Objective(s): Marfan syndrome (MFS) patients are at risk for aortic degeneration. Repair is traditionally performed with open surgery as this is deemed more durable. Endovascular aneurysm repair (EVAR) remains controversial given the underlying connective tissue disorder. We report on the largest series to date on outcomes of MFS patients with abdominal aortic aneurysms (AAA) undergoing EVAR.

Methods: The Vascular Quality Initiative registry identified 35,889 patients, including 29 with MFS, treated with EVAR from January 2003 to December 2017. Outcomes were analyzed per the Society for Vascular Surgery reporting standards.

Results: Median age was 70.0 years (IQR, 57.0-75.0), and 22 (75.9%) were male. Median aneurysm diameter was 5.3cm (IQR, 4.9-6.3cm), with an aortic neck diameter and length of 2.0cm (IQR, 1.6-2.8cm) and 2.5cm (IQR, 2.1-2.7cm) respectively. Twenty-one (72.4%) patients were asymptomatic, seven (24.1%) symptomatic, and one (3.4%) presented with rupture. Ten (34.5%) patients had prior aortic surgery, including one open AAA, three open thoracic aneurysm, four TEVARs, and three thoracoabdominal aortic aneurysm repairs. Six (20.7%) were unfit for open surgical repair. Length of stay was 2.0 days (IQR, 1.0-3.0 days). Percutaneous femoral access was performed in 15 (51.7%) patients, with no complications of hematoma or thrombosis. Fluoroscopy time was 21.4 minutes (IQR, 15.4-33.8). A type IA endoleak was present in one (3.4 %), type IB in one (3.4%), and type II endoleak in two (6.9%) patients. There were no postoperative pulmonary, cardiac or neurological complications. In-hospital mortality occurred in one (3.4%) patient who presented with a rupture and had been deemed unfit for open repair. A conversion to open repair was required. The patient expired on post-operative day 0. There were no other conversions to open repair. Re-intervention was required in two (6.9%) patients. Early clinical success was achieved in 26 (89.7%) patients. Follow-up was available for 15 (51.7%) patients at a time of 766 days (IQR, 653-937). Change in sac diameter was -0.6cm (IQR, -1.1 to -0.2cm). On follow up imaging, there were no Type I or III endoleaks. One (6.7%) patient had a Type II endoleak. There were no reinterventions or mortalities during follow-up.

Conclusions: EVAR for patients with MFS is feasible, and can be performed safely with excellent short-term results. Mid-term outcomes suggest this technique is durable. More robust long-term follow-up is needed.