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Table.

Preoperative comorbidities	No. (%) or median (interquartile range)
Asymptomatic	13 (81.25%)
Congestive heart failure	5 (31.25%)
End-stage renal disease on dialysis	2 (12.50%)
Prior neck surgery	3 (18.75%)
Previous carotid endarterectomy	1 (6.25%)
Percentage of carotid stenosis	
70%-79%	4 (25.00%)
80%-89%	9 (56.25%)
≥90%	3 (18.75%)
TCAR stent details	
1 stent	16 (100%)
Predilation (mm)	
None	8 (50.0%)
4	3 (18.75%)
5	4 (25.0%)
6	1 (6.25%)
Postdilation (mm)	
None	2 (12.50%)
5	6 (37.50%)
5.5	4 (25.0%)
6	4 (25.0%)
Stent sizes (mm)	
7 × 30	1 (6.25%)
8 × 30	5 (31.25%)
8 × 40	7 (43.75%)
9 × 40	3 (18.75%)
TCAR operative details	
Contrast volume (cc/mL)	20.0 (15.0-27.5)
Type of anesthesia	
General	13 (81.25%)
Local + sedation	3 (18.75%)
Operative time (minutes)	
Skin to skin	50.0 (41.75-60.0)
Flow reversal	9.0 (6.0-13.0)
Median time from TCAR to cardiac surgery (days)	2.0 (1.0-2.0)
Median length of stay (days)	9.0 (6.25-15.50)
Indication for cardiac surgery	
Multivessel coronary artery disease	9 (56.25%)
Coronary artery disease with left ventricle dysfunction	3 (18.75%)
Coronary artery disease of the left main	3 (18.75%)
Coronary artery disease with mitral valve endocarditis	1 (6.25%)
Discharge medical therapy	
Aspirin	15 (93.75%)
Statin	14 (87.50%)
Nonaspirin antiplatelet (clopidogrel, prasugrel, ticagrelor)	14 (87.50%)
Direct oral anticoagulants (apixaban, rivaroxaban, enoxaparin)	3 (18.75%)

(Continued on next page)

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Safety and Efficacy of Carotid Artery Dissection Management With Transfemoral Carotid Artery Stent and Transcarotid Artery Revascularization: Multi-institutional Study

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Objectives: Carotid artery dissection (CD) could lead to stroke, particularly in younger patients. Most studies assessing the safety of carotid artery stenting have excluded patients with dissections. We aim to fill that gap by evaluating and comparing the outcomes of transfemoral carotid artery stenting (TFCAS) and transcarotid artery revascularization (TCAR) in the management of CD using national database.

Methods: This is a retrospective analysis of all patients who underwent either TFCAS or TCAR for spontaneous carotid dissection in the Vascular Quality Initiative database from 2016 to 2024. The primary outcomes were 30-day mortality and in-hospital major adverse cardiovascular events, including stroke, death, and myocardial infarction. Multivariate logistic regression models were employed to adjust for demographics, insurance, smoking, comorbidities, prior procedures, urgency, symptomatic status, and medications.

Results: There were 554 patients treated with TFCAS (387; 69.9%) or TCAR (167; 30.1%) for CD. TCAR patients were older (mean age, 67.3 years vs 59.7 years; $P < .001$) with more comorbidities such as chronic kidney disease (26.8% vs 13.5%; $P < .001$), hypertension (78.4% vs 68.8%; $P = .02$), and coronary artery disease (41.9% vs 23.4%; $P < .001$), and more likely to be on preoperative medications and undergo general anesthesia (92% vs 38%; $P < .001$) (Table I). TFCAS patients were more likely to be symptomatic (64.9% vs 43.1%; $P < .001$), have a higher American Society of Anesthesiologists class (24% vs 22%; $P < .001$), and undergo urgent intervention (34% vs 24.6%; $P < .001$). Two-stent usage was similar between the two groups (21% TCAR vs 28% TFCAS; $P = .08$). TCAR was associated with lower 30-day mortality (1.2% vs 2.8%), in-hospital stroke (1.2% vs 3.2%), myocardial infarction (0.6% vs 0.8%), major adverse cardiovascular events (2.4% vs 5.7%), reperfusion syndrome (0.6% vs 2.3%), technical failure (0% vs 0.5%), access site complications (2.4% vs 4.9%), and shorter LOS (39.5% vs 51%). However, these differences were not statistically significant (Table II).

