CEA Versus TCAR In A Single Center Propensity Matched Study: The Outcomes Of The Two Treatments Are Comparable At 30 Days But TCAR Has A Higher Mortality At 2 Years

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Speaker Disclosure

- Nothing to disclose

Background

- CEA remains the standard of care for treatment of extracranial CVD
- The stenting cohort of CAS vs CEA trial (CREST) demonstrated an increased risk of periprocedural stroke
- TFCAS was utilized for pts with high surgical risk, or unfavorable anatomy for open surgery
- TCAR (2012) using the ENROUTE system added additional modality for treatment

TCAR Registry Data

ROADSTER 1
- Stroke rate of 1.4%
- Stroke/Death rate of 2.8%
- Stroke/Death/MI rate of 3.5%

ROADSTER 2
- Stroke rate of 1.9%
- Stroke/Death 2.3%
- Stroke/Death/MI rate of 3.2%

TCAR Registry Data (cont'd)

- At the timing of these trials, TCAR was indicated for high-risk pts.
- Both trials demonstrated rates of periop stroke/death comparable to CEA, and superior to TFCAS.
- Our study assesses 30-day periop and late outcomes of TCAR vs CEA

Patient Population and Methods

- Retrospective analysis of prospectively collected data of carotid interventions in our institution (2016 and 2023)
- All CEA pts enrolled in SVS/VQI prospectively maintained database
- All CEAs/gen anesthesia w/ routine shunting and patching.

Patient Population and Methods (cont'd)

- TCAR: TCAR done as part of the SVS/VQI/TSP approved by CMS/FDA
- All done for high-risk pts for CEA
- Procedures were done by same vascular surgeons who have done the CEAs after receiving the appropriate training

Demographics/Clinical Characteristics

	CEA (N=404)	TCAR (N=242)	p-value
Age (mean ± std)	68.9 ± 8.84	71.2 ± 8.41	0.0011
Male	217 (54%)	163 (67%)	0.0006
Symptomatic Status			
Asymptomatic	229 (57%)	140 (58%)	0.7715
Symptomatic	175 (43%)	102 (42%)	
Stroke	66 (16%)	35 (14%)	
TIA	109 (27%)	69 (29%)	
Hypertension	340 (84%)	220 (91%)	0.0145
Diabetes Mellitus	153 (38%)	114 (47%)	0.0248
Coronary Artery Disease	205 (51%)	147 (61%)	0.0135
Tobacco Use	271 (67%)	145 (60%)	0.0658
Congestive Heart Failure	38 (9%)	40 (17%)	0.0072
Renal Failure	28 (7%)	12 (5%)	0.3141

30-Day Complications/Whole Series

	CEA (N=404)	TCAR (N=242)	p-value
Neurological Events			
Stroke	4 (1%)	6 (2%)	0.1877
TIA	4 (1%)	2 (0.8%)	1
Death	2 (0.5%)	2 (0.8%)	0.6328
Stroke/Death	5 (1%)	8 (3%)	0.0849
Stroke/Death/MI	6 (1%)	9 (4%)	0.068
Bleeding/Hematomas	24 (6%)	11 (5%)	0.4483
Bleeding requiring re-intervention	8 (2%)	4 (2%)	1
Evidence of CNI	20 (5%)	3 (1%)	0.0138
Type			
HGN	11	0	
Mandibular Branch of Facial Nerve	5	0	
SLN	2	0	
VN	2	0	
RLN	0	3	

Late Clinical Outcome/Whole Series

	CEA (N=404)	TCAR (N=242)	p-value
Restenosis			
>50%	24 (6%)	20 (9%)	0.2025
>80%	2 (0.5%)	8 (4%)	0.0062
Reintervention	2 (0.5%)	1 (0.4%)	1
Stroke	4 (1%)	9 (4%)	0.0179
Death	29 (7%)	29 (13%)	0.0255
Stroke/Death	31 (8%)	33 (15%)	0.008

Propensity Matched-Demographics/Clinical Characteristics

	CEA (N=242)	TCAR (N=242)	p-value
Age (mean ± std)	71.1 ± 8.46	71.2 ± 8.41	0.8929
Male	154 (64%)	163 (67%)	0.3895
Symptomatic Status			
Asymptomatic	141 (58%)	140 (58%)	0.9266
Symptomatic	101 (42%)	102 (42%)	
Stroke	37 (15%)	35 (14%)	
TIA	64 (27%)	67 (28%)	
Hypertension	224 (93%)	220 (91%)	0.509
Diabetes Mellitus	116 (48%)	114 (47%)	0.8555
Coronary Artery Disease	129 (53%)	147 (61%)	0.0984
Tobacco Use	156 (64%)	145 (60%)	0.3025
Congestive Heart Failure	26 (11%)	40 (17%)	0.0637
Renal Failure	18 (7%)	12 (5%)	0.258

