Title

The Effect of Smoking Cessation on Outcomes of Thoracic Endovascular Aortic Repair

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Table II. Multivariable prediction models for outcome variables with odds ratios per TEVAR timing

	TEVAR timing					
	14-30 days vs <14 days		>30 days vs <14 days		>30 days vs 14-30 days	
	OR [95% CI]	*P*-value	OR [95% CI]	*P*-value	OR [95% CI]	*P*-value
Overall mortality	0.62 [0.22-1.71]	.357	0.10 [0.01-0.65]	.016	0.16 [0.03-0.99]	.050
Disease \ treatment-related mortality	0.66 [0.21-2.10]	.487	0.12 [0.01-0.98]	.048	0.18 [0.02-1.37]	.097
MACE	0.61 [0.24-1.54]	.293	0.08 [0.01-0.51]	.007	0.13 [0.02-0.79]	.027
MI	0.37 [0.46-2.96]	.349	0.01 [0.01- 0.86]	.043	0.03 [0.01-0.64]	.024
Stroke	0.45 [0.14-1.40]	.168	0.21 [0.05-0.99]	.048	0.47 [0.09-2.49]	.378
Respiratory complications	0.41 [0.13-1.27]	.124	0.22 [0.03-1.53]	.126	0.53 [0.14-1.98]	.346
Overall complications	0.44 [0.22-0.86]	.016	0.27 [0.09-0.81]	.019	0.63 [0.29-1.32]	.216
Reinterventions	0.29 [0.08-1.11]	.070	0.12 [0.10-1.41]	.093	0.42 [0.09-1.98]	.249
Aortic reinterventions	0.67 [0.28-1.58]	.363	0.30 [0.10-0.91]	.032	0.46 [0.14-1.48]	.193

ASA, American Society of Anesthesiologists; *BMI*, body mass index; *CAD*, coronary artery disease; *CHF*, congestive heart failure; *COPD*, chronic obstructive pulmonary disease; *CVD*, cerebrovascular disease; *EF*, ejection fraction; *HD*, hemodialysis; *HTN*, hypertension; *MACE*, major adverse cardiovascular events; *MI*, myocardial infarction; *OR*, odds ratio.
Logistic regression models adjusted for patient age, gender, ethnicity, race, ASA class, BMI, CAD, CHF, cardiac stress test result, CVD, COPD, HD, preoperative hemoglobin, creatinine, Beta-blockers, Statins, EF, preoperative functional status, maximal aortic diameter, urgency, indication for TEVAR (aneurysmal degeneration, progression of dissection, uncontrolled HTN, uncontrolled pain, TEVAR timing (acute, subacute, chronic), Interaction terms (timing-aneurysmal degeneration, timing-progression of dissection, timing-uncontrolled HTN).

Figure 1. ROC curve of the logistic regression model for overall mortality with AUC

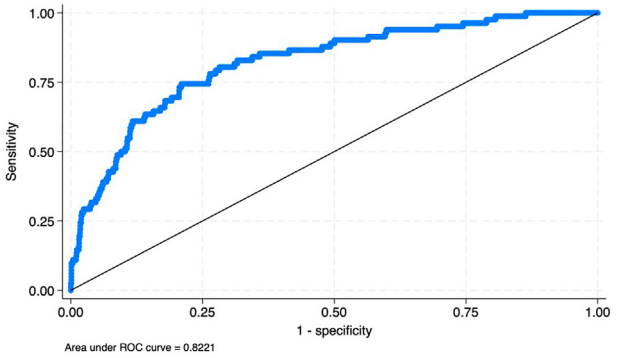

Fig. *AUC*, Area under the curve; *ROC*, receiver operating characteristic.

aneurysmal degeneration. Further studies are needed to validate these findings and help guide clinical decision-making for the timing of TEVAR for uTBAD.

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PC232

The Effect Of Smoking Status On Short And Mid-Term Outcomes Of Asymptomatic Patients Undergoing Carotid Endarterectomy: Analysis Of National Multi-Institutional Data

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Objectives: The current medical landscape lacks comprehensive data regarding the impact of preoperative smoking status on both short and long-term outcomes for patients undergoing carotid endarterectomy (CEA). This study seeks to elucidate the influence of the duration of smoking cessation on postoperative and mid-term outcomes in this patient population.

Methods: Data was collected from the Vascular Quality Initiative (VQI) for all asymptomatic patients who had undergone CEA from 2016 to 2023. Outcomes were compared across three different smoking status groups (never smoker [NS], current smoker [CS], quit >30 days ago [Q30]). Our primary outcomes included in-hospital stroke, death, and MI. Secondary outcomes included 1- and 3-year stroke/death. We used inverse probability weighting (IPW) to balance the following preoperative factors: age, gender, race, ethnicity, BMI, diabetes, CAD, prior CHF, renal dysfunction, COPD, HTN, prior CABG/PCI, prior CEA/CAS, degree of stenosis, urgency, anesthesia type, and medications.

