

Lessons Learned after 650 TCARs in the Community: A Decade-Long Experience from Early Adopters

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Background and Objectives

- Transcarotid arterial revascularization (TCAR) with flow reversal is a well-established minimally invasive alternative to carotid endarterectomy.
- The procedure involves flow reversal and stent placement in the treatment of carotid artery disease and stenosis
- Risks of the operation include bleeding, cardiovascular disease, cranial nerve injury, and cerebral vascular accidents
- As early adopters, CTVS Texas has performed TCARs in the greater Austin community since 2013.
- Here is a report on real-world experience after performing 650 TCARs over the last decade in a community hospital setting.

Methods

- Retrospective chart review of 656 TCAR procedures on 589 patients between 2013-2024.
- Primary endpoint: 30-day stroke and Myocardial infarction.
- Secondary endpoints: operative time, cranial nerve injury, neck hematoma requiring evacuation, arterial dissection, post-operative ICU admission, and death.



Table 1: Patient Demographics

Variable	Total	Asymptomatic (n=404)	Symptomatic (n=252)
Median Age	73 (67 - 79y)	73 (67 - 79y)	73 (67 - 80y)
Male	414 (63.5%)	250 (61.88%)	164 (65.08%)
History of Previous Neck Surgery	162 (24.7%)	114 (28.22%)	48 (19.05%)
Prior Carotid Endarterectomy	70 (12.1%)	53 (13.12%)	0 (0%)
Heart Failure	63 (9.6%)	40 (9.90%)	23 (9.13%)
Dialysis	14 (2.1%)	8 (1.98%)	6 (2.38%)
Previous Neck Radiation	43 (6.6%)	32 (7.92%)	11 (4.37%)
Surgical History of Cervical Fusion	8 (1.2%)	3 (0.74%)	5 (1.98%)

Table 2: Results by Symptom Status

Results	Total	Asymptomatic (n=404)	Symptomatic (n=252)
MAE <30d	63 (9.6%)	41 (10.15%)	22 (8.73%)
MI <30d	1 (0.2%)	1 (0.25%)	0 (0%)
Stroke <30d	12 (1.8%)	6 (1.49%)	6 (2.38%)
Death <30d	3 (0.5%)	2 (0.50%)	1 (0.40%)
Hematoma with Evacuation	10 (1.5%)	6 (1.49%)	4 (1.59%)
CNI	10 (1.5%)	6 (1.49%)	4 (1.59%)
Arterial Dissection	1 (0.2%)	0 (0%)	1 (0.40%)
MAE 1y	29 (4.4%)	14 (3.47%)	15 (5.95%)
MI 1y	6 (0.9%)	3 (0.74%)	3 (1.19%)
Stroke 1y	10 (1.5%)	6 (1.49%)	4 (1.59%)
Death 1y	30 (4.6%)	11 (2.72%)	15 (5.95%)
Reoperation	19 (2.9%)	11 (2.72%)	8 (3.17%)
Average LOS	1 (1, 1)	2 (0.50%)	2 (0.79%)
ICU Admission	84	44 (10.89%)	40 (15.87%)

Table 3: Stent Description

Number of Stents		n (%)
1		637 (97.71%)
2		36 (5.48%)
3		1 (0.15%)
Stent Width		n (%)
5 mm		3 (0.46%)
6 mm		9 (1.37%)
7 mm		63 (9.60%)
8 mm		408 (62.20%)
9 mm		168 (25.61%)
10 mm		25 (3.81%)

Results

- 656 operations (404 asymptomatic, 252 symptomatic)
 - 414 Male, 242 Female
- Median age at surgery 73 years (IQR 67 – 79 yr)
- Comorbidities
 - Previous Neck Surgery: 162
 - Prior CEA: 70
 - Heart Failure: 63
 - Dialysis: 14
 - Previous Neck Radiation: 43
 - Surgical fusion of C–spine: 8
- 30 Day Outcomes
 - MAE: 63
 - MI: 1
 - Stroke: 12
 - Death: 3
- 1 Year Outcomes
 - MAE: 29
 - MI: 6
 - Stroke: 10
 - Death: 30
- Average Hospital LOS: 1 Day
- Median operative time 45 minutes

Conclusions

- TCAR is an effective and efficient first-line therapy for treating carotid artery stenosis, regularly in less than 1 hour of operative time.
- Early adoption and integration of this technology by our practice has yielded excellent patient outcomes, matching or surpassing those reported for the gold standard, CEA.
- Given its efficiency and consistently excellent outcomes—both in our study and the broader literature—adopting TCAR in community-based practices could significantly expand patient access to timely, high-quality care.