Conclusions: In this multi-institutional national study, we have demonstrated that both TFCAS and TCAR have acceptable rates of in-hospital stroke and death. Although not statistically significant, the results suggest that TCAR is associated with better technical success and periprocedural outcomes in treating CD compared with TFCAS.

Table I. Baseline characteristics of carotid artery dissection patients undergoing transfemoral carotid artery stenting (*TFCAS*) and transcarotid artery revascularization (*TCAR*)

	TFCAS, 387 (69.9%)	TCAR, 167 (30.1%)	*P* value
Age	59.680 ± 15.206	67.323 ± 12.468	<.001
Female sex	169 (43.7%)	52 (31.1%)	.006
Race			
White	317 (81.9%)	139 (83.2%)	.708
Non-White	70 (18.1%)	28 (16.8%)	
Hispanic or Latino	21 (5.4%)	7 (4.2%)	.5
Smoking status			.081
Prior	125 (32.5%)	64 (38.3%)	
Current	94 (24.4%)	48 (28.7%)	
Chronic kidney disease	51 (13.5%)	44 (26.8%)	<.001
Chronic obstructive pulmonary disease	49 (12.7%)	27 (16.2%)	.27
Diabetes	78 (20.2%)	45 (26.9%)	.08
Dialysis	1 (0.3%)	2 (1.2%)	.17
Hypertension	265 (68.8%)	131 (78.4%)	.02
Prior coronary artery bypass grafting-percutaneous coronary intervention	65 (16.8%)	47 (28.1%)	.002
Prior congestive heart failure	33 (8.5%)	12 (7.2%)	.6
Coronary artery disease	90 (23.4%)	70 (41.9%)	<.001
Prior contralateral carotid endarterectomy/carotid artery stenting	30 (7.8%)	26 (15.6%)	.005
Prior ipsilateral carotid artery stenting	23 (5.9%)	6 (3.6%)	.3
Prior ipsilateral carotid endarterectomy	67 (17.3%)	34 (20.4%)	.4
Anesthesia			<.001
Local/regional	237 (61.6%)	13 (7.8%)	
General	148 (38.4%)	154 (92.2%)	
American Society of Anesthesiologists class			<.001
III	190 (52.5%)	124 (75.2%)	
IV-V	88 (24.3%)	36 (21.8%)	
Symptomatic	251 (64.9%)	72 (43.1%)	<.001
Two-stent usage	108 (28%)	35 (21%)	.08
Aspirin	304 (78.6%)	141 (84.4%)	.11
P2Y2 inhibitor	277 (71.6%)	137 (82.0%)	.009
Anticoagulant	41 (10.6%)	34 (20.4%)	.002
Beta-blocker	122 (31.5%)	81 (48.5%)	<.001
Statin	267 (69.0%)	141 (84.4%)	<.001
Angiotensin-converting enzyme inhibitor/angiotensin receptor blocker	113 (29.2%)	67 (40.1%)	.012
Urgency			<.001
Elective	164 (42.6%)	117 (70.1%)	
Urgent	132 (34.3%)	41 (24.6%)	
Emergent	89 (23.1%)	9 (5.4%)	

Values are mean ± standard deviation or number (%).

Table II. Postoperative outcomes of transfemoral carotid artery stenting (*TFCAS*) vs transcarotid artery revascularization (*TCAR*) in patients with carotid artery dissection

	Univariate				Multivariate		
	All carotid artery stenting (554)	TFCAS (387)	TCAR (167)	*P* value (Fisher's exact)	TCAR vs TFCAS (TFCAS is Ref)		
In-hospital	No. (%)	No. (%)	No. (%)		Outcomes[a]	aOR (95% CI)	*P* value
30-Day mortality	13 (2.4)	11 (2.8)	2 (1.2)	0.2	30-day mortality	0.3 (0.05-2.1)	0.3
In-hospital outcomes					In-hospital outcomes		
Death	9 (1.6)	8 (2)	1 (0.6)	0.2			
Stroke	14 (2.6)	12 (3.2)	2 (1.2)	0.14	Stroke	0.5 (0.1-2.5)	0.4
Myocardial infarction	4 (0.7)	3 (0.8)	1 (0.6)	0.6			
Stroke/death	22 (4)	19 (4.9)	3 (1.3)	0.06	Stroke/death	0.4 (0.2-1.3)	0.15
MACE	26 (4.7)	22 (5.7)	4 (2.4)	0.06	MACE	0.6 (0.17-2.4)	0.5
Length of stay >1	263 (47.5)	197 (51)	66 (39.5)	0.009	Length of stay >1	0.8 (0.5-1.4)	0.5
Reperfusion syndrome	10 (1.8)	9 (2.3)	1 (0.6)	0.14			
Technical failure	2 (0.4)	2 (0.5)	0	0.5			
Access site complication[b]	23 (4.2)	19 (4.9)	4 (2.4)	0.1	Access site complication[b]	0.4 (0.14-1.24)	0.12
Postoperative infection	0	0	0				
Pseudoaneurysm	4 (0.7)	4 (0.9)	0	0.23			
Hematoma	15 (2.8)	11 (3.2)	4 (2.4)	0.5			
Arteriovenous fistula	0	0	0				

