Racial Inequities Exist In Outcomes Following Endovascular Repair of Complex Aortic Aneurysms

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INTRODUCTION

- Prior studies have found disparities in outcomes by race following repair of abdominal aortic aneurysms, including endovascular repair of complex abdominal aortic aneurysms.
- However, little is known about what is driving these disparities.

OBJECTIVES

To assess differences in presentation and outcomes by race following endovascular repair of complex abdominal aortic aneurysms.

METHODS

All patients treated with fenestrated and branched repair in the VQI from 2010-2022 were included.

Demographics, comorbidities, and operative details were compared by race using t-tests.

Univariate and multivariate analyses were applied to assess differences in perioperative outcomes and long-term survival.

RESULTS

Table 1: Distribution of Patient Race following F/BEVAR in the VQI Registry from 2010-2022

Race	Count	Percent
Total	4389	100%
Asian	107	2%
Black or African American	378	9%
Hispanic/Latino	174	4%
White	3730	85%

RESULTS

F/BEVAR Patients

- Preoperative Factors:

Mean age (A:75 vs B/AA:69 vs H/L:72 vs W:74, P<0.01), sex – female (A:18% vs B/AA:37% vs H/L:14% vs W:26%, P<0.01), prior CAD (A:14% vs B/AA:28% vs H/L:32% vs W:30%, P<0.01), baseline creatinine (A:1.2 vs B/AA:1.3 vs H/L:1.1 vs W:1.2, P<0.01), presentation (symptomatic - A:12% vs B/AA:23% vs H/L:12% vs W:9.9%, P<0.01; ruptured - A:7% vs B/AA:12% vs H/L:6% vs W:7%, P<0.01), prior aortic surgery (A:22% vs B/AA:37% vs H/L:30% vs W:24%, P<0.01) and thoracoabdominal (vs juxtarenal) extent (A:40% vs B/AA:43% vs H/L:29% vs W:25%, P<0.01) significantly differed between groups.

- Univariate Outcomes:

30-day mortality (A:33% vs B/AA:23% vs H/L:29% vs W:22%, P<0.01), new postop dialysis (A:4.7% vs B/AA:3.2% vs H/L:4.0% vs W:2.0%, P<0.01), no endoleak at completion (A:54% vs B/AA:63% vs H/L:65% vs W:64%, P<0.01), and post-op length of stay >7 days (A:20% vs B/AA:24% vs H/L:16% vs W:16%, P<0.01) differed by race. Survival did not significantly vary by race (Fig).

- Multivariate Outcomes: After adjustment, only thirty-day mortality differs by race (Table 2).

Fig: Kaplan Meier Survival Curve following F/BEVAR by Race

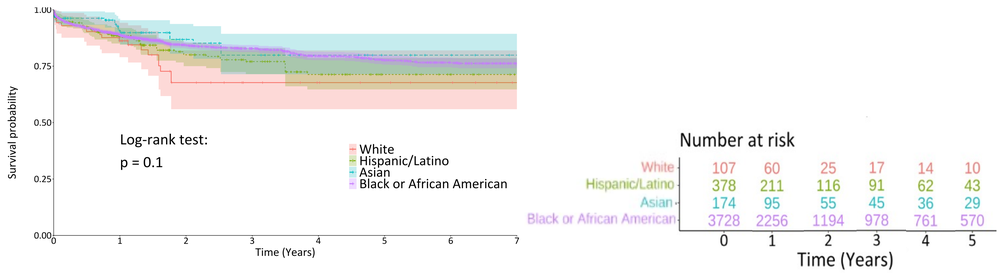

Table 2: Covariate-adjusted F/BEVAR Outcomes by Patient Race

Outcome	Asian aOR (95% CI)	Black/AA aOR (95% CI)	Hispanic/Latino aOR (95% CI)	White aOR (95% CI)
30-Day Mortality	1.4 (0.8, 2.3)	1.1 (0.8, 1.4)	1.7 (1.1, 2.6)	- -
Cardiac Complication	0.7 (0.3, 1.6)	0.9 (0.5, 1.4)	1.2 (0.6, 2.3)	- -
Respiratory Complication	0.4 (0.1, 1.5)	0.5 (0.3, 1.0)	0.5 (0.2, 1.5)	- -
Dialysis	0.6 (0.1, 6.7)	0.9 (0.4, 2.0)	2.4 (0.9, 6.4)	- -
Intestinal Ischemia	0.7 (0.1, 5.1)	1.0 (0.4, 2.3)	1.5 (0.4, 4.9)	- -
No Endoleak at Completion	0.7 (0.4, 1.3)	1.3 (0.9, 1.8)	1.1 (0.7, 1.7)	- -
Stroke	2.1 (0.6, 7.8)	1.0 (0.3, 2.7)	0.9 (0.1, 5.9)	- -
Re-Intervention	1.7 (0.8, 3.4)	0.8 (0.5, 1.4)	1.3 (0.7, 2.5)	- -
Post-Op Length of Stay (> 7 days)	1.1 (0.6, 2.0)	0.9 (0.6, 1.3)	1.0 (0.5, 1.8)	- -

RESULTS

F/BEVAR Outcomes By Symptom Status & Extent

- Multivariate Outcomes: 30-day mortality for non-elective procedures (aOR 1.4, 95% CI:1.1-1.8) and dialysis for non-elective procedures (aOR 2.3, 95% CI:1.3-4.3) were significant after adjustment.
- Respiratory complications and post-op length of stay are significantly predicted by both non-elective presentation and thoracoabdominal extent (Table 3).

Table 2: Covariate-adjusted F/BEVAR Outcomes by Symptom Status and Aneurysm Extent

Outcome	Non-Elective aOR (95% CI)	Thoracoabdominal aOR (95% CI)
30-Day Mortality	1.4 (1.1, 1.8)	1.2 (1.0, 1.4)
Cardiac Complication	1.3 (0.9, 1.8)	1.2 (0.9, 1.6)
Respiratory Complication	2.0 (1.4, 3.0)	1.7 (1.2, 2.5)
Dialysis	2.3 (1.3, 4.3)	0.8 (0.5, 1.4)
Intestinal Ischemia	1.7 (0.8, 3.7)	0.9 (0.5, 1.6)
No Endoleak at Completion	1.0 (0.8, 1.3)	1.1 (0.9, 1.3)
Stroke	2.0 (0.9, 4.6)	1.2 (0.6, 2.5)
Re-Intervention	1.3 (0.9, 1.9)	1.3 (0.9, 1.8)
Post-Op Length of Stay (> 7 days)	2.5 (1.9, 3.3)	1.9 (1.5, 2.4)

DISCUSSION

- Thirty-day mortality, dialysis, no endoleak at completion, and post-op length of stay differ by race.
- After adjusting for symptom status, extent and comorbidities, only thirty-day mortality differs by race.
- This pattern can be partially attributed to differences in symptom status and aneurysm extent.

CONCLUSIONS

- Long-term survival following F/BEVAR does not differ by race.
- Efforts to improve screening and access to care may provide an opportunity to address disparities in survival and treatment for complex aneurysms.

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