Outcomes of Thoracic Aortic Interventions in Marfan Syndrome Patients in the State of Texas from 2009-2019

Objective: Marfan Syndrome (MFS) is an inheritable connective tissue disorder associated with significant cardiothoracic morbidity often requiring thoracic aortic interventions (TAI). This study seeks to evaluate outcomes of TAIs amongst MFS discharges.

Methods: Retrospective review of the Texas Inpatient Discharge Dataset Public Use File from 1/1/2009 to 12/31/2019. Discharges from acute care hospitals with a diagnosis of MFS by International Classification of Diseases 9/10 code were identified. Demographics, procedures, principal diagnoses (PDx), and outcomes were analyzed. Descriptive, univariate, multivariable logistic and linear regression statistics were utilized.

Results: A total of 4,641 MFS discharges were identified during the study period, 644 (13.9%) of whom underwent TAI. Of these, 248 (38.5%) were female, 421 (65.4%) White, 141 (21.9%) Hispanic, and 209 (32.5%) were 35-49 years of age. Additional cardiovascular risk factors (RFs) included hypertension (n=416, 64.6%), tobacco use (n=100, 15.5%), hyperlipidemia (n=78, 12.1%), diabetes mellitus (n=30, 4.7%), bicuspid aortic valve (BAV) (n=16, 2.5%), and atherosclerosis (n=11, 1.7%). Private insurance was listed in 437 (67.9%) discharges. PDx of thoracic or thoracoabdominal aortic dissection or rupture (TADR) was noted in 223 (34.6% of TAIs). Simultaneous cardiac interventions included: mitral valve (n=88, 13.7%), aortic valve (n=119, 18.5%), and coronary artery procedures (CAP) (n=33, 5.1%). TAI approach was percutaneous in 42 (6.5%) patients. Outcomes included: 30 (4.7%) in-hospital mortalities, 126 (19.6%) diagnoses of acute renal failure (ARF), 52 (8.1%) mechanically ventilated >96 hours (MV96), 17 (2.6%) temporary mechanical circulatory support (TMCS), and median length of stay (LOS) was 10 [7-16] days. Mitral and aortic valve procedures were not associated with outcomes. CAP was associated with increased mortality (12.1% vs 4.3% p=0.037), ARF (36.4% vs 18.7% p=0.013), and TMCS (9.1% vs 2.3% p=0.018). TADR diagnosis was associated with increased ARF (26.5% vs 15.9% p=0.001), TMCS (4.5% vs 1.7% p=0.034), MV96 (12.1% vs 5.9% p=0.006), and longer LOS (11 [8-18] vs 9 [6-15] p<0.001). After adjustment (Table), CAP remained associated with mortality (OR 3.69 [1.15-11.90] p=0.029) and ARF (OR 2.66 [1.19-5.94] p=0.017). TADR diagnosis was associated with ARF (OR 1.73 [1.14-2.63] p=0.010), MV96 (OR 2.19 [1.21-3.97] p=0.010), and percent difference in LOS (14.9% [2.2-29.3%] p=0.021).

Conclusions: TAI are common amongst the MFS population, and are associated with significant morbidity and mortality, particularly if performed for TADR or requiring simultaneous CAP. Conventional cardiovascular RFs were not associated with adverse outcomes, nor were additional procedures (aside for CAP). The high prevalence (34.6%) of TADR may point to the need of more strict imaging surveillance in the MFS population.

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Additional Resources

- [https://files.aievolution.com/prd/aat2101/abstracts/abs_3023/MFSoutcomesAATSslideshow_Finalsubmission.pptx](https://files.aievolution.com/prd/aat2101/abstracts/abs_3023/MFSoutcomesAATSslideshow_Finalsubmission.pptx)