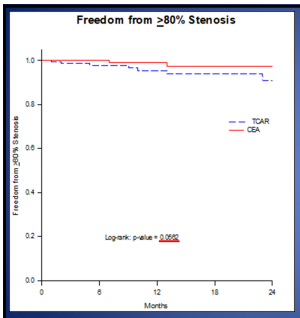
Propensity Matched-30 Day Complications

	CEA (N=242)	TCAR (N=242)	p-value
Neurological Events			
Stroke	3 (1%)	6 (2%)	0.5037
TIA	2 (0.8%)	2 (0.8%)	1
Death	1 (0.4%)	2 (0.8%)	1
Stroke/Death	4 (2%)	8 (3%)	0.2423
Stroke/Death/MI	5 (2%)	9 (4%)	0.278
Bleeding requiring re-intervention	4 (2%)	4 (2%)	1
MI	1 (0.4%)	1 (0.4%)	1
Evidence of CNI	8 (3%)	3 (1%)	0.1273

Propensity Matched-Late Clinical Outcome

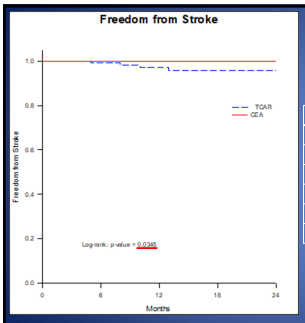
	CEA (N=242)	TCAR (N=242)	p-value
Restenosis			
>50%	16 (7%)	20 (9%)	0.4059
>80%	2 (0.9%)	8 (4%)	0.0577
Reintervention	2 (0.8%)	1 (0.4%)	1
Stroke	2 (0.8%)	9 (4%)	0.0242
Death	18 (8%)	29 (13%)	0.0603
Stroke/Death	20 (8%)	33 (15%)	0.0345

Freedom from >80% Stenosis



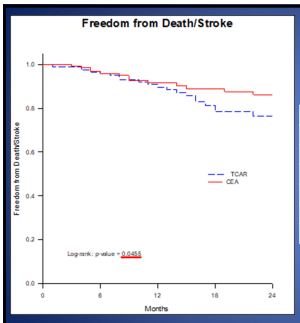
	CEA		TCAR		
	At risk	%	At risk	%	p-value
	234		224		0.0562
6 mos	104	100	106	97	
12 mos	66	99	66	95	
18 mos	59	98	45	93	
24 mos	52	98	27	91	

Freedom from Stroke



	CEA		TCAR		
	At risk	%	At risk	%	p-value
	234		223		0.0345
6 mos	104	99	111	97	
12 mos	69	99	71	95	
18 mos	62	99	48	93	
24 mos	55	99	29	93	

Freedom from Death/Stroke



	CEA		TCAR		
	At risk	%	At risk	%	p-value
	235		223		0.0455
6 mos	111	95	113	93	
12 mos	76	90	72	87	
18 mos	67	88	49	76	
24 mos	59	85	30	75	

One-year Outcomes of TCAR vs CEA in Medicare Database

- 3,157 propensity matched pairs of TCAR vs CEA
- No differences in 1 yr stroke: 6.6% vs 7.6%
- No differences in death: 7.7% vs 8%
- No differences in stroke/death: 12.8% vs 14.2%
- Overall, after propensity matching and complete follow up there was no significant differences in periop and 1 yr outcomes between TCAR and CEA regardless of symptomatic status

(*Schermerhorn M, Malas M et al, JVS. June 2022*)

Propensity score matched analysis of 1 yr outcomes of TCAR with Dynamic Flow Reversal, CEA and TFCAS

- 4,180 TCAR vs CEA matched pairs of pts
- No significant differences in 30-day stroke, death, stroke/death
- At 1 yr no significant difference observed in risk of ipsilateral stroke/death, 6.49% vs 5.68%
- Sx status did not modify the association in TCAR vs CEA

(Malas M, JVS, Jan 2022)

Conclusion

- In propensity match analysis, both CEA and TCAR have similar perioperative clinical outcomes.
- However, CEA was superior to TCAR for the rates of late stroke, stroke/death, and ≥80% restenosis at 2 years.
- ? TCAR pts may have other comorbidities
- ? More scrutiny single center data vs VQI registry data

Thank You!