

MINNEAPOLIS HEART INSTITUTE'S
JOURNALSCAN
 The Physician's Source for the Latest in Cardiovascular Care Essential to Primary Care Practice

ENDARTERECTOMY VERSUS STENTING IN PATIENTS WITH SYMPTOMATIC SEVERE CAROTID STENOSIS

Carotid stenting is less invasive than endarterectomy, but it is unclear whether it is as safe in patients with symptomatic carotid-artery stenosis. This multicenter, randomized, noninferiority trial compared stenting with endarterectomy in patients with a symptomatic carotid stenosis of at least 60%. The primary endpoint was the incidence of any stroke or death within 30 days after treatment.

The trial was stopped prematurely after the inclusion of 527 patients for reasons of both safety and futility. The 30-day incidence of any stroke or death was 3.9% after endarterectomy; the relative risk of any stroke or death after stenting as compared with endarterectomy was 2.5. The 30-day incidence of disabling stroke or death was 1.5% after endarterectomy and 3.4% after stenting; the relative risk was 2.2. At six months, the incidence of any stroke or death was 6.1% after endarterectomy and 11.7% after stenting ($P=0.02$). There were more major local complications after stenting and more systemic complications (mainly pulmonary) after endarterectomy, but the differences were not significant. Cranial nerve injury was more common after endarterectomy than after stenting.

In this study of patients with symptomatic carotid stenosis of 60% or more, the rates of death and stroke at one and six months were lower with endarterectomy than with stenting.

Mas JL, Chatellier G, Beyssen B, Branchereau A, Moulin T, Becquemin JP, et al. Endarterectomy versus stenting in patients with symptomatic severe carotid stenosis. *N Engl J Med*. 2006 Oct 19;355(16):1660-71.

30 DAY RESULTS FROM THE SPACE TRIAL OF STENT-PROTECTED ANGIOPLASTY VERSUS CAROTID ENDARTERECTOMY IN SYMPTOMATIC PATIENTS: A RANDOMISED NON-INFERIORITY TRIAL

Carotid endarterectomy is effective in stroke prevention for patients with severe symptomatic carotid-artery stenosis, and carotid-artery stenting has been widely used as alternative treatment. Since equivalence or superiority has not been convincingly shown for either treatment, this study compared the two.

1200 patients with symptomatic carotid-artery stenosis were randomly assigned within 180 days of transient ischaemic attack or moderate stroke (modified Rankin scale score of $<$ or $=3$) carotid-artery stenting ($n=605$) or carotid endarterectomy ($n=595$). The primary endpoint of this hospital-based study was ipsilateral ischaemic stroke or death from time of randomisation to 30 days after the procedure. The non-inferiority margin was defined as less than 2.5% on the basis of an expected event rate of 5%. Analyses were on an intention-to-treat basis. This trial is registered at Current Controlled Trials with the international standard randomized controlled trial number ISRCTN57874028.

1183 patients were included in the analysis. The rate of death or ipsilateral ischaemic stroke from randomisation to 30 days after the procedure was 6.84% with carotid-artery stenting and 6.34% with carotid endarterectomy (absolute difference 0.51%, 90% CI -1.89% to 2.91%). The one-sided p value for non-inferiority is 0.09.

SPACE failed to prove non-inferiority of carotid-artery stenting compared with carotid endarterectomy for the periprocedural complication rate. The results of this trial do not justify the widespread use in the short-term of carotid-artery stenting for treatment of carotid-artery stenoses. Results at 6-24 months are awaited.

SPACE Collaborative Group; Ringleb PA, Allenberg J, Bruckmann H, Eckstein HH, Fraedrich G, Hartmann M, et al. 30 day results from the SPACE trial of stent-protected angioplasty versus carotid endarterectomy in symptomatic patients: a randomised non-inferiority trial. Lancet. 2006 Oct 7;368(9543):1239-47.

Comment:

These two provocative trials again review the efficacy of the old standard, carotid endarterectomy (CEA) against the new option of carotid artery stenting (CAS) in patients with symptomatic significant carotid stenosis. In the SAPPHIRE Trial, high risk patients were randomized to either CAS or CEA utilizing a standardized stent platform and distal protection device (DPD). The SAPPHIRE Registry was comprised of primarily patients treated with CAS after being turned down for CEA. The results of the main study and the registry demonstrated clear non-inferiority of CAS with a trend in favor of CAS. The use of a DPD clearly decreased incidence of neurological events in the majority of CAS trials.

In the EVA-3S Trial, the authors concluded the risk of stroke or death at six months was much greater with CAS than CEA (11.7% vs 6.1%) resulting in the early termination of the trial. However, the experience of the CAS

operators was significantly inferior (<5 cases/operator) to that of the CEA operators (>25 cases).

The use of DPDs was also not universal. Multiple combinations of stent and DPD were used in this study which typically leads to inexperience with these devices and therefore higher complication rates. This is reflected by the much higher event rate in this trial than any other CAS study cohort (<6%). The use of widely accepted dual anti-platelet regimen post procedure was also poorly standardized. The study was terminated prematurely based on the event rates prior to reaching the intended statistical endpoints.

In the SPACE Trial, the authors reached similar conclusions despite the similarity of overall event rates in both arms. The use of DPDs and anti-platelet agents were also not standardized and left to the “discretion” of individual operators. This trial was terminated early due to funding issues and difficulty with enrollment. It did not enroll the intended number of patients necessary to reach statistical significance.

CAS is approved in the U.S. for high-risk symptomatic patients based on the results of the SAPPHIRE Trial. Many of these patients would otherwise not have the option of CEA. There are a number of ongoing trials evaluating CAS in both the symptomatic and asymptomatic populations with much more rigorous standards than either the EVA-3S or SPACE trials. Although both trials were well intended, their conclusions are not well supported. Future trials will offer greater insight into this controversial subject. — **Y. WangMD**, Senior Consulting Cardiologist, Minneapolis Heart Institute.

###

EDITOR-IN-CHIEF	MANAGING EDITOR	CONTRIBUTING EDITOR
M. Nicholas Burke, MD	Michelle Croteau	Y. Wang, MD
<i>Minneapolis Heart Institute's Journal Scan</i> is produced regularly by the Minneapolis Heart Institute. <i>Journal Scan</i> provides expert, practical commentary on breaking cardiovascular research for primary care physicians.		
<p align="center">Minneapolis Heart Institute 920 East 28th Street, Suite 300 • Minneapolis, Minnesota 55407 • Telephone: 612-863-4899 View electronically at www.mplsheart.com/journalscan</p> <p><i>The information in Journal Scan is for educational purposes only, and is not intended to be a replacement or substitution for professional medical care. Only a qualified health care provider can diagnose and treat a health problem or disease. The Minneapolis Heart Institute will not be responsible for the misuse of the information in this newsletter.</i></p> <p>© Copyright 2006 Minneapolis Heart Institute. All Rights Reserved. Minneapolis Heart Institute® is a trademark of Minneapolis Heart Institute, Inc.</p>		