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Management of Carotid infections Including Post CEA With Patches:

Outcomes of Ipsilateral Carotid Bypass In Hostile Necks: Technical Tips

Heron Rodriguez MD

Disclosures

- Speaking fees WL Gore

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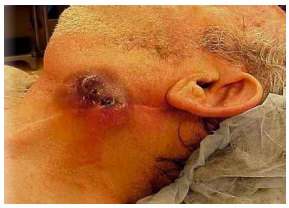
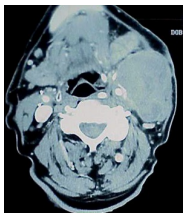
Carotid Infection: A difficult surgical problem





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Ipsilateral carotid bypass outcomes in hostile neck anatomy

Andres Guerra, MD, Ashish K. Jain, MD, Mark K. Eskandari, MD, *and* Heron E. Rodriguez, MD, *Chicago, Ill*

ABSTRACT

Objective: To determine differences in outcomes among patients undergoing ipsilateral carotid bypass with hostile or normal neck anatomy.

Methods: Single-center retrospective review of all ipsilateral extracranial carotid bypasses performed between 1998 and 2018.

Results: Forty-eight patients underwent ipsilateral carotid bypass from the common carotid artery to either the internal carotid artery or carotid bifurcation during the study period. Seven patients were excluded owing to either a lack of follow-up or missing data. The indications for intervention included infected patches, aneurysmal degeneration, symptomatic and asymptomatic stenosis or restenosis, carotid body tumors, neck malignancy, and trauma. In 25 procedures (61%), there was a hostile neck anatomy defined as a prior history of external beam neck irradiation or neck surgery. Among this group, 12 pectoralis muscle flaps were performed for reconstructive coverage. Conduits included polytetrafluorethylene (n = 21), great saphenous vein (n = 9), superficial femoral artery (n = 7) and arterial homograft (n = 4). All superficial femoral artery conduits were used in the hostile neck group ($P = .03$). The overall mean time of follow-up was 22 months, with all bypasses remaining patent with no significant clinical stenosis. The 30-day ipsilateral stroke and myocardial infarction rates were 4.88% each, all within the hostile neck group, with no 30-day mortalities for the entire cohort. One-third of the muscle flaps were performed in the setting of infected patches ($P = .02$) with no significant differences in perioperative outcomes with use. The overall median hospital length of stay was significantly increased in patients receiving muscle flap coverage (5.0 vs 7.0 days; $P = .04$).

Conclusions: In patients with a complex carotid pathology, ipsilateral carotid bypass is an effective solution for carotid reconstruction. Different conduits should be used depending on the indication. Muscle flap coverage should be considered in hostile settings when primary wound closure is not feasible. (J Vasc Surg 2021;74:1929-36.)

Keywords: Carotid artery diseases; Vascular grafting; Vascular patency; Surgical flaps

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48 ICB (1998-2017)

7 Excluded (insufficient follow up)

25 History of Prior Neck Surgery or Radiation

16 No Prior Neck Surgery or Radiation

22 Months Median Follow Up

- **Aneurysms (n=11)**
- **Symptomatic (n=9) and asymptomatic (n=4) Stenosis**
- **Infected Patch (n=5)**
- **CBT (n=5)**
- **Recurrent Stenosis (n=4)**
- **Trauma (n=3)**

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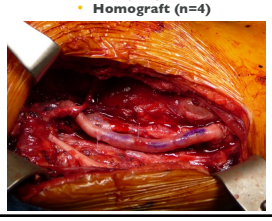
22 Months Median Follow Up

- **PTFE (n=21)**
- **GSV (n=9)**
- **SFA (n=7)**
- **Homograft (n=4)**



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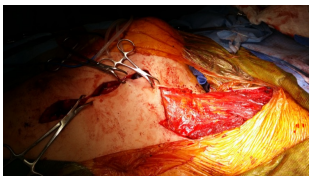
12 Musculo-cutaneous Flaps



22 Months Median Follow Up

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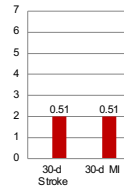
Complications:



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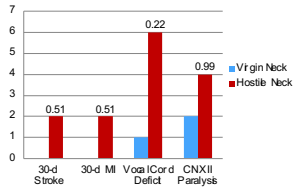
Complications:

Hematoma (n=1): homograft; not mm flap



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Other Outcomes:

Table V. Surgical outcomes between normal and hostile neck groups

	Normal (n = 16)	Hostile (n = 25)	*P* value
Hospital days	2.50 [2.00-5.25]	7.00 [2.00-8.00]	.08
30-Day CVA	0 (0.0)	3 (12.0)	.27
30-Day MI	0 (0.0)	2 (8.0)	.51
Pneumonia	0 (0.0)	3 (12.0)	.27
Reoperation	0 (0.0)	1 (4.0)	1.0
Vocal cord dysfunction	1 (6.2)	6 (24.0)	.22
CN XII palsy	2 (12.5)	4 (16.0)	1.0
DVT/PE	1 (6.2)	1 (4.0)	1.0

CN, Cranial nerve; *CVA*, cerebral vascular accident; *DVT*, deep vein thrombosis; *MI*, myocardial infarction; *PE*, pulmonary embolus. Values are absolute numerical values (%) or median (interquartile range).

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Other Outcomes:

Table VI. Surgical outcomes between patients with and without muscle flap coverage in the hostile neck group

	No Flap (n = 13)	Flap (n = 12)	*P* value
Hospital days	5.00 [2.00-8.00]	7.00 [5.50-9.75]	.26
30-day CVA	1 (7.7)	2 (16.7)	.59
30-day MI	1 (7.7)	1 (8.3)	1.0
Pneumonia	1 (7.7)	2 (16.7)	.59
Reoperation	0 (0.0)	1 (8.3)	1.0
Vocal cord dysfunction	3 (23.1)	3 (25.0)	1.0
CN XII palsy	2 (15.4)	2 (16.7)	1.0
DVT/PE	0 (0.0)	1 (8.3)	.48

CN, Cranial nerve; *CVA*, cerebral vascular accident; *DVT*, deep vein thrombosis; *MI*, myocardial infarction; *PE*, pulmonary embolus. Values are absolute numerical values (%) or median (interquartile range).

SSI (n=3): 1 SFA, 1 PTFE, 1 homograft; 2 in mm flap

Patency: 100% at 2 yrs (1 occlusion 5 yrs, radiated neck, PTFE)

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Conclusion:

Ipsilateral Carotid Bypass is a very reasonable option, even in hostile necks

The choice of conduit did not have a significant impact

The use of Muscle Flaps did not eliminate SSI but does not increase complications when there is not enough soft tissue for closure

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