Open heart surgery or carotid endarterectomy. Which procedure should be done first?

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Disclosure

Speaker name:

I have the following potential conflicts of interest to report:

- Consulting
- Employment in industry
- Stockholder of a healthcare company
- Owner of a healthcare company
- Other(s)

- I do not have any potential conflict of interest
Introduction

*Stroke* causes 1.1 million deaths annually in Europe, making it the second commonest cause of death.¹

The principal causes of ischaemic, carotid territory stroke are thromboembolism from the internal carotid artery (ICA) or middle cerebral artery (MCA) (25%), small vessel intracranial disease (25%), cardiac embolism (20%), other specified rarer causes (5%), and unknown causes despite investigation (25%).²

10-15% of all strokes follow thromboembolism from a previously asymptomatic ICA stenosis >50%²

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High risk for surgery patients

“high-risk for CEA” asymptomatic patient (SAPPHIRE)\(^4\)

- Clinically significant cardiac disease (Congestive heart failure, abnormal stress test or need for open heart surgery)
- Previous radical neck surgery, cervical radiation therapy
- Severe pulmonary disease
- Contralateral carotid occlusion
- Contralateral laryngeal-nerve palsy
- Recurrent stenosis after CEA and age >80 years

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Concomitant coronary and carotid disease

A meta-analysis reported that CABG patients with “50-100%” carotid stenoses faced a 7% risk of perioperative stroke, increasing to 9% in patients with 80-100% stenoses. 6

A systematic review suggested that CABG patients with carotid occlusion incurred an 11% risk of stroke after CABG. 6

CABG patients reporting a prior history of TIA/stroke and those with carotid occlusion incur a much higher risk of post-CABG stroke

6 Naylor AR, Bown MJ. Stroke after cardiac surgery and its association with asymptomatic carotid disease: an updated systematic review and meta-analysis. Eur J Vasc Endovasc Surg 2011;41:607e24
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• Routine prophylactic carotid revascularization is unlikely to reduce the prevalence of post-CABG stroke.
• The literature supports staged or synchronous carotid interventions in CABG patients with a history of stroke/TIA.
• The evidence would, however, support prophylactic CEA (or CAS) in patients with bilateral asymptomatic 70-99% stenoses, or a 70-99% stenosis with contralateral occlusion.

Interventional strategies include:

1. staged CEA followed by CABG
2. staged CABG followed by CEA
3. synchronous CEA and CABG
4. staged CAS followed by CABG
5. “same day” CAS þ CABG.

• Mortality was comparable across all treatment strategies in the early period, whereas higher stroke rates were observed in the combined CEA- CABG group and higher MI rates in the staged CEA-CABG
Open heart surgery or carotid endarterectomy. Which procedure should be done first?

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CHVNG/E - Cardiothoracic department

- 22 (20%) female, 86 (80%) male
- All asymptomatic carotid stenosis
- Elective and emergent OHS procedures

N= 108 Patients

Type of surgery procedure

<table>
<thead>
<tr>
<th>Type</th>
<th>Count</th>
</tr>
</thead>
<tbody>
<tr>
<td>Valvular replacement</td>
<td>32</td>
</tr>
<tr>
<td>CABG</td>
<td>56</td>
</tr>
<tr>
<td>Both</td>
<td>20</td>
</tr>
</tbody>
</table>
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CHVNG/E - Cardiothoracic department

N= 108 Patients

Death

3 in consequence to the cardiac event, 2 due to the neurologic event and 1 of non-related cause

None of the patients that developed post-operative TIA/stroke had history of a previous neurologic event nor the ones with carotid occlusion faced a post procedure neurologic event

Adverse events registered

- Cardiac event: 3, death: 6
- TIA/Stroke: 3, death: 6
- Death: 6

- Cardiac event: 2.80%
- TIA/Stroke: 2.80%
- Death: 4.60%
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N= 108 Patients

Stroke

Two of the neurologic events occurred in the corresponding side of a hemodynamic carotid stenosis although both patients had additionally significant aortic arch calcification and atrial fibrillation.

Grade of Carotid stenosis in each Patient

1 - ACID and ACIE < 50%
2 - ACIE 70-99%
3 - ACIE 50-69% and ACID 70-99%
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CHP – Vascular surgery department

- January 2011 – December 2015
- 17 (30%) female, 39 (70%) male
- Symptomatic carotid stenosis in 35 (65%) patients

N= 56 Patients

Anesthetic procedure

- 46 patients underwent general anesthesia
- 8 patients underwent local anesthesia
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**CHP – Vascular surgery department**

N= 56 Patients

Concomitant cardiac disease

- 42 coronary artery disease
- 11 valve disease
- 3 both

Patients distribution according to the carotid stenosis
Open heart surgery or carotid endarterectomy. Which procedure should be done first?

MD. Pedro Pinto Sousa – Centro Hospitalar Vila Nova de Gaia/Espinho

CHP – Vascular surgery department

N= 56 Patients

Adverse events registered

<table>
<thead>
<tr>
<th>Event</th>
<th>Series 1</th>
<th>Series 2</th>
</tr>
</thead>
<tbody>
<tr>
<td>Cardiac event</td>
<td>1</td>
<td></td>
</tr>
<tr>
<td>Stroke/TIA</td>
<td>1</td>
<td></td>
</tr>
<tr>
<td>Death</td>
<td>0</td>
<td>0%</td>
</tr>
</tbody>
</table>

N=56 Patients

1,70% 1,70% 0%
Open heart surgery or carotid endarterectomy. Which procedure should be done first?

Discussion

Cardiac surgery prior to carotid endarterectomy might be associated with higher adverse events rate.

Adverse events rate difference between groups did not reach statistical significance

(stroke 1.7% vs 2.8% p = 0.698; AMI 1.7% vs 2.8% p = 0.698; death 0% vs 4.6% p = 0.073)

Carotid endarterectomy in this high-risk group is challenging but may be feasible with acceptable complications rate and may indicate

A sub-group of patients with even unilateral significant (≥70%) CS could benefit from staged surgery prior to OHS.
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Conclusion

Notwithstanding, the risk of peri-operative stroke was much lower (2.8% vs 7%) than the reported in the recent guidelines from the European society of vascular surgery.

This results should be analyzed with some reservations due to the short period of time and patients contained. Further studies should take place to validate this results

We still question the recommendation for not screening patients to proposed OHS due to the high rate of patients with both pathologies that we find in our clinical practice
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Thank You!!

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