aOR, Adjusted odds ratio; *CI*, Confidence interval; *MACE*, in-hospital major adverse cardiac events.
[a]Adjusting for the following confounders: age, body mass index, gender, race, ethnicity, symptomatic status, dialysis, chronic kidney disease, diabetes, hypertension, smoking, coronary artery disease, prior congestive heart failure, chronic obstructive pulmonary disease, coronary artery bypass grafting/percutaneous coronary intervention, prior contralateral carotid endarterectomy/carotid artery stenting, prior ipsilateral carotid endarterectomy/carotid artery stenting, procedure urgency, anesthesia, American Society of Anesthesiologists class, preoperative medications, living status, insurance.
[b]Access site complication is hematoma/bleeding, stenosis/occlusion, infection, pseudoaneurysm, or arteriovenous fistula.

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Barriers to Routine Use of Mini-incision Carotid Endarterectomy: Results of an SCVS Survey

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Objectives: Carotid endarterectomy remains the gold standard for treating carotid atherosclerotic disease, exhibiting low morbidity and mortality rates. Mini-incision carotid endarterectomy (MI-CEA), utilizing incisions <5 cm, has demonstrated benefits in reducing postoperative morbidity, pain, and improving aesthetics. Despite these advantages and the current trend toward minimally invasive procedures, most vascular surgeons continue to perform carotid endarterectomy with traditional 10- to 15-cm incisions. This study aims to identify the factors that a sample of practicing US vascular surgeons consider barriers to adopting MI-CEA.

Methods: We designed a survey that was distributed nationally to practicing vascular surgeons who are members of the Society for Clinical Vascular Surgery (SCVS), regarding their experiences with MI-CEA. Questions focused on whether they perform MI-CEA, use of adjunctive measures (eg, shunts), as well as examined what factors precluded surgeons from performing MI-CEA (not taught in training, does not provide adequate surgical exposure, etc). Results were analyzed using descriptive statistics, and subgroup analyses were performed looking at relationships between various respondent characteristics (eg, years in practice, taught in training) and frequency of MI-CEA.

Results: Our MI-CEA survey was sent to 1110 SCVS members, of which 146 (13.1%) responded. In this cohort, 85% of respondents trained in a conventional fellowship, and years in practice ranged from 2 months to 53 years, with a median 14 years in practice. MI-CEA was performed at least once by 65.8% of respondents and in 19.2% of respondents, MI-CEA was always performed. Respondents who performed MI-CEA less frequently were significantly more likely to report that it provides less exposure ($P < .0001$) and that patients are unconcerned about incision size ($P < .0001$). Only 31.5% of respondents were trained to perform MI-CEA prior to beginning practice, however those surgeons were significantly more likely to have performed MI-CEA in practice ($P < .0001$). Additionally, surgeons who always performed MI-CEA with patch angioplasty were significantly more likely to do so even in patients with higher-risk features (eg, high bifurcation, short or obese neck, redo surgery) ($P < .0001$), although this was not observed in those who always utilized shunts during MI-CEA ($P = .1099$).

Conclusions: While the majority of SCVS respondents have performed MI-CEA at least once in their practice careers, most do not perform it routinely. This study also shows that greater exposure to MI-CEA during training may dispel perceived limitations to this approach and achieve wider adoption.

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Direct Supply Cost and Complication Analysis of Transfemoral Carotid Stenting vs Carotid Endarterectomy vs Transcarotid Artery Revascularization: A Single-center Retrospective Study

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Objectives: Assessing the cost-effectiveness of carotid stenosis interventions is essential in value-based care. This study compares the direct