



John Kanitra, MD; Isabella Graham, MA; R. David Hayward, PhD; Richard Berg, MD; Frederick Jaecklein, MD; Jimmy Haouilou, MD
 Department of Surgery, Ascension St. John Hospital, Detroit, Michigan

Introduction

- Transfemoral carotid artery stenting (TFAS) is reserved for patients that are high risk for carotid endarterectomy (CEA)¹
- TFAS incurs a 3 - 4% 30-day stroke rate^{2,3}
- Transcarotid arterial revascularization (TCAR) was developed to mitigate complications of distal plaque embolization
- Current data demonstrates a 1% 30-day and 2-3% 1 year stroke rate for TCAR and CEA, lower than TFAS^{3,4}
- TCAR mitigates risk of cranial nerve injury compared to CEA⁵
- Paucity of literature on cost for TCAR

Methods

- Retrospective chart review of patients who underwent TCAR Aug 1, 2019 – Feb 1, 2020 at our institution
- Compared cost for entire hospital stay of TCAR vs CEA vs TFAS
- TCAR cost obtained through hospitals finance department
- Cost data for CEA & TFAS obtained from 2018 Medicare cost reports

Results

(TCAR Cohort)

- N=22
- Female 73% (n=16)
- Avg Age 72.9 (57-82)
- All patients had 75% or greater stenosis
- 9% symptomatic
- 50% right TCAR

- Avg flow reversal time 19.5 min
- Avg procedure time 62.3 min
- Avg Hospital stay 1.8d (1-5)
- Follow-up 136 ± 47d
- n=1 had ipsilateral hemorrhagic stroke 3 months out
- n=1 passed away 5 months later due to metastatic malignancy

Table 1: Total Hospital Cost of TCAR compared to CEA and TFAS

	TCAR	CEA*	TFAS*
n	19 [†]	55	36
Margin (\$)	4,933	2,853	6,312
Cost (\$)	10,343 ± 2,558 (8,274-20,672)	8,975 ± 9,043 (1,423-1,146,691)	9,012 ± 9,840 (1,014-109,409)
Avg Charge (\$)	60,043 ± 14,677 (47,176-107,112)	43,718 ± 49,773 (2,025-3,393,848)	36,606 ± 43,798 (6,578-878,391)
Avg Payment (\$)	15,276 ± 3,874 (10,132-27,761)	11,828 ± 4,350 (1,561-242,206)	15,324 ± 3,579 (6,687-75,925)
LOS (days)	1.8 ± 1.2	1.85 ± 2.5	1.78 ± 1.7
Age	72.9 ± 6	74 ± 4.4	76 ± 5.6
DRG (Avg Payment, \$)			
With MCC ‡	27,760 (n=1) [†]	22,899 ± 10,803 (4,589-242,206) (n=8)	29,052 ± 7,888 (16,897-75,925) (n=2)
With CC §	16,312 ± 1,835 (11,224-17,173) (n=10)	11,768 ± 4,165 (4,633-89,085) (n=20)	16,432 ± 4,099 (8,474-46,277) (n=15)
Without CC	12,419 ± 1,063 (10,132-13,142) (n=8)	8,591 ± 2,728 (1,561-43,997) (n=27)	13,003 ± 2,936 (6,687-40,241) (n=19)

DRG = Diagnosis Related Group
 Data presented as median ± standard deviation. Parenthesis = range
 *Data from 2018 Medicare Cost Reports
 † Two patients with private insurance and 1 patient awaiting insurance authorization were eliminated from this table
 ‡Major complications/comorbidities
 §Complications/Comorbidities
 | Prior contralateral TCAR counting as major comorbidity

Discussion

Local TCAR cases

- Our early experience demonstrates good outcomes consistent with national data demonstrating low morbidity for TCAR
 - 0% 30-day stroke, 5% 4 month stroke (n=1)
 - Our one morbidity (stroke) is unlikely related to the procedure TCAR given that was hemorrhagic and 3 months later.

Cost

- TFAS and TCAR had similar payments, but TFAS had a lesser cost creating a higher margin for TFAS
- In time, we would expect TCAR cost to decrease, thereby increasing margin
- 3 patients were initially coded with the incorrect DRG, were re-billed due to this study, increasing total payment by \$11,033
 - Given TCAR's recent introduction, we recommend institutions pay particular attention to billing/reimbursement

Conclusions

TCAR profit margin is inferior to TFAS. However, further study is needed to evaluate the long term impact on cost of the increased stroke rate in TFAS compared to TCAR.

References

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