

Introduction

In 2010, the Carotid Revascularization Endarterectomy Versus Stenting Trial (CREST) found no difference in composite outcomes (stroke, myocardial infarction, or death) between carotid artery stenting (CAS) and carotid endarterectomy (CEA); however, a higher rate of periprocedural strokes was noted with CAS.

Methods

The National Inpatient Sample (NIS) database was used to determine procedure utilization as well as patient age, gender, comorbidities, discharge disposition (none to minimal disability versus moderate to severe disability), and postprocedural complications and outcomes (neurological, cardiac, composite, and death) for 2009 (pre-CREST) and 2011 (post-CREST).

The pre-CREST CAS, post-CREST CEA, and post-CREST CAS groups were compared to the reference (pre-CREST CEA) group to identify changes in utilization and differences in discharge disposition, postprocedural complications, and composite outcomes. The post-CREST CAS and CEA groups were compared to identify differences in discharge disposition, postprocedural complications, and composite outcomes.

Results

Utilization of CEA and CAS did not change following CREST publication.

The pre- and post-CREST CAS groups demonstrated more severe disability ($p=0.008$ and $p<0.0001$, respectively) and more frequent neurological complications ($p=0.0003$ and $p=0.005$, respectively) compared to the reference, while the post-CREST CEA group exhibited more frequent cardiac complications ($p=0.01$).

The pre-CREST CAS and post-CREST CEA groups showed worse composite outcomes ($p=0.008$ and $p=0.02$, respectively), with greater inpatient mortality $p=0.0004$ in the pre-CREST CAS group.

When comparing post-CREST CEA and CAS groups, the CAS group demonstrated more severe disability (OR=0.6, 95%CI=0.5-0.8, $p=0.001$) with more frequent neurological complications and worse composite outcomes (OR=0.6, 95%CI=0.4-0.8, $p=0.0004$ and OR=0.7, 95%CI=0.5-0.9, $p=0.005$, respectively).

Similar results were found with adjustment for age, gender, and comorbidities.

Conclusions

There has been no change in CAS or CEA utilization following CREST publication. CAS is associated with more severe disability at discharge with greater risk of postprocedural neurological complications and worse composite outcomes compared to the reference and post-CREST CEA groups.

Learning Objectives

By the end of this session, participants should be able to:

- Describe any changes in utilization of CAS and CEA in the post-CREST period
- Compare discharge dispositions in CAS versus CEA in the pre- and post-CREST periods
- Compare rates of neurological complications and composite outcomes in CAS versus CEA in the pre- and post-CREST periods

References

Brott, Thomas G., et al. "Stenting versus endarterectomy for treatment of carotid-artery stenosis." *New England Journal of Medicine* 363.1 (2010): 11-23.

Carotid Artery Stenosis



Angiography showing carotid artery stenosis in a symptomatic patient.

Carotid Artery Stent



Angiogram following carotid artery stent placement in the same patient.