Our Best practice in CEA strategy:
is there a way to make surgery even better?

G.Coppi, R.Moratto
DISCLOSURE

NONE ON THIS SUBJECT
Our Best practice in CEA, .... for a better starting point

ECHO DUPLEX FOR SELECTION

ANGIO CT FOR DOCUMENTED DECISION AND SURGICAL STRATEGY

We can detect proximal and distal lesions, tortuosity, kinks, coils but also plaque composition and plaque length
Our Best practice in CEA

ECHO DUPLEX in O.R.: for pre-incision side check, detection of possible unexpected asymptomatic thrombosis ……

The day before
Pre-occlusive ICA lesion

Pre-op evaluation in O.R.
Asymptomatic ICA occlusion
Our Best practice in CEA

.........and for the identification of level of carotid bifurcation for a smaller incision + final control

Lower invasivity, lower cutaneous and cranial nerves injures
Gala Trial was not able to demonstrate different results of LA vs. GA, but only comparable advantages and disadvantages of each technique not affecting the outcome.
GALA TRIAL RESULTS
comparable advantages and disadvantages

<table>
<thead>
<tr>
<th>GA</th>
<th>LA</th>
</tr>
</thead>
<tbody>
<tr>
<td>More shunts (43% vs 14%) with risk of malposition, malfunctioning and ICA dissection</td>
<td>Anxiety, restless, claustrophobia, pain (4%)</td>
</tr>
<tr>
<td>More blood pressure instability (43% vs 17%)</td>
<td>Not rare difficult conversion (1.4%)</td>
</tr>
<tr>
<td></td>
<td>Damages from cervical block (4.4%)</td>
</tr>
<tr>
<td></td>
<td>Uncomfortable in elderly pts</td>
</tr>
<tr>
<td></td>
<td>Lower accuracy in agitated pts</td>
</tr>
</tbody>
</table>

No difference in stroke, MI, death
HYBRID ANAESTHESIA

Effectiveness and safety of carotid endarterectomy under remifentanil

<table>
<thead>
<tr>
<th>Outcome</th>
<th>&quot;Remifentanyl + CEA&quot;</th>
<th>Conventional-IRA + CEA</th>
<th>Remifentanyl + &quot;Conventional&quot;</th>
<th>Fisher exact test</th>
</tr>
</thead>
<tbody>
<tr>
<td>No. (%)</td>
<td>No. (%)</td>
<td>No. (%)</td>
<td>No. (%)</td>
<td></td>
</tr>
<tr>
<td>Stenosis &gt;75%</td>
<td>42 of 120 (35%)</td>
<td>30 of 120 (25%)</td>
<td>11 of 120 (9.1%)</td>
<td>0.012</td>
</tr>
<tr>
<td>Conduction</td>
<td>39 of 120 (32.5%)</td>
<td>30 of 120 (25%)</td>
<td>11 of 120 (9.1%)</td>
<td>0.012</td>
</tr>
<tr>
<td>Bypass</td>
<td>62 of 120 (51.7%)</td>
<td>50 of 120 (41.7%)</td>
<td>12 of 120 (10%)</td>
<td>0.398</td>
</tr>
<tr>
<td>Shunt applied</td>
<td>50 of 120 (41.7%)</td>
<td>50 of 120 (41.7%)</td>
<td>10 of 120 (8.3%)</td>
<td>0.031</td>
</tr>
<tr>
<td>TIA/ME</td>
<td>5 of 120 (4.2%)</td>
<td>2 of 120 (1.7%)</td>
<td>1 of 120 (0.8%)</td>
<td>0.033</td>
</tr>
<tr>
<td>Major stroke</td>
<td>2 of 120 (1.7%)</td>
<td>2 of 120 (1.7%)</td>
<td>1 of 120 (0.8%)</td>
<td>0.65</td>
</tr>
<tr>
<td>Mortality</td>
<td>0 of 120 (0%)</td>
<td>0 of 120 (0%)</td>
<td>0 of 120 (0%)</td>
<td>0.398</td>
</tr>
<tr>
<td>Morbidity/mortality ratio</td>
<td>11/24 (45.8%)</td>
<td>11/24 (45.8%)</td>
<td>1/24 (4.2%)</td>
<td>0.033</td>
</tr>
<tr>
<td>Hemorrhage</td>
<td>16 of 120 (13.3%)</td>
<td>20 of 120 (16.7%)</td>
<td>4 of 120 (3.3%)</td>
<td>0.048</td>
</tr>
<tr>
<td>Nausea, vomiting</td>
<td>19 of 120 (15.8%)</td>
<td>2 of 120 (1.7%)</td>
<td>0 of 120 (0%)</td>
<td>0.0002</td>
</tr>
</tbody>
</table>

Patient intubated but able to respond to the vocal command
Our Best practice in CEA

**HYBRID Anaesthesia**

- Controlled airways
- No conversion problems
- Selective shunt
- Comfortable for pts and surgeons
- Stability in blood pressure (lower manipulation up & down)
- Rapid induction and rapid restoration

Collects advantages of both Tecniques (LA & GA)
WHICH SURGICAL TECHNIQUE?

EA + PATCH OR EVERSION?

NO DIFFERENCES IN RANDOMIZED STUDIES

ARE THEY REALLY EQUAL?
Our Best practice in CEA

CEA: eversion technique

### Patch

- More bleeding
- Prosthetic material (risk of infection)
- No carotid body damage
- Best end point plaque control

Patch technique

better in straight ICA with long lesion and in high bifurcation
Our Best practice in CEA

CEA: eversion technique

Eversion

- More rapid
- No prosthetic material (lower risk of infection)
- Carotid body damage (avoid in bilateral carotid lesions)
- Worse end point plaque control in long lesions

Eversion technique

is better in redundant ICA with short lesion and lower bifurcation
PATCH or EVERSION?

Choose the most clever route for each patient

Considering the level of the bifurcation, the anatomy of the neck and the anatomy of the vessels …
## Our Best practice in CEA

Our CEA results @ 30 days: from January 2003 to December 2014

<table>
<thead>
<tr>
<th></th>
<th>N° of patients</th>
<th>Mean age</th>
<th>Stroke</th>
<th>Death</th>
<th>MI</th>
<th>Death/stroke</th>
</tr>
</thead>
<tbody>
<tr>
<td>CEA</td>
<td>1431</td>
<td>71.6</td>
<td>0.83%</td>
<td>0.14%</td>
<td>0.76%</td>
<td>0.97%</td>
</tr>
</tbody>
</table>

181 pts treated in acute

ALL MAE 1.87%
< 1% in Asympt. last 6 years

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<table>
<thead>
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</tr>
</thead>
<tbody>
<tr>
<td>SPACE</td>
<td>589</td>
<td>67.9</td>
<td>6.16%</td>
<td></td>
<td></td>
<td>7.5%</td>
</tr>
<tr>
<td>EVA 3-S</td>
<td>259</td>
<td>69.7</td>
<td>2.7%</td>
<td>1.54%</td>
<td></td>
<td>5.7%</td>
</tr>
<tr>
<td>ICSS</td>
<td>858</td>
<td>69.7</td>
<td>3.9%</td>
<td></td>
<td>4.7%</td>
<td></td>
</tr>
<tr>
<td>CREST</td>
<td>1240</td>
<td>69.2</td>
<td>2.3%</td>
<td>0.3%</td>
<td>2.3%</td>
<td>2.6%</td>
</tr>
</tbody>
</table>
IN CONCLUSION

Adequate experience of the centers and surgeons
surgery is not a pill
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