

Asymptomatic Carotid Stenosis in Cardiac Surgery Patients Is Less More?

Rebecca F. Gottesman, MD, PhD

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Carotid stenosis is a known risk factor for stroke after heart surgery¹; yet, outcome of surgeries combining carotid endarterectomy (CEA) with coronary artery bypass graft (CABG) is worse than after CABG alone.² It is not clear, however, whether this difference in outcomes is because of inherent differences in those people needing combined surgeries, who likely have more extensive vascular disease, as compared with individuals only requiring isolated CABG procedures. As a result of these differences in outcomes, other management options have been considered: previous studies have evaluated combined CEA or carotid stenting with CABG surgery, or staged surgeries, with some findings suggesting that stenting might be preferred in this population³ and that staged procedures might do better than combined procedures,⁴ but other studies failing to find a difference in outcome based on staged versus synchronous procedures.⁵ To date, no large clinical trial had directly compared therapy options head-to-head, which is why the safety of simultaneous CABG and carotid endarterectomy versus isolated CABG (CABACS [Coronary Artery Bypass graft surgery in patients with Asymptomatic Carotid Stenosis]) trial by Weimar et al,⁶ published in this issue of *Stroke*, is important in help address this question. Furthermore, this management question is timely because it inherently deals with another question at the forefront of debate in the stroke field: the optimal management of asymptomatic carotid stenosis.

Management of asymptomatic carotid stenosis in the general population is still a topic of much debate because the early carotid stenosis surgery trials,⁷ suggesting only a marginal benefit of surgery in individuals with carotid stenosis but without previous transient ischemic attack or stroke, took place in an era before the advent of statin therapy or current standards for maximal medical management. The CREST-2 trial (Carotid Revascularization and Medical Management for Asymptomatic Carotid Stenosis Trial),⁸ currently ongoing, will consider medical management compared with revascularization therapies (both CEA or carotid stenting), which will allow for direct comparison of these therapies and will hopefully guide management of asymptomatic disease in the general population. Certainly, the decision about how to manage

asymptomatic carotid disease in the setting of planned cardiac revascularization becomes somewhat more complex because surgical treatment of either may be complicated by disease in the other vascular bed, but the general lack of certainty about whether any revascularization is needed in individuals with asymptomatic disease extends to the particular cardiac surgery scenario as addressed in this issue of *Stroke*.

In the CABACS trial,⁶ individuals with asymptomatic carotid stenosis, detected by ultrasound, of at least 80% by European Carotid Surgery Trial criteria (corresponding to >70% for the North American Symptomatic Carotid Endarterectomy Trial),⁹ and with an indication for coronary surgical revascularization, were randomized to receive combined CEA with CABG versus CABG alone. Throughout the Czech Republic and Germany, 129 patients were enrolled, and the study was terminated early because of lack of funds. By intention-to-treat analysis, no statistical differences were noted between the groups, but follow-up was limited to 1 year. Although rates of stroke and death were generally higher than reported in some other studies, this is likely because of this being a relatively high risk and older population. Although not statistically different, the isolated CABG group tended to do better than did the combined procedure group (the 30-day and 1-year combined stroke/death rates were 18.5% and 23.4%, respectively, in the combined CEA/CABG group and were 9.7% and 13.1%, respectively, in the isolated CABG group). Importantly, both groups were managed with best medical treatment, including risk factor management with antiplatelet therapy, antihypertensives, and lipid-lowering drugs, and the majority of individuals in both treatment groups remained on statins, antiplatelet medications, and antihypertensive therapy, even up to 1 year out from surgery.

Although proponents of carotid revascularization in this setting could argue that this study may have failed to show a benefit from combined CEA/ CABG because (1) the lack of staging of the procedures (referring to doing one after the other instead of simultaneously) may have led to worse outcomes or (2) carotid stenting either combined or staged with CABG may have been more successful at reducing risk of stroke and death, it is important to consider another viewpoint, which is more clearly considered in the evaluation of asymptomatic carotid stenosis in the general population. This study suggests that even in the presence of concurrent coronary disease, not intervening on an asymptomatic carotid lesion may be better than an intervention. Modern medical management affords consideration of this option, and CREST-2 will help provide valuable data to answer whether selecting medical management over revascularization for asymptomatic carotid stenosis is safe, or even preferred, even in the absence of cardiac disease requiring cardiopulmonary bypass.

From the Department of Neurology, Johns Hopkins University School of Medicine; Baltimore, MD.

Guest Editor for this article was Seemant Chaturvedi, MD.

Correspondence to Rebecca F. Gottesman, MD, PhD, Phipps 446D, 600 N Wolfe St, Baltimore, MD. E-mail rgottesm@jhmi.edu

(*Stroke*. 2017;48:2650-2651.)

DOI: 10.1161/STROKEAHA.117.018754.)

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Stroke is available at <http://stroke.ahajournals.org>

DOI: 10.1161/STROKEAHA.117.018754

As the population requiring CABG surgery increases in age and comorbidities, it is likely that asymptomatic carotid stenosis will become increasingly prevalent among surgical candidates. Using Swedish registry data, evaluation of risk factors in individuals getting isolated CABG from 1987 to 2006 demonstrated that the rate of diabetes mellitus more than doubled, and the rates of hypertension and prior stroke nearly tripled.¹⁰ Other studies have reported higher rates of carotid stenosis in more recent surgical cohorts compared with individuals undergoing cardiac surgery in earlier time epochs.¹¹ Thus, it will become increasingly important to know how to manage asymptomatic carotid disease in CABG candidates. Data from the CABACS trial, including its long-term follow-up data that are still being collected, in combination with evidence from CREST-2 and other trials evaluating asymptomatic carotid stenosis management in the general population, will help guide clinicians planning CABG, or treating asymptomatic carotid stenosis patients who are in need of CABG. About management of asymptomatic carotid stenosis in individuals requiring cardiopulmonary bypass surgery, it may be that less is more.

Disclosures

Dr Gottesman is an Associate Editor for *Neurology* and receives grant funding, unrelated to this editorial, from the National Institutes of Health.

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KEY WORDS: Editorials ■ carotid stenosis ■ coronary artery bypass ■ endarterectomy, carotid ■ stroke ■ randomized controlled trial

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Stroke. 2017;48:2650-2651; originally published online September 15, 2017;
doi: 10.1161/STROKEAHA.117.018754

Stroke is published by the American Heart Association, 7272 Greenville Avenue, Dallas, TX 75231

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Print ISSN: 0039-2499. Online ISSN: 1524-4628

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