Results: The final analysis included 85,237 CEA cases with 22,343 (26.2%) NS, 41,731 (49.0%) Q30, and 21,163 (24.8%) CS. Notably, NS tended to be older and more likely to be a female. On the other hand, patients who Q30 were more likely to have comorbidities including obesity, CAD, prior CHF, and CKD, as well as prior procedures. Patients who are CS were more likely to have COPD and stenosis >80%. After IPW, we found no statistical difference for in-hospital stroke, death, or MI outcomes across the groups. However, the mid- term outcomes revealed Q30 and CS compared to NS had higher odds of 1-year stroke/death (OR, 1.3; 95% CI, 1.1-1.4; $P < .001$; OR, 1.3; 95% CI, 1.1-1.5; $P < .001$) and 3-year stroke/death (OR, 1.4; 95% CI, 1.3-1.6; $P < .001$; OR, 1.4; 95% CI, 1.3-1.6; $P < .001$), respectively (Table I).

Conclusions: In this large national study, we found that smoking status did not emerge as a substantial determinant of adverse short-term outcomes for asymptomatic patients undergoing CEA. However, smoking had a negative impact on the midterm stroke-free survival of these patients. Although this study suggests not delaying CEA for smokers, it emphasizes the importance of smoking cessation for improving mid-term survival. It is essential to acknowledge that the intricate relationship between smoking and surgical outcomes warrants further exploration and validation through additional prospective studies.

Table. Postoperative outcomes of CEA patients by preoperative smoking

	Q30 vs NS				CS vs NS			CS vs Q30	
	NS	Q30	aOR (95% CI)	*P* value	CS	aOR (95% CI)	*P* value	aOR (95% CI)	*P* value
In-hospital stroke	0.9%	0.9%	1.1 (0.9-1.2)	.380	0.9%	1.0 (0.8-1.2)	.936	1.2 (1.0-1.5)	.11
In-hospital death	0.2%	0.2%	1.0 (0.7-1.5)	.827	0.2%	1.2 (0.8-1.9)	.352	1.5 (0.9-2.5)	.086
Perioperative MI	0.8%	0.7%	1.0 (0.8-1.2)	.753	0.6%	0.9 (0.7-1.1)	.263	0.8 (0.6-1.0)	.035
Stroke or death	1.0%	1.0%	1.1 (0.9-1.2)	.355	1.0%	1.0 (0.9-1.2)	.803	1.2 (1.0-1.5)	.082
Stroke, death, MI	1.8%	1.7%	1.0 (0.9-1.2)	.688	1.5%	1.0 (0.8-1.1)	.507	1.0 (0.9-1.2)	.8
Extended length of stay >2 days	27.0%	26.0%	1.0 (1.0-1.1)	.540	25.0%	1.0 (0.9-1.0)	.293	0.9 (0.9-1.0)	.006
1-year stroke / death	3.0%	3.7%	1.3 (1.1-1.4)	< .001	3.8%	1.3 (1.1-1.5)	< .001	1.0 (0.9-1.1)	> .9
3-year stroke / death	3.8%	5.3%	1.4 (1.3-1.6)	< .001	5.4%	1.4 (1.3-1.6)	< .001	1.0 (0.9-1.1)	.6

Note: Confounders: age, gender, race, ethnicity, obesity, diabetes, diabetes, hypertension, CAD, prior CHF, COPD, CKD, contralateral occlusion, CABG/PCI, prior contralateral CEA/CAS, ipsilateral occlusion, prior ipsilateral CEA/CAS, procedure urgency, anesthesia, ASA class, preoperative medications.

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PC234

Re-Evaluating The Centers For Medicare And Medicaid Services (CMS) High-Risk Criteria For Carotid Artery Revascularization

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Objectives: Existing literature has revealed inconsistencies with CMS risk guidelines. With recent CMS approval for transcarotid artery revascularization (TCAR) and transfemoral carotid artery stenting (TFCAS) in high and standard-risk patients, we aim to assess and update CMS guidelines using national data to identify procedure-specific high-risk indicators.

Methods: Data was collected from the VQI (2016-2023) for patients undergoing CEA, TFCAS, or TCAR. We used inverse probability weighting to adjust for confounders and compared in-hospital stroke or death across procedures for the following high-risk criteria: contralateral occlusion (CLO), prior CEA, prior CAS, radiation, prior neck surgery, moderate-severe CHF, severe COPD (on home O2), unstable angina, recent MI (<6 months), and age (>75 years).

