



Complex Aortic Neck Anatomy does not Predict 30-Day Mortality following Ruptured Abdominal Aortic Aneurysm Repair

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Disclosures



- BWS: Co-founder of AORTICA Corporation- acquired in Nov 2019 by Terumo Corporation.
- Other authors: None



Introduction



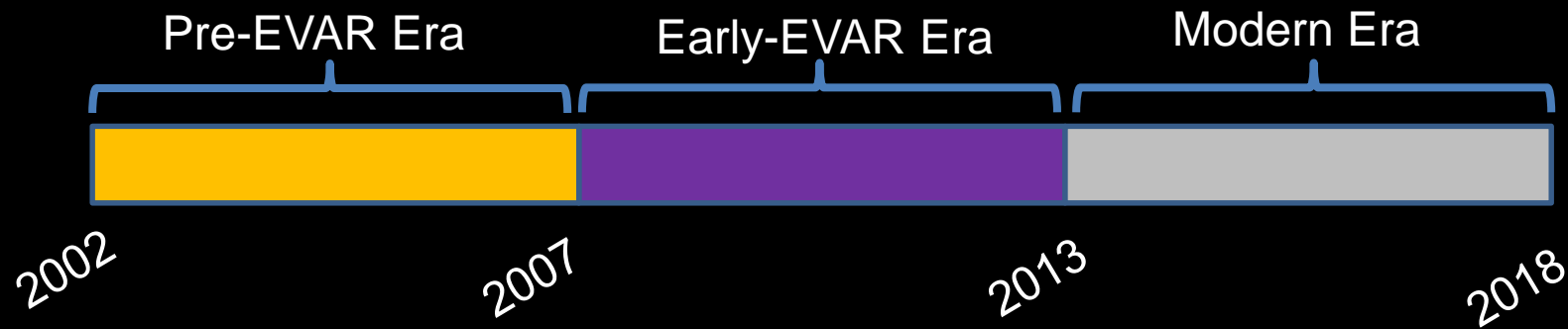
- Endovascular Aneurysm Repair (EVAR) has become increasingly common for the repair of ruptured abdominal aortic aneurysms (rAAA).
- The “Hostile Aortic Neck” has been described by many authors.
- We hypothesized increased comfort with EVAR increased the percentage of patients with hostile neck anatomy transferred to quaternary care centers and affects mortality.



Methods



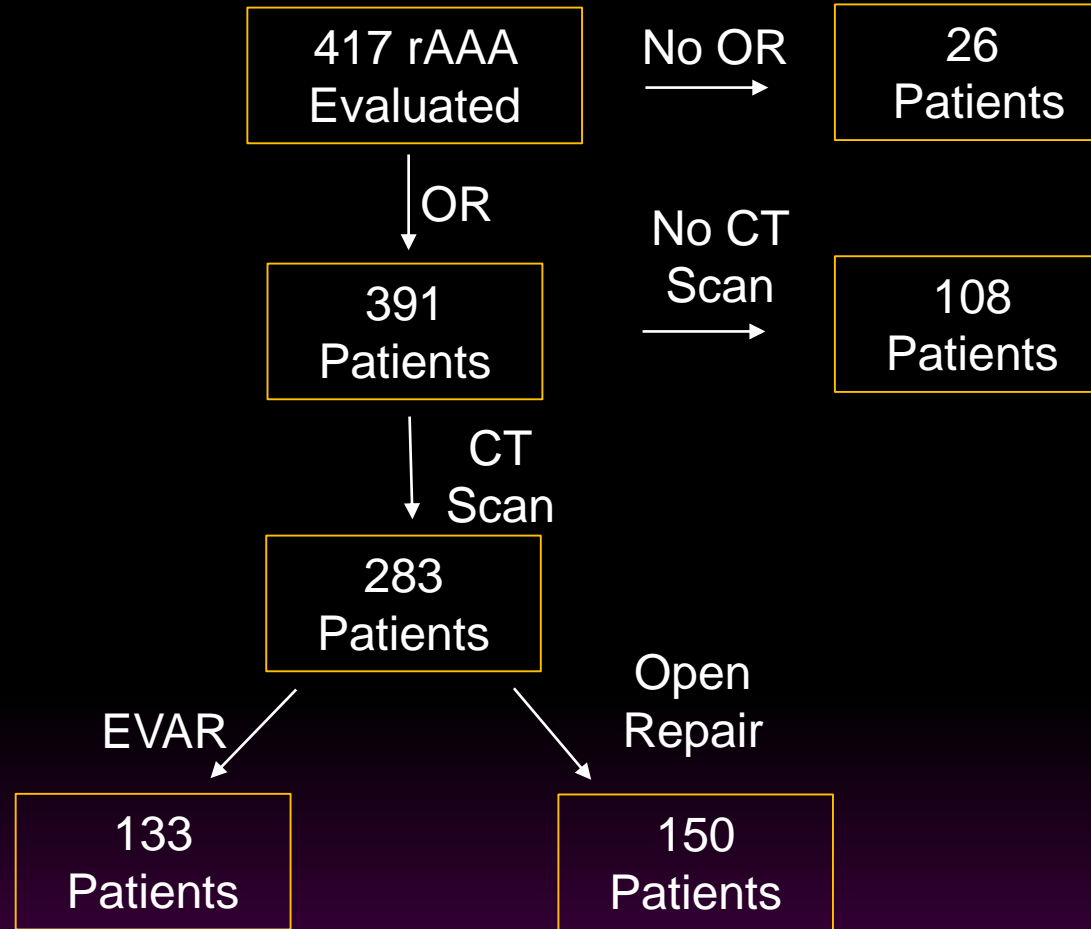
- A retrospective review of all patients who underwent operation for rAAA .



