Asymptomatic Carotid Stenosis: Surgery, Angioplasty or Medical Treatment

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Disclosure

I have no relevant financial relationships with proprietary entities producing health care goods or services related to the content of this presentation.

I participate in research for Endologix, Medtronic and Gore

Content may not reflect position of US Government
What to do with hemodynamically significant asymptomatic carotid stenosis?

- **When** to treat?
- **Treatment** method?
  - Best medical therapy
  - Endarterectomy – CEA
  - Angioplasty & stent - CAS
Historical Evidence for Decision Process

- Current practice management for carotid stenoses based on 30+ year old clinical trials
  - Compared available medical management to CEA
    - **Symptomatic** 70-99% stenoses – Randomized trial 1981-1994 – NACET
    - **Asymptomatic** 50-99% stenoses – Randomized trial 1983-2003 - ACAS

Executive Committee for the Asymptomatic Carotid Atherosclerosis Study. *JAMA* 1995
Historical Evidence for Decision Process

• **Medical management**
  - Risk factor modification + ASA
  - No Statin or current antiplatelet therapies
  - No modern agents for managing comorbidities
Historical Evidence for Decision Process

• Results
  • Symptomatic stenoses
    • 3%/yr prevention benefit from CEA
    • 6% stroke/death risk @ 30 days
  • Asymptomatic stenoses
    • 0.5-1%/yr. prevention benefit from CEA
    • 3% stroke/death risk @ 30 days

Halliday, et al. 10-year stroke prevention after successful carotid endarterectomy for asymptomatic stenosis *Lancet* 2010
Current Evidence for Decision Process

- **Medical management** - better today
  - Co-morbidities
  - Risk factors
- **Incidence of stroke in general population**
  - Progressively declining over past 30 years
  - Stroke risk ~ 0.5%/year now

Current Evidence for Decision Process

• CREST Trial
  • CEA outcomes improved
    • Stroke and/or death
      • Symptomatic ~ 4.7%
      • Asymptomatic ~ 2.7% or less
  • CAS Outcomes
    • Stroke and/or death
      • Symptomatic – 6.4%
      • Asymptomatic – 4.5%

• Outcomes of MI and cranial nerve injury
  • ? relevance

Silver FL, et al. Safety of stenting and endarterectomy by symptomatic status in the Carotid Revascularization Endarterectomy vs. Stenting Trial (CREST) Stroke
Factoids

- Screening risk stratified populations with Duplex Carotid Imaging – No Benefit!
  - No level I or II evidence to support this strategy
- CAS in USA reimbursed only
  - Tx of symptomatic > 50% stenosis/ulceration
  - Cerebral protection device must be used
  - Participation in FDA IDE trial
  - Participation in PMA registry

Asymptomatic Only

Centers for Medicare & Medicaid Services. National Coverage Determination (NDC) for Percutaneous Transluminal Angioplasty (PTA) (20.7) 2010
SO------?
What to Do With the Patient With Symptomatic Carotid Disease

• Best Overall Therapy
  • Aggressive medical management
    • Statins
    • Antiplatelet agents
    • Optimal risk factor control
    • Optimal comorbidity treatment
  • CEA or CAS

Abbott AL. Medical (nonsurgical) intervention alone is now best for prevention of stroke associated with asymptomatic severe carotid stenosis: Results of a systematic review and analysis. Stroke 2009
What to Do With the Patient With Asymptomatic Carotid Disease

- Aggressive medical management
- Intervention for evidence of disease progression
  - Worsening of lesion by duplex imaging
    - Vulnerable plaque – GSM <25
    - Critical stenosis - >80%
    - End diastolic spectral velocity >120cm/sec
    - Acceptable risk for intervention
- Onset of cerebral or retinal ischemic symptoms

Which Intervention is Best for the Asymptomatic Patient with Worsening Carotid Stenosis?

- CEA & CAS are NOT equivalent for stroke prevention when performed by average surgeon / interventionist

- Isolated centers / operators have produced documented equivalence in both symptomatic & asymptomatic patients


Who Benefits from CEA?

- Asymptomatic patients of low or average risk regardless of age
  - Peri-procedural stroke/death risk ~ 1.4%
- Patients with acute cerebral or retinal SSx who need intervention < 7 days
- Adverse anatomy for CAS
- Cost considerations

Who May Benefit from CAS? Patients at “high risk” for CEA

- CAS in asymptomatic patients considered high surgical risk or < 70 years of age
  - Peri-procedural stroke/death risk ~2.5%

<table>
<thead>
<tr>
<th>Cardiac Issues</th>
<th>Vascular Issues</th>
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<tbody>
<tr>
<td>NY Class III/IV CHF</td>
<td>Contralateral carotid occlusion</td>
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<tr>
<td>LVEF &lt; 30%</td>
<td>Recurrent stenosis after CEA</td>
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<td>Unstable angina</td>
<td>Neck radiation</td>
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<tr>
<td>Recent MI</td>
<td>Hostile anatomy</td>
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<td>Carotid bifurcation &gt;/= C2</td>
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Thank You