

**Postoperative Renal Dysfunction Independently Predicts Late Mortality in Patients Undergoing Aortic Reconstruction**

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**Objectives:** Preoperative chronic kidney disease (CKD) has been shown to predict postoperative renal complications and late survival following aortic surgery, whereas the impact of postoperative renal complications less severe than permanent dialysis are unknown. We evaluated the effect of increasingly severe postoperative renal dysfunction on survival using a regional quality improvement registry.

**Methods:** Patients undergoing intact open aortic reconstruction in the Vascular Study Group of New England registry (2003-2012) were stratified by severity of postoperative renal complications; none, creatinine increase >0.5 mg/dL (IncCr), or any dialysis (HD). Predictors of renal dysfunction and impact of renal complications on survival were analyzed using multivariable methods.

**Results:** A total of 2095 patients were included, of which 72% had open abdominal aortic aneurysm repair, and 28% open aortoiliac reconstruction. Of these, 15% of patients had moderate CKD, and 1.2% had severe CKD at baseline. Postoperative renal complications were none in 90%, IncCr in 8.6%, and HD in 1.6%. Multivariable cumulative logit regression identified moderate CKD (odds ratio [OR], 2.7; 95% confidence interval [CI], 1.8-3.9; *P* < .01), severe CKD (OR, 17; 95% CI, 7-41; *P* < .01), operating room time (OR, 1.004 minutes; 95% CI, 1.003-1.006; *P* < .01), and supra-renal clamp use (OR, 2.1; 95% CI, 1.4-2.9; *P* < .01) as independent predictors of worsening strata of postoperative renal dysfunction. Risk-adjusted multivariable Cox regression showed that IncCr (hazard ratio, 1.6; 95% CI, 1.1-2.3; *P* = .01) and HD (hazard ratio, 3.2; 95% CI, 1.8-5.7; *P* < .01) increased risk of late death independent of age, gender, baseline moderate or severe CKD, congestive heart failure, chronic obstructive pulmonary disease, and postoperative myocardial infarction or death. Five-year survival was lower (log rank *P* < .01) in patients with IncCr (71% ± 4%), and HD (29% ± 10%) compared with those with none (79% ± 1%; Fig).

**Conclusions:** Increasing severity of postoperative renal dysfunction independently predicts increased risk of late mortality after open aortic surgery. Perioperative measures to reduce renal complications may potentially prolong the survival of patients following open aortic surgery.

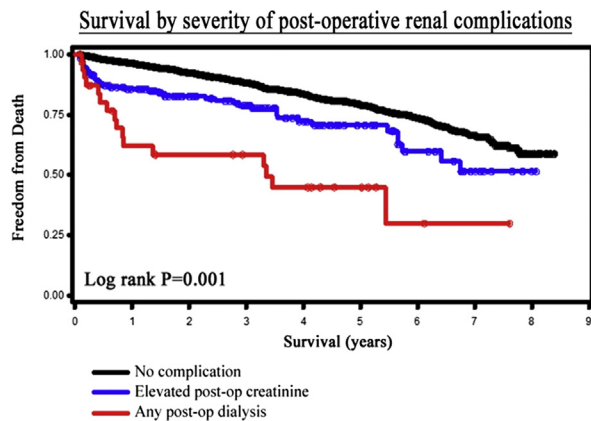


Fig.

**Outcome of Carotid Endarterectomy Versus Stenting in Comparable Medical Risk Patients**

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**Objectives:** In medically high-risk patients, the choice between carotid artery stenting (CAS) and carotid endarterectomy (CEA) can be difficult. The purpose of this study was to compare risk-stratified outcomes of CAS and CEA.

**Methods:** Patients undergoing primary CEA (n = 10,541) or primary CAS (n = 424) at 26 centers in the Vascular Study Group of New England were analyzed (2003-2012); patients with prior ipsilateral CEA or CAS were excluded. A medical risk score based on the risk of death within 5 years was developed for each patient using a Cox proportional hazards model. Patients in the highest risk quartile were termed high-risk (vs normal risk for the other three quartiles). Risk-stratified outcomes were compared between neurologically symptomatic and asymptomatic patients.

**Results:** Patients undergoing CAS had a higher prevalence of coronary artery disease, congestive heart failure, diabetes, chronic obstructive pulmonary disease, and contralateral internal carotid artery occlusion. Neurologic symptom status was not different (CAS, 43% vs CEA, 40% symptomatic). Overall 5-year survival was 80%. Medically high-risk patients had a 5-year survival of 60% and comprised 25% of CEA and 35% of CAS. Among asymptomatic patients rates of in-hospital stroke/death, and stroke/death/myocardial infarction were not different between CAS and CEA in both normal- and high-risk cohorts. Among symptomatic patients, CAS had significantly higher event rates for both normal- and high-risk cohorts (Table). CAS outcomes did not correlate with operator annualized stent volume.

**Conclusions:** In the Vascular Study Group of New England, asymptomatic normal- and high-risk patients do equally well after CEA or CAS. However, both normal- and high-risk symptomatic patients have substantially worse outcomes with CAS as compared with CEA. Symptom status is more important than medical risk when recommending CAS.

Table. Outcome of carotid endarterectomy vs stenting

	Stroke or death				Stroke, death, or myocardial infarction			
	Asymptomatic		Symptomatic		Asymptomatic		Symptomatic	
	Normal risk	High risk	Normal risk	High risk	Normal risk	High risk	Normal risk	High risk
CAS	0.0%	0.0%	4.7%	7.9%	0.0%	0.0%	6.3%	7.9%
CEA	0.6%	1.3%	1.0%	1.9%	1.4%	2.6%	1.8%	2.9%
<i>P</i> value	.36	.33	<.01	<.01	.15	.17	<.01	.02

CAS, Carotid artery stenting; CEA, carotid endarterectomy.

**Racial Disparity in Hemodialysis Access Types in Patients with End-Stage Renal Disease: An Analysis of the United States Renal Database System**

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**Objectives:** To examine racial and ethnic influences on hemodialysis initiation modes with arteriovenous fistula (AVF), arteriovenous graft (AVG), and intravenous hemodialysis (HD) catheter (IHC) in patients with end-stage renal disease (ESRD).

**Methods:** A retrospective analysis of a prospectively collected database comprising all ESRD patients receiving renal replacement therapy maintained by the United States Renal Database System between 2006 and 2010 was performed with institutional review board approval.  $\chi^2$  tests and analysis of variance provided descriptive statistics.

**Results:** Examined were 2,377,166 ESRD patients. We excluded all patients with IHC, AVF, or AVG prior to 2006, those not classified as white, black, or Hispanic, and patients with prior kidney transplants. Patients totaling 482,988 were included, of whom 82.7% initiated HD via IHC versus 13.9% via AVF and 3.4% via AVG. White patients were older (65.9 years) at initiation than black (58.4 years) and Hispanic (58.0 years) patients (*P* < .001). Black patients were more likely to be female (48.1%) than white (41.2%) and Hispanic (42.9%) patients (*P* < .001). HD initiation with AVF was more common among white patients (15.2%) than black (12.5%) or Hispanic (11.8%) patients, whereas AVG was more common among black patients (4.9%) than white (2.9%) or Hispanic (2.6%) patients (*P* < .001; Table).

**Conclusions:** White ESRD patients initiate HD with AVF more frequently than black or Hispanic patients. This disparity between white and black patients derives not from procedure rate, but rather from conduit selection. Black patients receive AVG two-thirds more frequently, while undergoing surgery at clinically similar rates. Hispanic patients receive fewer fistulas and grafts, as well as more catheters, in comparison to the other