


Compared To CEA, TCAR Improves Operating Room OR Throughput (But Is More Costly?): Tips To Improve OR Efficiency

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Disclosures

- Silk Road Medical



Efficiency and Throughput

Making the case that TCAR is more efficient and operationally cost effective when compared to CEA...



Comparing TCAR and CEA Operative Time


Procedure Time¹

TCAR: 73 Minutes

vs

CEA: 116 Minutes


¹Mahajan D, Golbin DT, Liu C, et al. The study of TransCatheter artery revascularization under total versus general anesthesia with results from the Society for Vascular Surgery Vascular Quality Initiative. *Vascular*. 2020;28(5):764-770.




Comparing TCAR and CEA Operative Time

Procedure Time ¹	Factors to take into account:
TCAR: 73 Minutes	1. Anesthetic type: Local/Regional v General
vs	2. Use of neuromonitoring
CEA: 116 Minutes	3. Instrument count
	4. Primary closure v Patch placement


¹Mahajan D, Golbin DT, Liu C, et al. The study of TransCatheter artery revascularization under total versus general anesthesia with results from the Society for Vascular Surgery Vascular Quality Initiative. *Vascular*. 2020;28(5):764-770.



Does this time saving REALLY translate into additional cases?



The average turnover time at a large tertiary hospital = 40-50 minutes



Does this time saving REALLY translate into additional cases?

Not enough time in block for additional case

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Incremental Cases

Northwell Health

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Added revenue and improved efficiency

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Less Wait Time to Get Surgery Performed

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Does this time saving translate into additional cases?

Incremental Cases

Added revenue and improved efficiency

In Era of Nursing and Anesthesia Shortages... Less Overtime and Greater Efficiency Critical to Hospital Productivity

Less Wait Time to Get Surgery Performed

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Does this time saving translate into additional cases?

In Era of Nursing and... performed
Less Overtim...
Critical...
Optimal Use of Block Time
Efficiency... shortages...
Added re...
Less Wait... and improved efficiency...
Productivity

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Improving Efficiency: TCAR Tray

Instruments opened for standard carotid endarterectomy
200-250 instruments

Our current sterile processing facility costs = **\$1.25 PER INSTRUMENT!**

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Improving Efficiency: TCAR Tray

Small box of **25** instruments

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Improving Efficiency: TCAR Tray

Small box of **25** instruments

Multiple boxes created

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Less sterile processing costs

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Improving Efficiency: TCAR Tray

Small box of **25** instruments


Multiple boxes created

Less sterile processing costs


Quicker instrument count

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Improving Efficiency: TCAR Tray



- Small box of **25** instruments
- Multiple boxes created
- Less sterile processing costs
- Quicker instrument count
- Faster turnover



TCAR Tray


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Mastering transcarotid artery revascularization (TCAR) instrumentation efficiency

Katie Taylor, RN, CNOR and Nicola J. Muscard, MD, MPH, MBA, FSVS, FRCR, FACS, RPhT

- Idea of the "TCAR tray"
- Reduced the overall instruments from 194 in the vascular surgery set to the 16 instruments in a focused TCAR tray—a 92% reduction in instrument count

Transcarotid artery revascularization is a relatively new minimally invasive procedure used to treat patients with carotid atherosclerosis without high risk for open revascularization and is reported to have lower stroke rate of any carotid intervention. The novel application of this technique reduces new and additional considerations with regard to efficiency in the operating theater, new specialty instrumentation and reworkload. This article discusses our unique challenges and the subsequent improvements implemented to optimize and maintain our operating room efficiency and case volume developed with ultimately reducing costs and resource usage. J Vasc Nurs 2020; 32(4)



TCAR Tray

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Mastering transcarotid artery revascularization (TCAR) instrumentation efficiency

Katie Taylor, RN, CNOR and Nicola J. Muscard, MD, MPH, MBA, FSVS, FRCR, FACS, RPhT

- In a carotid revascularization center of excellence minimally invasive hybrid TCAR procedures have taken over half of carotid revascularization case load
- Average intraoperative times for TCARs is 35 minute with an average turnover of less than 30 minutes.
- Case volumes increased from 2 to 3 per day to 5 to 7 operations in one shift



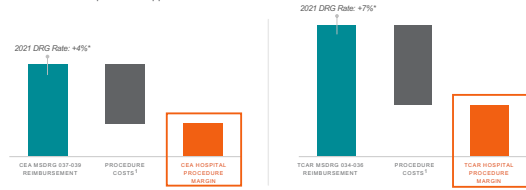


Figure 2. Back table image displaying instrumentation setup for TCAR procedure.




