Predictors of Bad Outcomes After CAS and CEA
- They Are Not The Same -

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Predictors of Bad CAS & CEA Outcomes
- Disclosures -

I have nothing relevant to disclose

Predictors of Bad CAS & CEA Outcomes
- The Menu of Possible Complications -

- Death – the ultimate bad outcome
- Stroke – major, minor, transient
- MI – symptoms, enzymes, EKG
- Miscellaneous and less important

Predictors of Bad CAS & CEA Outcomes
- The Decade of CAS Pseudoscience -

Predictors of Bad CAS & CEA Outcomes
- Lessons Learned Through Bad Experiences -

- Type 3 aortic arch

We learned to avoid these anatomies for CAS due to their technical difficulties and the fear of embolization, but often without any specific data.

- Circumferential calcification

Predictors of Bad CAS & CEA Outcomes
- Time Has Brought Both Data & (Some) Clarity -

- SPACE Trial
- EVA-3S Trial
- ICSS Trial
- CREST Trial
Predictors of Bad CAS & CEA Outcomes

- Long Term Durability of Stroke Prevention -
Any Ipsilateral Stroke or Any Procedural Stroke or Death

EVA-3S; Stroke 2014
CREST; NEJM 2016

In the CREST 4-year analysis, periprocedural events were 73% of all CAS & 58% of all CEA events.

Predictors of Bad CAS & CEA Outcomes

- The Effect of Patient Age in SPACE -
Any Ipsilateral Stroke or Death Within 30 Days

SPACE; Lancet Neurology 2008

Predictors of Bad CAS & CEA Outcomes

- Effect of Other Clinical Variables in SPACE -

No significant differences in outcomes between CAS or CEA for gender, qualifying event, contralateral stenosis, side of intervention, or severity of index stenosis.

Predictors of Bad CAS & CEA Outcomes

- The Effect of Patient Age in CREST -
Periprocedural Stroke, MI, or Death or 4-Year Ipsilateral Stroke

CREST; NEJM 2010
Predictors of Bad CAS & CEA Outcomes
- The Effect of Patient Age in ICSS -
Thirty Day Risk of Stroke, MI, or Death with Carotid Stenting

Predictors of Bad CAS & CEA Outcomes
- Other Significant ICSS 30-Day CAS Findings -
Thirty Day Risk of Stroke, MI, or Death with Carotid Stenting

Predictors of Bad CAS & CEA Outcomes
- Patient Variables

Predictors of Bad CAS & CEA Outcomes
- Procedural Variables

Predictors of Bad CAS & CEA Outcomes
- Do Gender & Symptoms Matter for CAS / CEA -
• conflicting reports in the older historical literature, some indicating / some refuting higher risks for women with CEA
• contemporary series have not demonstrated an outcome differential between men & women, or for symptomatic status, for either CAS or CEA

Predictors of Bad CAS & CEA Outcomes
- What About Myocardial Infarction? -
• CEA has higher MI risk than CAS (2.3% vs 1.1% in CREST)
• but is that clinically significant?

Predictors of Bad CAS & CEA Outcomes
- What About Cranial Nerve Dysfunction? -
• 4.7% in the CEA group in CREST (0.3% in CAS group)
• ECST (2004) reported 5.1% (88/1739); 3.7% at discharge
• 67% hypoglossal or marginal mandibular nerve palsies
• indicative of more distal ICA dissection & retraction
• the latter of which has increased risk of stroke with CAS
• only 0.5% of total CN deficits persisted beyond 4 months

ECST; J Neurosurg 2004
Predictors of Bad CAS & CEA Outcomes
- Cranial Nerve Dysfunction With Redo CEA -

- 671 consecutive CEA procedures
- 547 primary operations → 5.3% CN injury
- 124 reoperations → 17% CN injury
- most of the CN injuries in both groups were transient

Predictors of Bad CAS & CEA Outcomes
- Summary of Increased CAS Risks -

- Type 3 aortic arches
- Atherosclerotic aortic arches
- Tortuous internal carotid arteries
- Ulcerated carotid lesions
- Circumferentially calcified lesions
- Age >70 years
- Longer lesions (≥12.85mm)
- Distal lesions
- Sequential lesions

CEA remains my primary therapy for clinically significant carotid disease!

AbuRahma; Stroke 2001

Unfortunately, CREST did not collect data on the type of aortic arch

CREST; J Vasc Surg 2016