Sex Differences in Perioperative and Long-term Outcomes after Complex Abdominal Aortic Aneurysm Repair

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INTRODUCTION

- Abdominal aortic aneurysms (AAAs) are 4-6 times more common in men than in women. However, female sex is associated with a higher rupture risk and worse perioperative outcomes
- Complex abdominal aneurysms present additional technical challenges to aortic repair
- The impact of sex on complex AAAs is poorly characterized and studies have shown contradicting results

OBJECTIVE

- To evaluate the association of female sex and perioperative and long-term outcomes after complex EVAR

METHODS

- Database: SVS | VQI VASCULAR QUALITY INITIATIVE
- Inclusion: Elective complex EVAR from 2014 to 2018
- Complex EVAR: proximal extent between the top of the celiac artery and the lowest renal artery and includes repairs with FEVAR, chimney and PMEG
- Primary outcome: long-term mortality
- Secondary outcomes: in-hospital mortality and postoperative complications
- Associations were examined using survival analyses and multivariable logistic regression

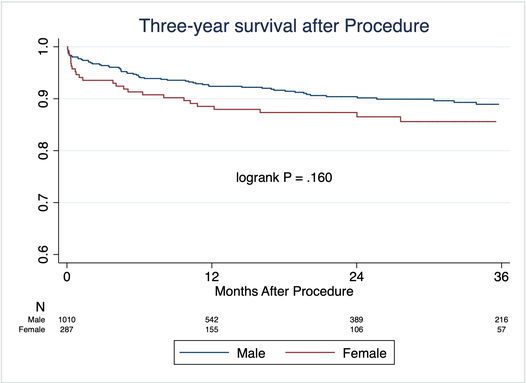
RESULTS

Patient Characteristics

We identified 1,304 complex EVARs, of which 22% were female

	Complex EVAR (n=1,304)		
	Female (n=287)	Male (n=1,017)	P-value
Age	75 (69, 81)	73 (68, 79)	**0.001**
Underweight	9 (3.1%)	15 (1.5%)	0.064
Overweight (BMI >25)	173 (60.3%)	722 (71.0%)	**<0.001**
Current Smoker	118 (41.1%)	339 (33.3%)	**0.015**
IDDM	11 (3.8%)	27 (2.7%)	0.30
CHF	8 (2.8%)	59 (5.8%)	**0.041**
Renal Function			**<0.001**
eGFR >60	137 (48.2%)	601 (59.8%)	
eGFR 30-60	121 (42.6%)	365 (36.3%)	
eGFR <30 or on dialysis	26 (9.2%)	39 (3.9%)	
Diameter	56 (52, 62)	58 (55, 65)	**<0.001**
Aortic Size Index	32.5 (29.3, 36.8)	29.1 (26.1, 33.3)	**<0.001**
ZFEN	204 (71.1%)	745 (73.3%)	0.46
Chimney	59 (20.6)	154 (15.1%)	**0.028**
PMEG	40 (13.9%)	189 (18.6%)	0.068
Operative time	230.5 (177, 306)	220 (168, 285)	**0.045**

Survival analysis



PERIOPERATIVE OUTCOMES

	Female (n=287)	Male (n=1,017)	P-value
In-hospital Mortality	5.2%	2.7%	**0.029**
Any Complication*	33.4%	27.2%	**0.040**

	Multivariable analysis
In-hospital Mortality	OR 2.3; 95%CI 1.2-4.4, P=**0.017**
Any Complication*	OR 1.3, 95%CI 1.0 – 1.7, P=.089

**Any complications: death, re-intervention, AKI, stroke, TIA, access site complication, MI, new arrhythmia, new CHF, pneumonia, re-intubation or mesenteric ischemia*

Adjusted for: age, diameter and repair modality. Additionally adjusted for race, overweight, smoking, insulin dependent diabetes, hypertension, COPD, CHF and renal function in "any complication" analyses.

LIMITATIONS

- No data on the exact technical approach and limited anatomical data
- Future studies assessing the long-term complications and reinterventions are warranted

CONCLUSIONS

- Female sex is independently associated with higher **in-hospital mortality and complications** after complex EVAR, even after adjustment for demographics, comorbid conditions, and aneurysm diameter
- Female sex is **not** associated with **higher long-term mortality** following complex **EVAR.**

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