Current considerations for patient oriented revascularisation strategies: CAS vs. CEA vs. medical management

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Disclosure

Speaker name:

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I have the following potential conflicts of interest to report:

- [x] Consulting: Boston Scientific, Terumo, Endologix
- [ ] Employment in industry
- [ ] Stockholder of a healthcare company
- [ ] Owner of a healthcare company
- [ ] Other(s)

- [ ] I do not have any potential conflict of interest
Best Medical Therapy

BMT has improved over the years
## Asymptomatic stenosis

### Recommendations for management of asymptomatic carotid artery disease

<table>
<thead>
<tr>
<th>Recommendations</th>
<th>Class</th>
<th>Level</th>
</tr>
</thead>
<tbody>
<tr>
<td>In ‘average surgical risk’ patients with an asymptomatic 60–99% stenosis, CEA should be considered in the presence of clinical and/or more imaging characteristics that may be associated with an increased risk of late ipsilateral stroke, provided documented perioperative stroke/death rates are &lt;3% and the patient’s life expectancy is &gt;5 years.</td>
<td>IIa</td>
<td>B</td>
</tr>
<tr>
<td>In asymptomatic patients who have been deemed ‘high risk for CEA’ and who have an asymptomatic 60–99% stenosis in the presence of clinical and/or imaging characteristics that may be associated with an increased risk of late ipsilateral stroke, CAS should be considered, provided documented perioperative stroke/death rates are &lt;3% and the patient’s life expectancy is &gt;5 years.</td>
<td>IIa</td>
<td>B</td>
</tr>
<tr>
<td>In ‘average surgical risk’ patients with an asymptomatic 60–99% stenosis in the presence of clinical and/or imaging characteristics that may be associated with an increased risk of late ipsilateral stroke, CAS may be an alternative to CEA provided documented perioperative stroke/death rates are &lt;3% and the patient’s life expectancy is &gt;5 years.</td>
<td>IIb</td>
<td>B</td>
</tr>
</tbody>
</table>

*ESC – ESVS Guidelines 2017*
## Symptomatic stenosis

<table>
<thead>
<tr>
<th>Recommendations</th>
<th>Class&lt;sup&gt;a&lt;/sup&gt;</th>
<th>Level&lt;sup&gt;b&lt;/sup&gt;</th>
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</thead>
<tbody>
<tr>
<td>CEA is recommended in symptomatic patients with 70–99% carotid stenoses, provided the documented procedural death/stroke rate is &lt;6%.&lt;sup&gt;138,147&lt;/sup&gt;</td>
<td>I</td>
<td>A</td>
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<tr>
<td>CEA should be considered in symptomatic patients with 50–69% carotid stenoses, provided the documented procedural death/stroke rate is &lt;6%.&lt;sup&gt;138,147&lt;/sup&gt;</td>
<td>IIa</td>
<td>A</td>
</tr>
<tr>
<td>In recently symptomatic patients with a 50–99% stenosis who present with adverse anatomical features or medical comorbidities that are considered to make them ‘high risk for CEA’, CAS should be considered, provided the documented procedural death/stroke rate is &lt;6%.&lt;sup&gt;135,145,152&lt;/sup&gt;</td>
<td>IIa</td>
<td>B</td>
</tr>
<tr>
<td>When revascularization is indicated in ‘average surgical risk’ patients with symptomatic carotid disease, CAS may be considered as an alternative to surgery, provided the documented procedural death/stroke rate is &lt;6%.&lt;sup&gt;152,153&lt;/sup&gt;</td>
<td>IIb</td>
<td>B</td>
</tr>
<tr>
<td>When decided, it is recommended to perform revascularization of symptomatic 50–99% carotid stenoses as soon as possible, preferably within 14 days of symptom onset.&lt;sup&gt;138,154,155&lt;/sup&gt;</td>
<td>I</td>
<td>A</td>
</tr>
<tr>
<td>Revascularization is not recommended in patients with a &lt;50% carotid stenosis.&lt;sup&gt;138&lt;/sup&gt;</td>
<td>III</td>
<td>A</td>
</tr>
</tbody>
</table>

* Stroke or TIA occurring within 6 months.

