


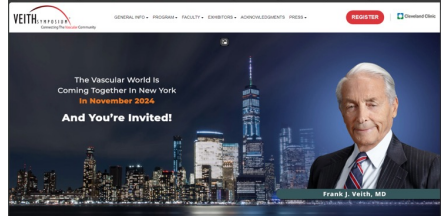
TCAR IN PATIENTS WITH DIFFICULT ANATOMY: TIPS AND TRICKS

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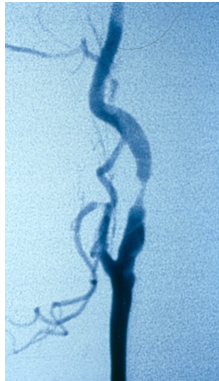
Disclosures

- Nothing to disclose



OUTLINE

- TCAR criteria
- What to do with short CCA
- Tips and tricks



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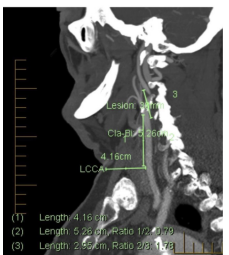
Anatomic eligibility for transcrotid artery revascularization and transfemoral carotid artery stenting

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ABSTRACT
Objective: Transcrotid artery revascularization (TCAR) has emerged as an alternative to transfemoral carotid artery stenting (tICAS). We investigated the proportion of carotid arteries undergoing revascularization procedures that would be eligible for TCAR based on anatomic criteria and how many arteries at high anatomic risk for tICAS would be amenable to TCAR.
Methods: We performed a retrospective review of consecutive patients who underwent carotid endarterectomy or carotid stenting between 2012 and 2015. Patients were excluded if computed tomography angiography of the neck was not performed within 6 months of the procedure. We assessed TCAR eligibility on the basis of the instructions for use of the ENROUTE Transcrotid Neuroprotection System (Silk Road Medical, Sunnyvale, Calif) and high anatomic risk for tICAS on the basis of anatomic factors known to make carotid cannulation more difficult or hazardous.
Results: Of the 318 patients and 226 carotid arteries identified, 12 carotid arteries were excluded for presence of an occluded internal carotid artery (ICA). Of the remaining 224 carotid arteries, 72% were eligible for TCAR on the basis of the instructions for use criteria. 100% had 4- to 9-mm ICA diameters. 100% had ≥6-mm common carotid artery (CCA) diameter. 75% had ≥5-cm clavicle to carotid bifurcation distance and 96% had no or mild puncture site plaque. In addition, 7% of carotid arteries had bifurcation anatomy unfavorable for stenting; thus, of the entire cohort of arteries examined, 69% were eligible for TCAR. Hypertension (odds ratio [OR], 4.7; 95% confidence interval [CI], 1.7-26; P < .01), chronic obstructive pulmonary disease (OR, 3.5; 95% CI, 1.5-8.3; P = .01), and older age (OR, 1.1; 95% CI, 1.0-1.1; P = .02) were independently associated with TCAR ineligibility, whereas white race (OR, 0.2; 95% CI, 0.0-1.0; P = .048) and beta blocker use (OR, 0.3; 95% CI, 0.1-0.7; P = .01) were independently associated with TCAR eligibility. In addition, 24% of carotid arteries were considered to be at high risk for tICAS for the presence of a type II aortic arch (2.6%), severe aortic calcification (5.3%), tandem CCA lesions (7.1%), moderate to severe stenosis at the carotid ostium (8.9%), and tortuous distal ICA (precluding embolic filter placement) (6.9%). Active smoking (OR, 4.4; 95% CI, 1.9-10; P < .01), hypertension (OR, 4.0; 95% CI, 1.2-14; P = .03), and older age (OR, 1.1; 95% CI, 1.0-1.1; P = .02) were independently associated with tICAS ineligibility, whereas preoperative aspirin (OR, 0.1; 95% CI, 0.0-0.4; P < .001) or clopidogrel (OR, 0.3; 95% CI, 0.1-0.8; P = .01) use was associated with tICAS eligibility. Of the arteries that were considered to be at high risk for tICAS, 69% were eligible for TCAR.
Conclusions: The majority of carotid arteries in individuals selected for revascularization meet TCAR eligibility, making TCAR a viable treatment option for many patients. (J Vasc Surg 2019;69:1452-60.)
Keywords: Carotid artery; Transcrotid artery revascularization; Eligibility

TCAR criteria

- Length of CCA
- Lesion charact.



(1) Length: 4.18 cm
 (2) Length: 5.26 cm, Ratio: 1.26:1.00
 (3) Length: 2.65 cm, Ratio: 0.64:1.00

Fig 2. Measurements performed for transcrotid artery revascularization (TCAR). Cb-B, Clavicle-bifurcation distance, LCCA, left common carotid artery.

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TCAR Criteria

Table 1. Summary of carotid arteries that meet anatomic and medical requirements for transcrotid artery revascularization (TCAR)

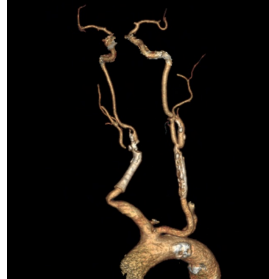
TCAR criteria	Carotid arteries (N = 224), No. (%)
Anatomic criteria	
ICA diameter >4.9 mm	224 (100)
Clavicle-carotid bifurcation distance >5 cm	167 (75)
CCA diameter >6 mm	224 (100)
No or mild puncture site plaque	214 (96)
Medical criteria	
No neck allergy	224 (100)
No bleeding disorder	224 (100)
No contraindication to aspirin or clopidogrel	224 (100)
No contraindication to anticoagulation	224 (100)
Overall eligibility for TCAR	162 (72)

CCA, Common carotid artery; ICA, internal carotid artery.

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Case 2

70 yo man presents to ED with *symptomatic* recurrent left carotid stenosis. Received neck radiation for vocal cord cancer in 2000. He previously had Left tfCAS in 2006 and Right tfCAS in 2010



SUMMARY

- TCAR criteria are not always present
- With a short CCA, 6 mm Dacron conduit
- Tunnel off the chest below the clavicle
- Maintain a 45° angle to avoid complications