Results: A total of 122,737 (62%) patients underwent CEA, 50,095 (25%) underwent TCAR, and 26,218 (13%) underwent TFCAS. In line with CMS criteria, TCAR had lower odds of stroke/death compared to CEA for patients with CLO (aOR, 0.73; 95% CI, 0.55-0.98; $P = .035$) and radiation (aOR, 0.44; 95% CI, 0.23-0.82; $P = .01$). When comparing TFCAS with CEA, CLO patients performed similarly, but TFCAS radiation patients had lower odds of stroke/death (aOR, 0.42; 95% CI, 0.23-0.74; $P = .003$). When comparing to TCAR, TFCAS CLO patients had higher odds of stroke/death (aOR, 1.69; 95% CI, 1.24-2.32; $P < .001$), but there was no statistical difference for radiation patients. Contrary to CMS criteria, CEA patients did not have higher stroke/death for prior CEA, prior CAS, prior neck surgery, moderate-severe CHF, severe COPD, unstable angina, recent MI, or age (>75) compared to TCAR and TFCAS (Table I). However, TCAR was associated with reduced CNI compared to CEA in patients with prior CEA (aOR, 0.11; 95% CI, 0.07-0.17; $P < .001$) and prior neck surgery (aOR, 0.03; 95% CI, 0.00-0.19; $P < .001$) (Table II). On the other hand, TFCAS demonstrated higher odds of stroke/death compared to CEA and TCAR for patients with prior CEA (aOR, 1.37; 95% CI, 1.09-1.73; $P = .007$; aOR, 1.68; 95% CI, 1.29-2.18; $P < .001$), recent MI (aOR, 1.99; 95% CI, 1.24-3.18; $P = .004$; aOR, 1.79; 95% CI, 1.10-2.92; $P = .019$), and age >75 (aOR, 1.95; 95% CI, 1.70-2.24; $P < .001$; aOR, 1.96; 95% CI, 1.68-2.28; $P < .001$), respectively (Table I).

Conclusions: This is the largest muti-institutional study comparing the real-world outcomes of the three carotid revascularization procedures in high-risk patients. TCAR performed the best in patients with CLO. While TFCAS has the worst outcomes in patients with prior CEA, moderate-severe CHF, recent MI, or age (>75). CEA had similar stroke and death outcomes compared to TCAR in these patients but higher CNI in patients with prior surgery. As a result, the definition of high-risk criteria may warrant reconsideration. Nevertheless, prospective studies along with further investigation into lesion characteristics and risk- specific outcomes are necessary to confirm findings.

Table I. In-hospital stroke-death rates by high-risk criteria comparing TCAR vs CEA and tfCAS vs CEA (reference: CEA)

	TCAR vs CEA				TFCAS vs CEA			TFCAS vs TCAR	
	CEA	TCAR	aOR (95% CI)	*P* value	TFCAS	aOR (95% CI0	*P* value	aOR (95% CI)	*P* value
Contralateral occlusion	2.8%	2.0%	0.73 (0.55-0.98)	.035	3.4%	1.24 (0.93-1.66)	.15	1.69 (1.24-2.32)	< .001
Prior CEA	1.6%	1.3%	0.82 (0.66-1.02)	.075	2.2%	1.37 (1.09-1.73)	.007	1.68 (1.29-2.18)	<.001
Prior CAS	2.5%	1.1%	0.45 (0.20-1.02)	.056	1.7%	0.68 (0.29-1.55)	.4	1.51 (0.97-2.36)	.068
Radiation	2.4%	0.7%	0.30 (0.17-0.54)	< .001	1.0%	0.42 (0.23-0.74)	.003	1.37 (0.72-2.61)	.3
Prior neck surgery	2.0%	1.3%	0.63 (0.37-1.07)	.089	1.5%	0.73 (0.41-1.29)	.3	1.15 (0.57-2.33)	.7
Moderate-severe CHF (Class III, IV)	3.2%	2.3%	0.69 (0.44-1.09)	.11	4.6%	1.44 (0.92-2.25)	.11	2.08 (1.27-3.41)	.004
Severe COPD (on home O_2)	2.2%	2.5%	1.12 (0.73-1.72)	.6	2.7%	1.24 (0.76-2.03)	.4	1.11 (0.67-1.85)	.7
Unstable angina	2.6%	2.0%	0.75 (0.37-1.52)	.4	3.8%	1.45 (0.73-2.90)	.3	1.94 (0.91-4.17)	.088
Recent MI (<6 months)	3.5%	3.9%	1.11 (0.70-1.77)	.7	6.7%	1.99 (1.24-3.18)	.004	1.79 (1.10-2.92)	.019
Age (≥75 years old)	1.7%	1.7%	1.00 (0.88-1.13)	> .9	3.2%	1.95 (1.70-2.24)	< .001	1.96 (1.68-2.28)	< .001