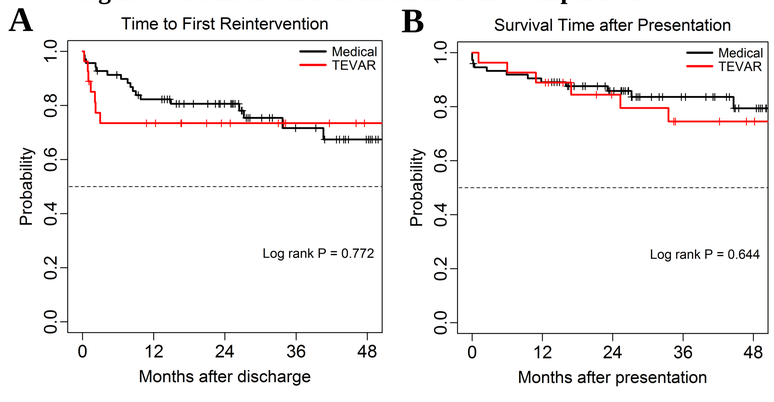
The increase in number of antihypertensive medications from admission to discharge was significantly higher for MM than TEVAR, while the percentage of patients discharged with pain medications was similar. There was no significant difference in length of stay, in-hospital mortality, 30-day mortality, complication rate, or readmission rate.

Figure 2. Aortic Remodeling after MM versus TEVAR



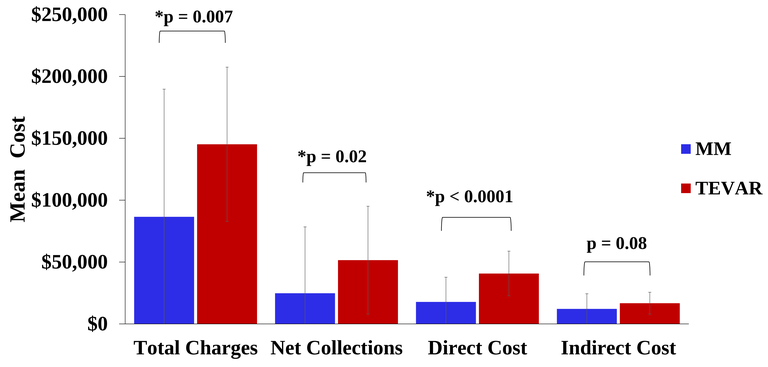
A. After MM, aortic diameter increases significantly more per year compared to TEVAR. Expansion of TL diameter per year was greater after TEVAR but not statistically significant. B. After TEVAR, over 85% of patients showed significant TL expansion from their TL size at admission, compared to 7% of MM patients. Forty percent of post-TEVAR patients demonstrated FL thrombosis, which was significantly higher than 11% of MM patients

Figure 3. Reintervention and Survival Comparison



Kaplan-Meier estimates for time to reintervention (A) and survival (B) demonstrate no significant difference between MM and TEVAR.

Figure 4. Index Admission Costs for MM and TEVAR



Mean charges, net collections, and direct cost for index admission were significantly higher for TEVAR than for MM For the TEVAR cohort, mean endograft cost was $23,151.72±12,991.50.

Conclusions

- TEVAR for refractory HTN in UATBAD may be more beneficial than MM.
- Despite higher cost, TEVAR showed no significant advantage over MM for pain control or short term outcomes.
- TEVAR results in favorable aortic remodeling in UATBAD that alters the natural history of the disease process.
- Further research with longer follow-up is needed to characterize the impact of post-TEVAR aortic remodeling on long term outcomes in UATBAD.