<sup>a</sup> Class of recommendation.

<sup>b</sup> Level of evidence.
Carotid Artery Stenting in a single center: are six years of experience enough to achieve the standard of care?

Setacci C, Chisci E, de Donato G, Setacci F, Sirignano P, Galzerano G. *Eur J Vasc Endovasc Surg. 2007 Sep*
The importance of plaque evaluation

**Nicolaides classification**

1. Uniformly anechogenic

1. Predominantly hypoechochogenic

1. Predominantly echogenic

1. Uniformly echogenic

1. Unclassified (haevey calcification and acoustic shadowing)
Safety and Feasibility of Intravascular Optical Coherence Tomography Using a Nonocclusive Technique to Evaluate Carotid Plaques Before and After Stent Deployment

Carlo Setacci, MD; Gianmarco de Donato, MD; Francesco Setacci, MD; Giuseppe Galzerano, MD; Pasqualino Sirignano, MD; Alessandro Cappelli, MD; and Giancarlo Palasciano, MD

Department of Surgery, Vascular and Endovascular Surgery Unit, University of Siena, Italy.
New carotid stent design

Terumo - Roadsaver

Gore – Mesh carotid stent

Inspire – C-Guard
Optical Coherence Tomography Assessment of New Generation Mesh-Covered Stents after Carotid Stenting.

Umemoto T1, de Donato G, Pacchioni A, Reimers B, Ferrante G, Isobe M, Setacci C.
1. Which Patient Should Be Treated Invasively?

2. Which by CEA?

3. Which by CAS?

Those at high risk for stroke!
1. Which Asymptomatic Patient Should Be Treated Invasively

**Composite biomarker for high-risk patient/plaque**

- Hypoechoic and/or ulcerated plaque at DUS
- Thin/ruptured fibrous cap at MRI or OCT
- Embolic signals at TCD
- Intraplaque hemorrhage or large lipid-rich necrotic core at US & MRI
1. Which Asymptomatic Patient Should Be Treated Invasively?

2. Which by CEA?

3. Which by CAS?

Depends on:
- plaque type
- patients comorbidities
- anatomical complexity
Which by CEA, which by CAS

- Type / Vulnerability of the plaque & Rate of stenosis
- Age and comorbidities (cardiac / renal)
- Anatomical complexity
- Operative risks

by CEA
- Tight & dishomogeneous

by CAS
- Homogeneous
Which by CEA, which by CAS

- Type / Vulnerability of the plaque & Rate of stenosis
- Age and comorbidities (cardiac / renal)
- Anatomical complexity
- Operative risks

By CEA:
- Pts at risk of renal failure

By CAS:
- Pts at risk for MI
Which by CEA, which by CAS

- Type / Vulnerability of the plaque & Rate of stenosis
- Age and comorbidities (cardiac / renal)
- Anatomical complexity
- Operative risks

by CEA
- Pts with complex aortic arch

by CAS
- Restenotic lesion
- Attinic stenosis
- Hostile neck
Which by CEA, which by CAS

- Type / Vulnerability of the plaque & Rate of stenosis
- Age and comorbidities (cardiac / renal)
- Anatomical complexity
- Operative risks

By CEA
- Local expertise with CEA

The choice
- The procedure with documented better outcomes

By CAS
- Local expertise with CAS
Pts with carotid plaque

- CEA or CAS* + BMT in case of
  - Symptomatic stenosis
  - «High-grade» asymptomatic Stenosis (>80%) or «progression» Stenosis
  - Hypoechoic plaque + ulceration
  - <1% complications
  - Good life expectancy (3-5y)

- 6-month Surveillance (50-79% Stenosis)
CONCLUSIONS

Patient oriented revascularisation strategies: CAS vs. CEA vs. medical management

Suggestion to patients

- Please refer to high volume centers for both CEA & CAS
- They know what suits you best (CEA/CAS/BMT)
Thanks for your attention
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