

Open Revision Compared to Endovascular Intervention in Failed Hemodialysis Vascular Access: A National Surgical Quality Improvement Project Study

Mohamed Shakeeb Aldallal, BS¹; Nora Laban, BS²; Waseem Wahood, MS³; Osman Ahmed, MD⁴

1. Indiana University School of Medicine, Indianapolis, Indiana

2. Oakland University William Beaumont School of Medicine, Rochester, MI

3. Dr. Kiran C. Patel College of Allopathic Medicine, Nova Southeastern University, Davie, FL

4. Department of Interventional Radiology, University of Chicago, Chicago, IL

Background

To identify the variables associated with reintervention using vascular open revision vs endovascular intervention in patients with arteriovenous fistulas (AVFs) and grafts (AVGs).

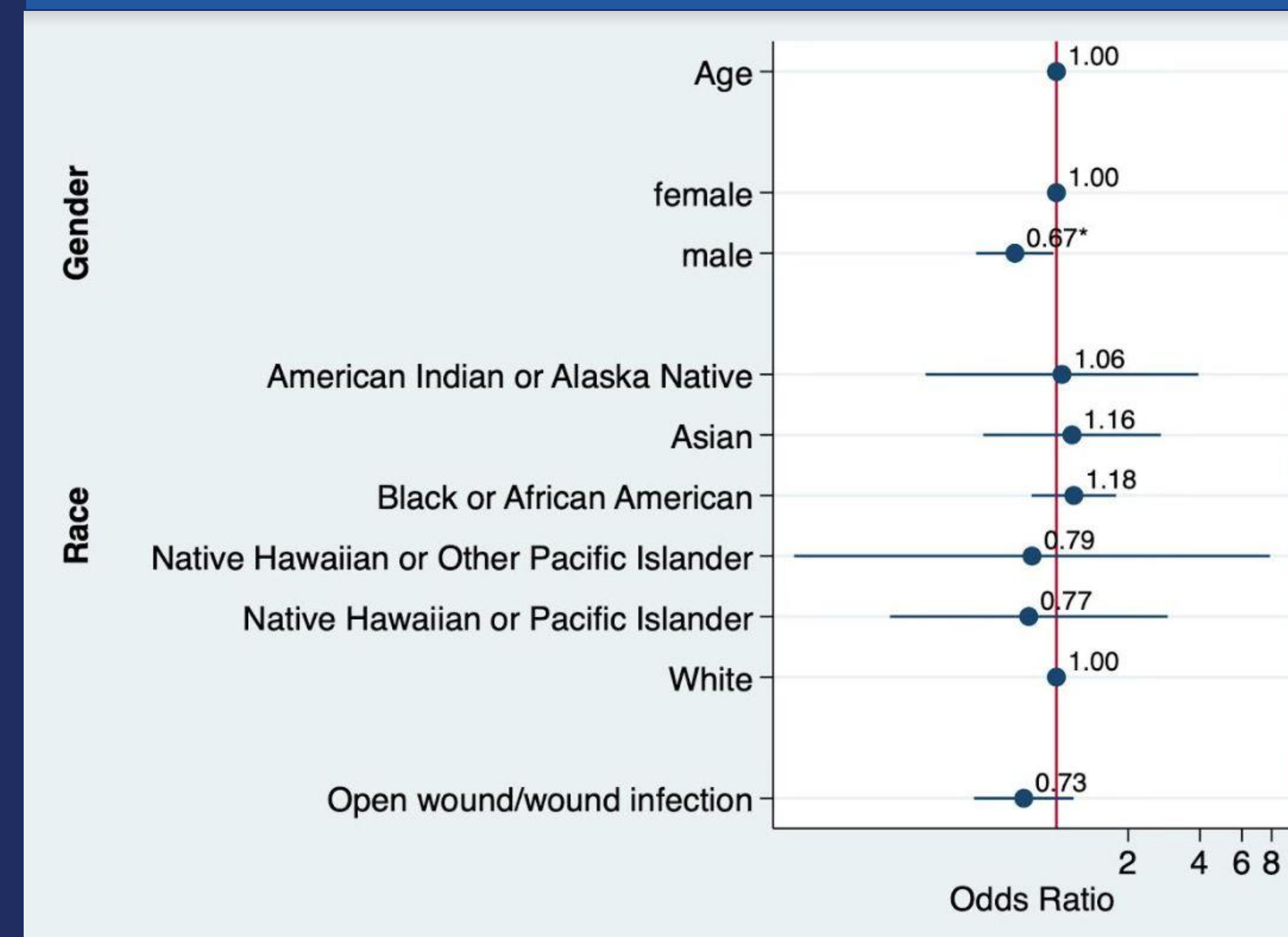
Materials and Methods

The 2017-2020 American College of Surgeons National Surgical Quality Improvement Program database was queried for reintervention of AVFs and AVGs using endovascular intervention (declot, angioplasty, and stenting) and vascular open revision. The main outcome variable of interest was the type of reintervention. Multivariable logistic regression was performed to assess the variables associated with open revision compared to endovascular intervention.

Table 1

	Declot/Endovascular		Open Reintervention	
	n/mean	percent/stdev	n/mean	percent/stdev
SEX				
female	62*	38.99%*	305	48.26%
male	97*	61.01%*	327	51.74%
RACE				
American Indian or Alaska Native	3	2.07%	11	1.84%
Asian	7	4.83%	33	5.52%
Black or African American	45	31.03%	209	34.95%
Native Hawaiian or Other Pacific Islander	1	0.69%	3	0.50%
Native Hawaiian or Pacific Islander	3	2.07%	9	1.51%
White	86	59.31%	333	55.69%
AGE	60.93	14.02	61.75	13.77
Operative Time	102.1	63.97	120.8	73.93
BMI	30.08	7.41	29.78	7.286

Figure 1



Results

A total of 791 patients met the inclusion criteria, of which 159 (20.1%) required endovascular intervention and 632 (79.9%) required open reintervention. Multivariable regression revealed that age (odds ratio [OR]: 1.00; 95% confidence interval [CI]: 0.99-1.01; $P = 1.00$), male sex (OR: 0.67; 95% CI: 0.46-0.97; $P = 0.036$), Asian (OR: 1.10; 95% CI: 0.24-5.17; $P = 0.90$), Black or African American (OR: 1.12; 95% CI: 0.30-4.25; $P = 0.87$), Native Hawaiian or Other Pacific Islander (OR: 0.75; 95% CI: 0.054-10.3; $P = 0.83$), Native Hawaiian or Pacific Islander (OR: 0.73; 95% CI: 0.12-4.58; $P = 0.73$), White (OR: 0.95; 95% CI: 0.25-3.54, $P = 0.94$), and open wound/ wound infection (OR: 0.73; 95% CI: 0.45-1.18; $P = 0.20$).

Conclusion

The odds of patients requiring a vascular open revision of their AVF/AVGs as opposed to an endovascular declot is 33% lower for males when compared to females. It is important to have a multidisciplinary approach for failed dialysis accesses, involving vascular surgeons and interventional radiologists, as it is difficult to identify variables associated with open revision compared to endovascular intervention.