Postoperative Disability and Associated Outcomes for Patients Suffering a Stroke after Carotid Artery Stenting

Andrea Alonso, MD, Anna Kobzeva-Herzog, MD, Jeffrey Melvin, MD, Elizabeth King, MD, Alik Farber, MD, Katie Shean, MD, Karan Garg, MD
Thomas O'Donnell, MD, Denis Rybin, MD, Jeffrey J Siracuse, MD

Boston Medical Center, Boston, MA USA

BACKGROUND

- Stroke after a carotid artery stenting (CAS) procedure is rare. When they occur, the effects can be variable, and the degree of disability and long-term effects from a post-operative stroke remains unclear
- Almost 2/3 of patients who experience a post-op stroke following CEA develop a degree of initial disability with 1/3 developing moderately severe to severe disability
- There is less information on post-operative disability following stroke for CAS, specifically transcarotid artery revascularization (TCAR) and transfemoral carotid artery stenting (TFCAS)

AIM

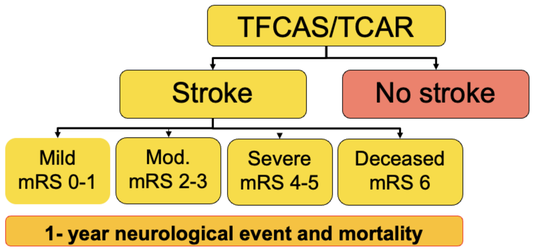
Assess the degree of post-operative disability in patients who sustain a stroke following CAS for asymptomatic disease and its one-year outcomes

Modified Rankin scale (mRS) used to assess degree of disability

0 – No symptoms
1– No significant disability
2 – Slight disability
3 – Moderate disability
4 – Mod. severe disability
5 – Severe disability
6 – Deceased

METHODS

The Vascular Quality Initiative CAS registry was queried for interventions performed for asymptomatic carotid artery disease during 2016-2023



RESULTS

Table 1: TCAR demographics by discharge mRS score

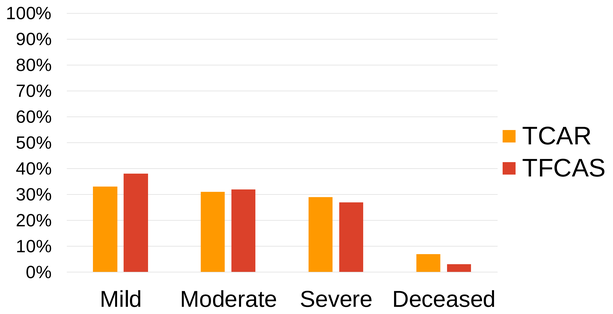
Characteristic	No stroke N=23,248	mRS 0-1 N=61	mRS 2-3 N=58	mRS 4-5 N=54	mRS 6 N=14	P-value
Age, mean (SD)	73.5	73.3	74.6	74.8	71.6	.53
Male %	63.1	54.1	53.4	61.1	64.3	.35
White race %	90.4	85.2	91.4	77.8	100.0	<.001
Black race %	4.7	3.3	1.7	13.0	0.0	
Hispanic %	3.0	1.6	1.7	13.0	0.0	<.001
Smoking %	20.6	14.8	17.2	13.2	14.3	.12
ASA %	89.9	90.2	89.7	77.8	78.6	.03
P2Y12 %	89.5	77.0	93.1	74.1	85.7	<.001
High risk anatomy	63.9	59.0	58.6	70.4	50.0	.48

Table 2: TFCAS demographics by discharge mRS score

Characteristic	No stroke N=7,418	mRS 0-1 N=26	mRS 2-3 N=22	mRS 4-5 N=19	mRS 6 N=2	P-value
Age, mean (SD)	70.9	73.7	73.0	75.4	59.5	.01
Male %	64.6	61.5	63.6	57.9	0.0	.39
White race %	90.1	88.5	86.4	94.7	100.0	<.001
Black race %	4.7	7.7	9.1	5.3	0.0	
Hispanic %	2.9	0.0	9.1	5.3	0.0	<.001
Smoking %	22.9	11.5	27.3	5.3	50.0	.04
ASA %	86.2	73.1	86.4	73.7	100.0	.17
P2Y12 %	79.1	50.0	81.8	63.2	100.0	.002
High risk anatomy	52.7	53.8	59.1	63.2	50.0	.88

RESULTS

Figure 1: Disability at discharge by procedure type



TCAR stroke 1.23% | TFCAS stroke 1.61%

Table 3: Multivariable analysis of one-year neurological events and mortality

Variables	TIA/stroke		Mortality	
DC mRS	HR (CI)	P-value	OR (CI)	P-value
1 vs. 0	1.53 (0.64, 3.7)	.34	1.07 (0.34, 3.31)	.91
2-3 vs 0	1.43 (0.59, 3.46)	.42	0.73 (0.18, 2.91)	.65
4-5 vs 0	**10.82 (6.93, 16.9)**	**<.001**	**11.04 (6.9, 17.7)**	**<.001**
TFCAS vs TCAR	**1.27 (1.10, 1.47)**	**.001**	**1.27 (1.11,1.45)**	**<.001**

Discussion

- The majority of patients who undergo TCAR and TFCAS for asymptomatic carotid artery disease that suffered a periprocedural stroke had substantial disability
- Patients with strokes from TFCAS have worse one-year outcomes
- These findings should help guide patient-provider discussion regarding the the risks of CAS interventions for asymptomatic disease and aid in the prognostication of postoperative stroke