- Six hostile aortic neck features, based on current literature, were analyzed.
 - Neck Length
 - Neck Diameter
 - Neck Angulation (Severe, Not Severe)
 - Neck Morphology (Parallel, Irregular, Reverse Funnel, Inverted Funnel)
 - Neck Calcification (Mild, Moderate, Severe)
 - Neck Thrombus (None, <25%, 25-50%, >50%)



Results





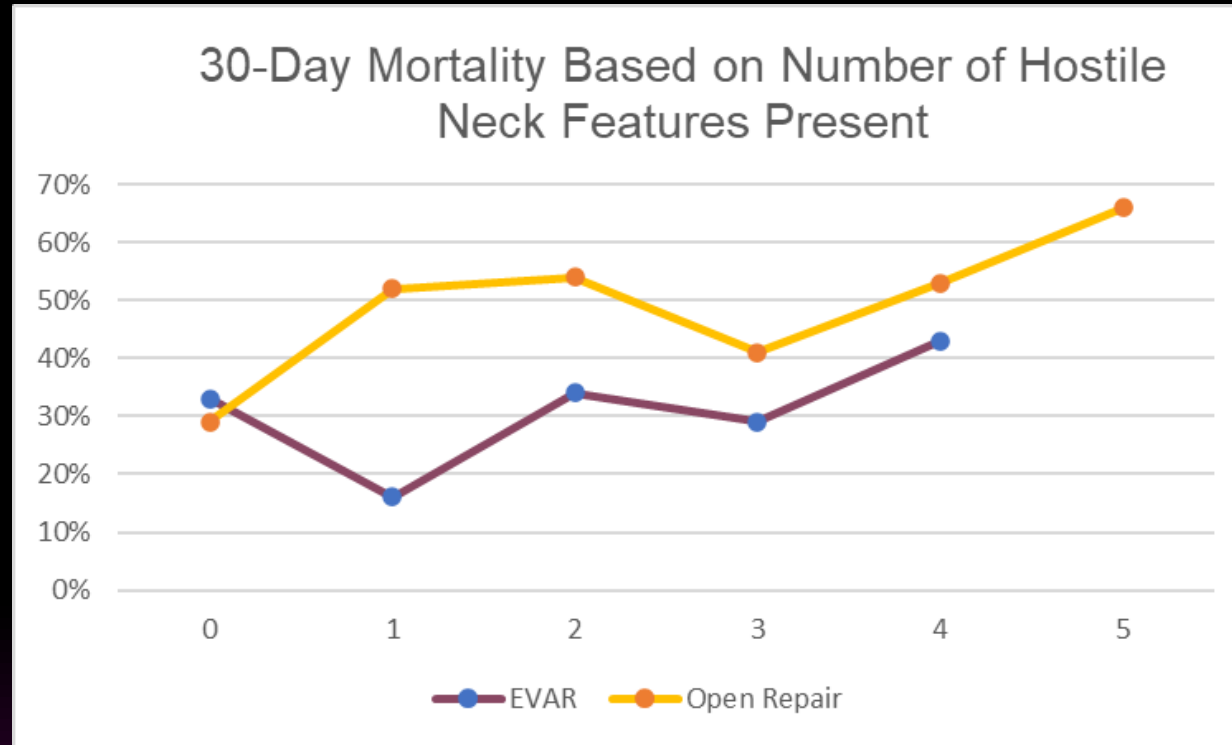
Results



Hostile Neck Characteristics	EVAR			Open Repair		
	30-Day Mortality when Present	30-Day Mortality when Absent	P-Value	30-Day Mortality when Present	30-Day Mortality when Absent	P-Value
Neck Length <15 mm	29%	26%	P=0.71	44%	50%	P=0.44
Neck Diameter >28 mm	33%	26%	P=0.48	46%	45%	P=0.92
Severe Neck Angulation	17%	27%	P=0.67	55%	45%	P=0.73
Non-Parallel Neck	27%	27%	P=0.96	47%	44%	P=0.72
Neck Thrombus	27%	28%	P=0.93	56%	38%	P=0.06
Neck Calcification	21%	31%	P=0.20	53%	40%	P=0.11



Results



