

Hemodynamic Instability Predicts Morbidity and Mortality in Patients undergoing Open and Endovascular Abdominal Aneurysm repair

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Objectives & Aim

- Hemodynamic condition of ruptured abdominal aortic aneurysm (rAAA) is a known important prognostic factor for outcomes.
- The impact of the hemodynamic status of rAAA patients on outcomes of open aneurysm repair (OAR) or endovascular aneurysm repair (EVAR) has not been addressed previously in further detail
- We aim to compare in-hospital outcomes for unstable vs stable patients undergoing OAR or EVAR.

Methods

- **Design:** Retrospective analysis.
- **Study population:** Patients undergoing BTOAR or EVAR for rAAA in the VQI database from 2003 to 2022.
- **Comparison groups:** unstable vs stable rAAA patients stratified by the type of the procedure (OAR or EVAR).
- **Outcomes:** In-hospital mortality, packed RBCs transfusion, respiratory complications, bowel ischemia, stroke, leg ischemia, and non-home discharge.
- **Statistical analysis:** Pearson χ^2 and Fisher exact tests, Student's t-test, and multivariable logistic regression analyses.



Results

Table I. Baseline characteristics

	OAR			EVAR		
	Stable	Unstable	P VALUE	Stable	Unstable	P VALUE
Age	71 (65-78)	72.5 (66-79)	<0.001	70 (57.5-83)	75 (63-88)	<0.001
Current smokers	576 (50.1)	777 (49.7)	0.885	999 (45.9)	878 (40.1)	<0.001
Hypertension	902 (78.3)	1,212 (76.1)	0.183	1,726 (80.2)	1,647 (75.6)	<0.001
CKD	570 (50.4)	968 (63.2)	<0.001	1,071 (50.7)	1,351 (63.1)	<0.001
Ambulatory	895 (90.1)	1,210 (92.5)	0.006	276 (86.8)	237 (82.6)	0.079
ASA class V	380 (34.8)	805 (54.4)	<0.001	84 (20.3)	165 (39.5)	<0.001
Prior aortic surgery	177 (15.4)	140 (8.8)	<0.001	87 (4.0)	101 (4.6)	0.354
Preoperative Beta Blocker	530 (46.3)	654 (41.7)	0.017	1,016 (46.9)	880 (40.2)	<0.001
Mental status "Normal"	994 (68.1)	1,013 (62.7)	<0.001	1,915 (88.2)	1,532 (86.9)	<0.001

Table II. Unstable vs stable rAAA outcomes in OAR patients

	Univariate			Multivariate Unstable vs stable	
	Stable	Unstable	P VALUE	aOR (95%CI)	P value
Mortality	280 (24.12)	725 (44.59)	<0.001	1.92 (1.54-2.39)	<0.001
Packed RBCs transfusion	962 (83.22)	1,507 (94.01)	<0.001	2.24 (1.59-3.16)	<0.001
Respiratory complications	333 (29.39)	600 (40.57)	<0.001	1.49 (1.24-1.80)	<0.001
Bowel ischemia	141 (12.46)	309 (20.96)	<0.001	1.55 (1.19-2.02)	0.001
Stroke	22 (2.10)	57 (4.29)	0.003	1.73 (1.09-2.74)	0.021
Leg ischemia	72 (6.35)	151 (10.22)	<0.001	1.71 (1.27-2.29)	<0.001
Non-home discharge	390 (44.27)	514 (56.92)	<0.001	1.45 (1.17-1.79)	0.001

Table III. Unstable vs stable rAAA outcomes in EVAR patients

	Univariate			Multivariate Unstable vs stable	
	Stable	Unstable	P	aOR (95%CI)	P
Mortality	280 (24.12)	725 (44.59)	<0.001	1.92 (1.54-2.39)	<0.001
Packed RBCs transfusion	962 (83.22)	1,507 (94.01)	<0.001	2.24 (1.59-3.16)	<0.001
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Non-home discharge	390 (44.27)	514 (56.92)	<0.001	1.45 (1.17-1.79)	0.001

Conclusions

- To date, this is the first study to show outcomes of unstable vs stable rAAA patients.
- We found that hemodynamic instability is associated with significantly higher odds of in-hospital mortality and morbidity regardless of the procedure type.
- Future studies are needed to investigate the underlying factors of these worse outcomes
- Our study shows that this is an important distinction between rAAA patients in future studies and should be classified as such