Procedure Margin

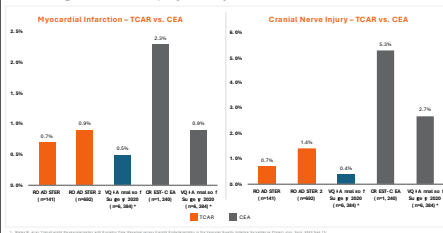
Economic Value Proposition Supports Utilization



Higher weighted average DRG reimbursement and shorter operative time *more than offset* TCAR materials costs, resulting in higher national average procedure margin




Low Periprocedural Complications and Shorter Length of Stay (LOS)



Compared to CEA, patients undergoing TCAR had a lower risk of:

- Heart attack (2-2.5x lower)
- Cranial Nerve Injury (CNI)

Patients undergoing TCAR less likely to have LOS >1 day¹



Efficiencies of a Less Invasive Approach

Average Procedure Time¹


TCAR 73 Mins vs **CEA 121 Mins**

Ability to treat **67% more** patients vs. CEA due to procedural time savings

Cost of Operating Room Time²

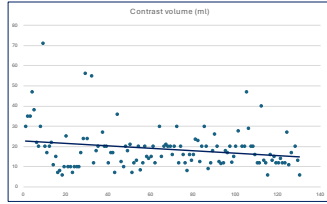
TCAR \$2,701 vs **CEA \$4,477**

Reduced OR Time Cost compared to CEA: **\$1,776**



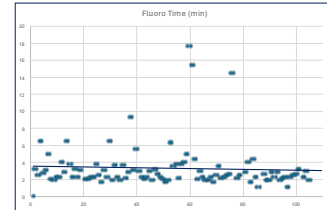
Northwell Experience - Learning Curve: Contrast Volume

- Gradual decrease in contrast use during first 130 cases
- During recent series of cases average contrast use is less than 10 ml



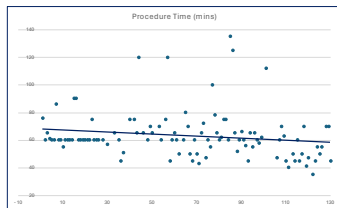
Northwell Experience - Learning Curve: Fluoroscopy Time

- Minimal change in fluoro time throughout early cases
- Average fluoro time remains under 3 minutes

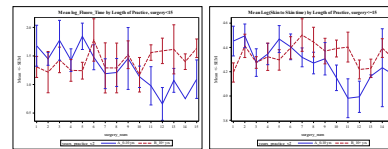


Northwell Experience - Learning Curve: Procedure Time

- Over first 130 cases gradual diminution in procedure time
- Currently most cases under 60 minutes
- This includes general anesthetic with set-up and use of neuromonitoring



Northwell Experience - Learning Curve

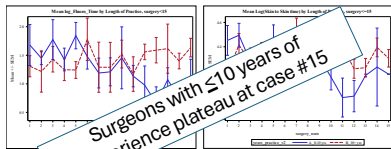


Surgeons with ≤ 10 years of experience used 51% less fluoroscopy time ($p=0.0051$, 95% CI 20% to 70%; -0.72 difference in log scale)

Surgeons with ≤ 10 years of experience exhibited a 30% less skin-to-skin time ($p=0.0017$, 95% CI 13% to 44%; -0.36 difference in log scale)



Northwell Experience - Learning Curve



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TCAR Costs

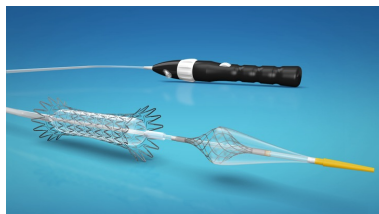
While TCAR device costs may exceed standard endarterectomy,

- Decreased instrumentation
- Decreased OR Time
- Increased volume of cases
- Reduced length of stay (?)
- Volume growth from a robust comprehensive carotid program

Are all likely to offset that difference....



Integrated systems: Neuroguard IEP System



Thank You