The presence of three or greater hostile neck features did not predict 30-day mortality in EVAR (26% vs. 33%, $p=0.5$) or open repair (46% vs. 45%, $p=0.9$).



Results

Hostile Neck Characteristics	All Cohorts (n=283)	EVAR (n=133)	Open Repair (n=150)	P-Value
Mean Neck Length (mm)	17.2	22.1	12.6	P<0.01
Mean Neck Diameter (mm)	26.2	25.1	27.3	P<0.01
Severe Neck Angulation	5%	5%	6%	P=0.61
Non-Parallel Neck	46%	31%	59%	P<0.01
Neck Thrombus	31%	27%	36%	P=0.5
Neck Calcification	43%	40%	46%	P=0.1



Results



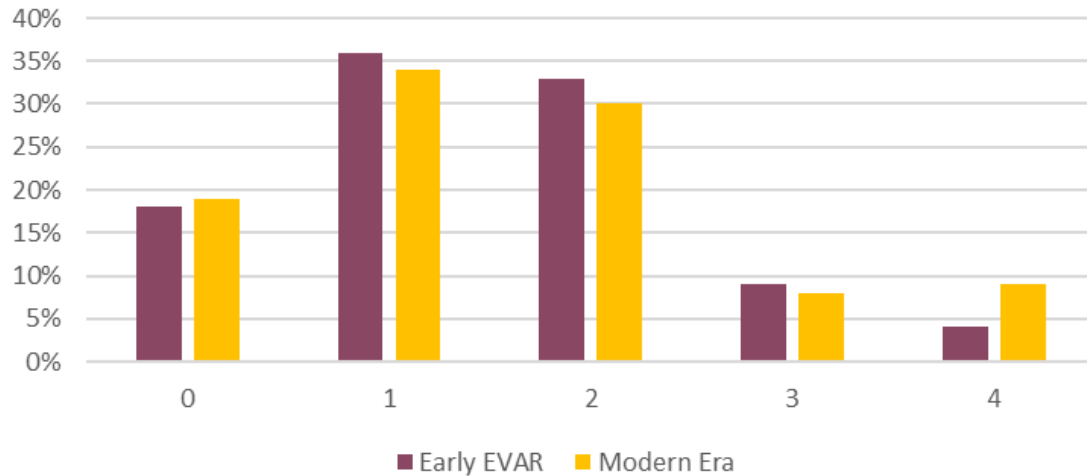
Hostile Neck Characteristics	Total	Modern Era (n=89)	Pre and Early EVAR Era (n=194)	P-Value
Mean Neck Length (mm)	17.2	16.6	17.4	0.7
Mean Neck Diameter (mm)	26.2	26.0	26.4	0.6
Severe Neck Angulation	5%	17%	0%	<0.01
Non-Parallel Neck	46%	45%	47%	0.4
Neck Thrombus	31%	21%	39%	0.03
Neck Calcification	43%	33%	48%	0.08



