

# Reoperative Carotid Endarterectomy: Are the Risks Really So High That CAS Should Be the Primary Treatment?

NOTES

*Richard P. Cambria, MD, Boston, MA*

---

## **Background**

Reoperative carotid endarterectomy (CEA) is an accepted treatment for recurrent carotid stenosis. With reports of a higher operative morbidity than primary CEA and the advent of carotid stenting, catheter-based therapy has been advocated as the primary treatment for this reportedly "high-risk" subgroup. This study reviews a contemporary experience with reoperative CEA to validate the high-risk categorization of these patients.

## **Methods**

From 1989 to 2002, 153 consecutive, isolated (excluding CEA/coronary artery bypass graft and carotid bypass operations) reoperative CEA procedures were reviewed. Clinical and demographic variables potentially associated with the end points of perioperative morbidity, long-term durability, and late survival were assessed with multivariate analysis.

## **Results**

There were 153 reoperative CEA procedures in 145 patients (56% men, 36% symptomatic) with an average age of  $69 \pm 1.3$  years. The average time from primary CEA (68% primary closure, 23% prosthetic, 9% vein patch) to reoperative CEA was  $6.1 \pm 0.4$  years (range, 0.3 to 20.4 years). At reoperation, patch reconstruction was undertaken in 93% of cases. The perioperative stroke rate was 1.9%, with no deaths or cardiac complications. Other complications included cranial nerve injury (1.3%) and hematoma (3.2%). Average follow-up after reoperative CEA was  $4.4 \pm 0.3$  years (range, 0.1 to 12.7 years), with an overall total stroke-free rate of 96% and a restenosis rate ( $> 50\%$ ) by carotid duplex of 9.2%. Among variables assessed for association with restenosis after reoperative CEA, only younger age was found to be significant ( $66 \pm 2.5$  years vs  $70 \pm 0.7$  years,  $p < .05$ ). The all-cause long-term mortality rate was 29%. Multivariate analysis of long-term survival identified diabetes mellitus as having a negative impact (hazard ratio,  $3.4 \pm 0.3$ ,  $p < .05$ ) and lipid-lowering agents as having a protective effect (hazard ratio,  $0.42 \pm 0.4$ ,  $p < .05$ ) on survival.

## **Conclusions**

Reoperative CEA is a safe and durable procedure, comparable to reported standards for primary CEA, for long-term protection from stroke. These data do not support the contention that patients who require reoperative CEA constitute a high-risk subgroup in which reoperative therapy should be avoided.