Real World Outcomes of Acute Aortic Dissection in Marfan Syndrome Patients Compared with the General Population

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Objectives

Recent studies that utilized the International Registry on Acute Aortic Dissections (IRAD) have found that Marfan Syndrome patients have a lower in-hospital mortality rate after aortic dissection surgery. We investigated the real-world outcomes of aortic dissection in Marfan patients undergoing aortic dissection surgery as compared to the general population.

Methods

- A retrospective analysis of the Nationwide Readmission Database (NRD) between 2016-2018 was performed to identify patients who underwent non-elective surgery for thoracic aortic dissection (TAD) including: descending aortic replacement (DAR), ascending aortic replacement (AAR), aortic valve/root replacement (ARR), and descending aortic endograft (DAE).
- Patients with Marfan Syndrome were compared with non-Marfan patients for mortality, readmission, comorbidities, and post-operative complication.
- ICD-10 codes were utilized to determine the diagnoses, procedures, comorbidities, and post-operative complications. ICD-10 does not distinguish between aortic valve and aortic root surgeries. Thus, ARR includes all aortic valve interventions including valve sparing root replacements. Also, it can't distinguish between acute and chronic aortic dissection. Therefore, we queried the NRD for TAD cases that were admitted non-electively as a surrogate for acute aortic dissection.

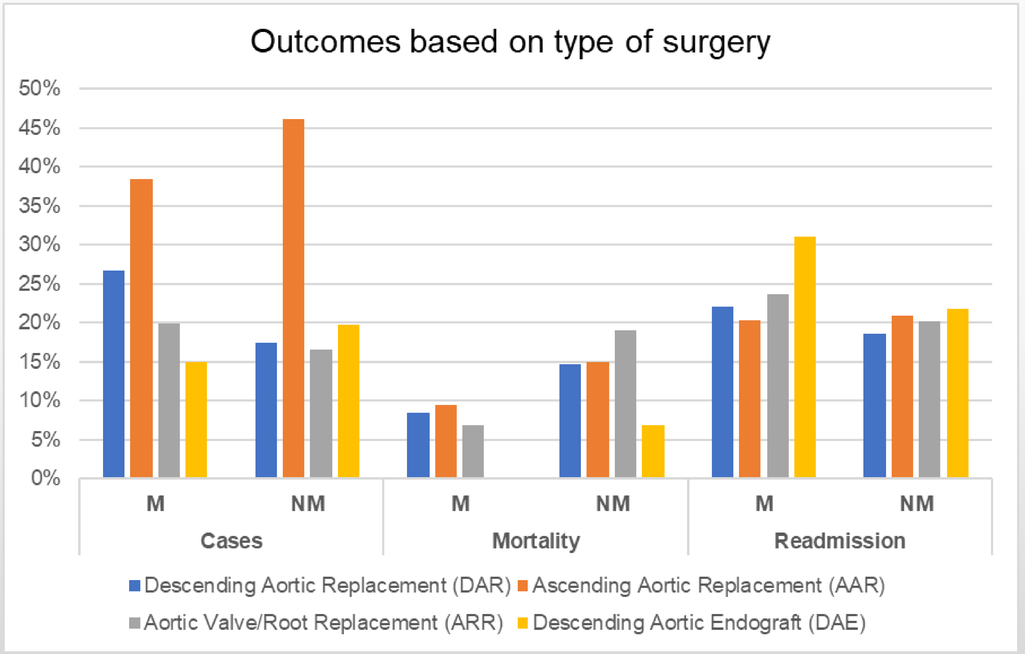
Results

- A total of 11,758 patients underwent surgery for TAD, of which 9,316 patients (79.2%) were admitted non-electively. We identified 182 patients with Marfan Syndrome and 9,134 Non-Marfan patients.
- In-hospital mortality was lower among Marfan patients (7.1% vs. 13.3%, p=0.015), while there was no statistically significant difference in readmission (p>0.05).
- DAR and ARR were more common in Marfan group (26.7% vs. 17.5%, 19.9% vs. 16.5%, respectively), while AAR and DAE were more common in Non-Marfan group (46.2% vs. 38.5%, 19.8% vs. 14.9%, respectively).
- Non-Marfan patients who underwent ARR had the highest mortality rate (19.0%), while Marfan patients, that underwent DAE had no in-hospital mortality. Results of mortality, readmission, comorbidities, and complication are shown in Table 1.

Table 1

M= Marfan group, NM= Non-Marfan group, OR= odd ratio, P= p-value, NS= Not significant (p > 0.05).

	M		*NM*		*OR*	*P*
Mortality	13	7.1%	1215	13.3%	1.99	0.015
Readmission	42	25.1%	1631	20.9%	---	NS
Comorbidities						
Diabetes	8	4.0%	1427	14.1%	3.93	<0.001
Renal disease	14	7.0%	2183	21.6%	3.65	<0.001
Hypertension	125	62.8%	8431	83.5%	3.00	<0.001
Cerebrovascular disease	17	8.5%	1785	17.7%	2.30	<0.001
Obesity	21	10.6%	2018	20.0%	2.12	<0.001
Chronic pulmonary disease	24	12.1%	2076	20.6%	1.89	0.003
Valvular disease	105	52.8%	3143	31.1%	0.40	<0.001
Complications						
Stroke	8	4.0%	1227	12.2%	3.30	<0.001
Pericardial effusion	9	4.5%	1219	12.1%	2.90	0.001
Acute renal failure	60	30.2%	4595	45.5%	1.94	<0.001



Conclusion

- Marfan Syndrome patients undergoing non-elective surgery for TAD have a lower mortality rate than the general population with no difference in readmission rate.
- Marfan patients are more likely to need aortic valve/root intervention and replacement of descending aorta, whereas non-Marfan patients are more likely to undergo endograft repair of descending aortic dissection.
- Non-Marfan patients present with more comorbidities and suffer more complications with stroke being three times more common. This highlights the need for careful surveillance and treatment for patients undergoing aortic dissection repair.