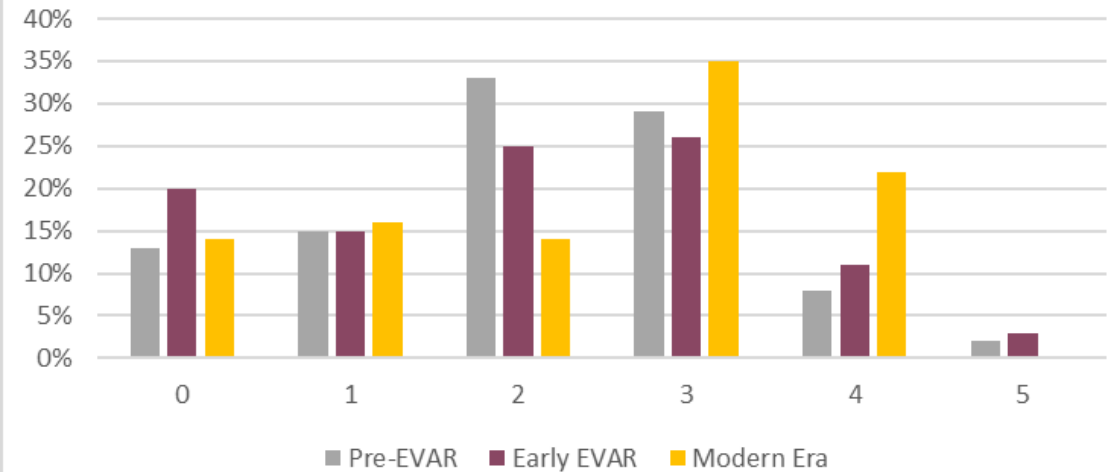
Results



Hostile Neck Features by Era (EVAR)



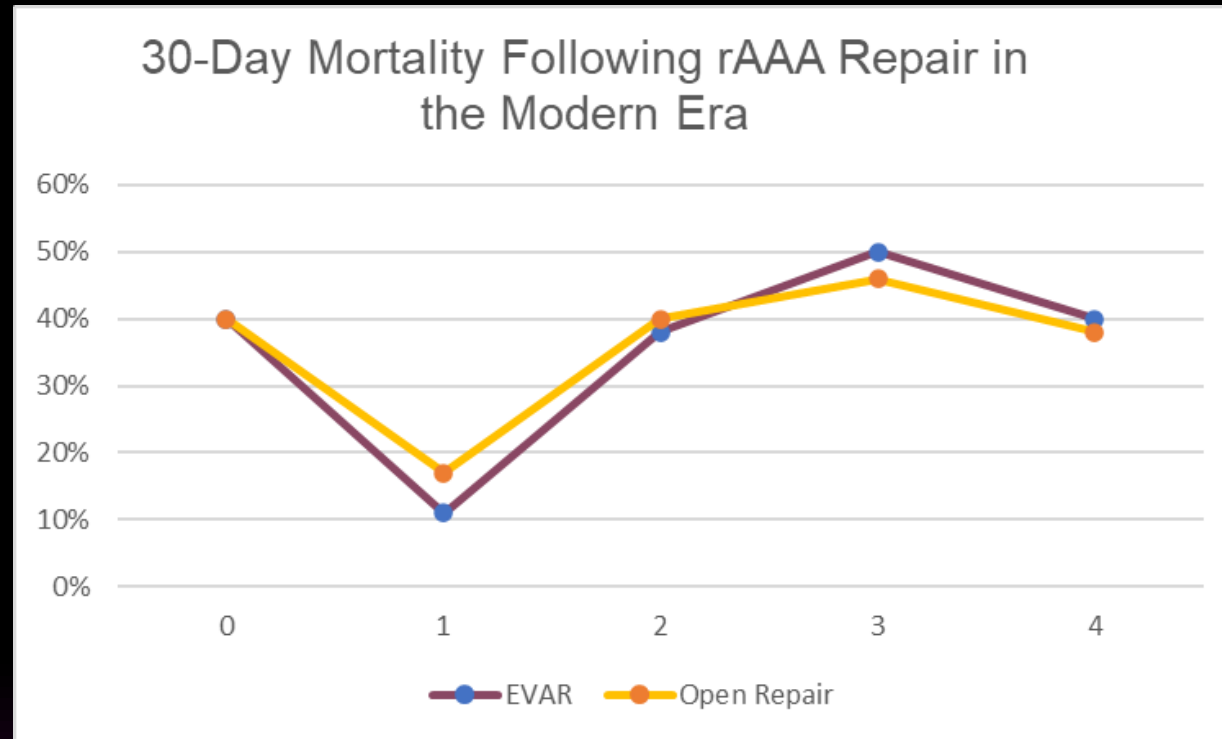
Hostile Neck Features by Era (Open Repair)



Patients undergoing open repair in the modern era were more likely to have greater than three hostile neck factors compared to previous eras ($p < 0.01$).



Results



The presence of three or greater hostile neck features did not predict 30-day mortality in EVAR (44% vs. 27%, $p=0.52$) or open repair (43% vs. 31%, $p=0.51$) in the modern era.



Conclusion



- There has been an increase in patients with complex neck anatomy undergoing open rAAA repair at our high-volume center in the modern era.
- These patients were more likely to undergo an open operation, but mortality was not correlated with the number of hostile neck factors present.
- Although patient anatomy is important in planning repair, it does not impact short term survival following rAAA repair.

