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Predictors of Stroke, Myocardial Infarction or Death within 30 Days of Carotid Artery Stenting: Results from the International Carotid Stenting Study

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WHAT THIS PAPER ADDS

The International Carotid Stenting Study (ICSS) compared carotid artery stenting (CAS) with endarterectomy for stroke prevention in patients with recently symptomatic carotid artery stenosis. The aim of the present study was to determine if there were specific factors related to CAS procedures, the process of care, or baseline patient characteristics that significantly increased or decreased the risk of stroke, myocardial infarction, or death within 30 days of CAS in ICSS. It was found that increasing age independently increased the risk of CAS, while the risk was significantly lower in patients undergoing a right-sided procedure, in patients taking the combination of aspirin and clopidogrel, and in those presenting only with amaurosis fugax. Cerebral protection device use did not modify the risk, but the risk was significantly higher in patients treated with an open-cell stent compared to a closed-cell stent.

Objectives: Stroke, myocardial infarction (MI), and death are complications of carotid artery stenting (CAS). The effect of baseline patient demographic factors, processes of care, and technical factors during CAS on the risk of stroke, MI, or death within 30 days of CAS in the International Carotid Stenting Study (ICSS) were investigated.
Methods: In ICSS, suitable patients with recently symptomatic carotid stenosis $>$ 50% were randomly allocated to CAS or endarterectomy. Factors influencing the risk of stroke, MI, or death within 30 days of CAS were examined in a regression model for the 828 patients randomized to CAS in whom the procedure was initiated.
Results: Of the patients, 7.4% suffered stroke, MI, or death within 30 days of CAS. Independent predictors of risk were age (risk ratio [RR] 1.17 per 5 years of age, 95% CI 1.01–1.37), a right-sided procedure (RR 0.54, 95% CI 0.32–0.91), aspirin and clopidogrel in combination prior to CAS (compared with any other antiplatelet regimen, RR 0.59, 95% CI 0.36–0.98), smoking status, and the severity of index event. In patients in whom a stent was deployed, use of an open-cell stent conferred higher risk than use of a closed-cell stent (RR 1.92, 95% CI 1.11–3.33). Cerebral protection device (CPD) use did not modify the risk.
Conclusions: Selection of patients for CAS should take into account symptoms, age, and side of the procedure. The results favour the use of closed-cell stents. CPDs in ICSS did not protect against stroke.

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INTRODUCTION

Carotid artery stenting (CAS) is an endovascular alternative to carotid endarterectomy (CEA) for the treatment of symptomatic atherosclerotic disease of the carotid artery. The International Carotid Stenting Study (ICSS) was a large

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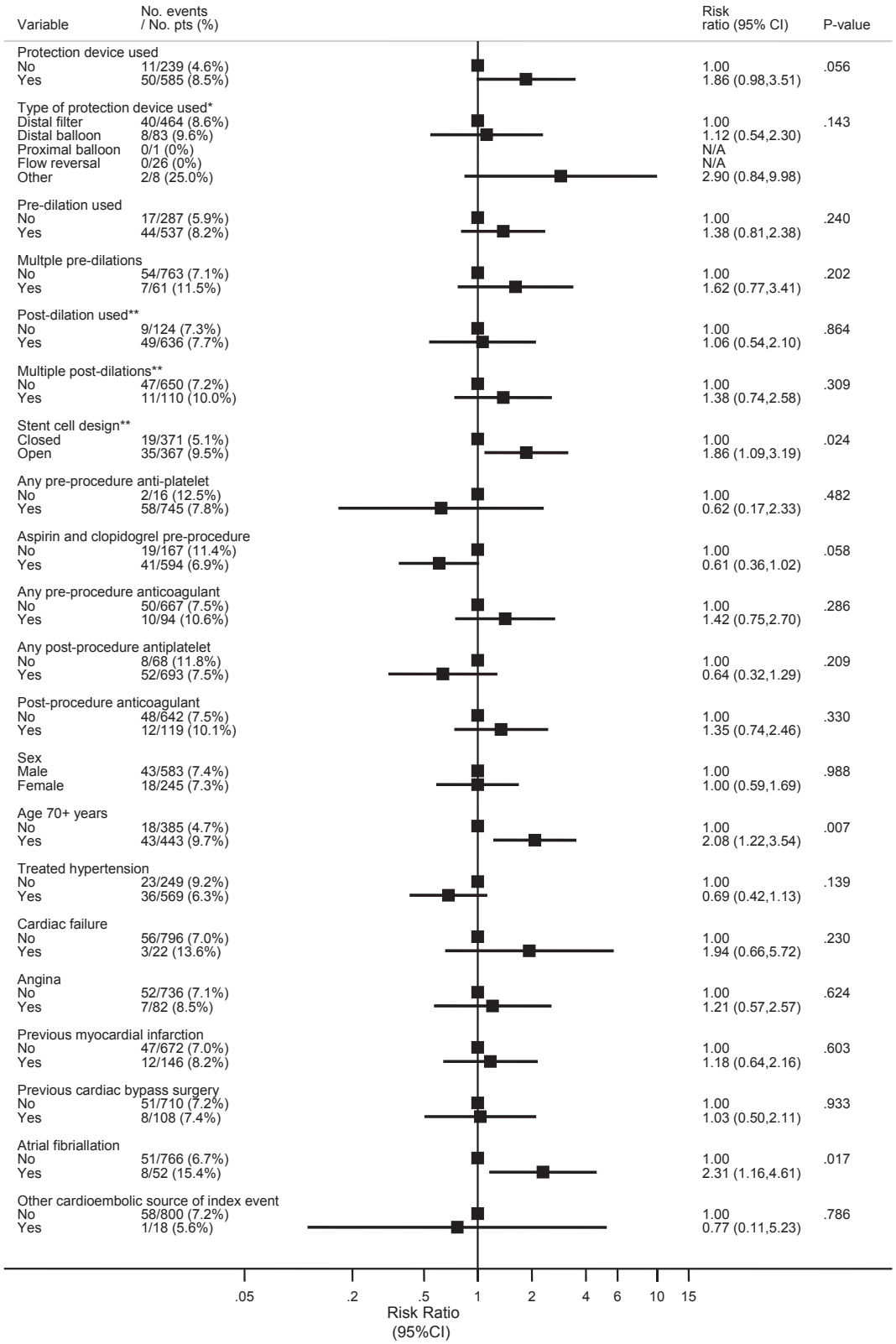

Figure 1. Univariable predictors of the risk of stroke, myocardial infarction or death within 30 days of carotid artery stenting in 828 ICSS per-protocol participants in whom the procedure was initiated.* Only patients with a protection device. ** Only patients were a stent was deployed. Patients with missing data were excluded for each relevant analysis. Variables with >1% missing data are: stent cell design (3%), any pre-procedure antiplatelet (8%), aspirin and clopidogrel pre-procedure (8%), any pre-procedure anticoagulant (8%), any post-procedure antiplatelet (8%), any post-procedure anticoagulant (8%), baseline Rankin score (2%), duration of CAS (17%), baseline systolic BP (6%), baseline diastolic BP (6%), and cholesterol (14%).