Minimal Invasive CEA Through AN INCISION < 3cm IN LENGTH: TECHNIQUE, Results, Precautions And Contraindications

WHAT YOU CHOOSE?

If one can safely perform CEA by minimal incision – let's do it routinely !!!

OPERATION MICE

INCISION

carotid bifurcation

If one can safely perform CEA by minimal incision – let's do it routinely !!!

WHAT YOU CHOOSE?

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Speaker name:
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I have the following potential conflicts of interest to report:

* Consulting
* Employment in industry
* Shareholder in a healthcare company
* Owner of a healthcare company
* Other(s)

X I do not have any potential conflict of interest
04. Reaching the Artery
Reaching the artery by tissue separation along the border of SternoCleidoMastoid muscle

05. Vessel Loop
Once the artery is visualized, apply the vessel loop on the ECA and Thyroid artery

06. ECA and CCA Vessel Loop
Pulling the ECA vessel loop up and to the opposite side (45° angle) reveals anterior and posterior portion of ICA

07. Anterior and Posterior Portion of ICA
Pulling the ECA vessel loop down and to the opposite side (30° angle) reveals anterior and posterior portion of ICA

08. ICA Above Atherosclerotic Plaque
The vessel loop on ICA MUST be located above atherosclerotic plaque

09. Clamp ICA for 30 seconds
Temporary clamping of ICA for 30 seconds should show if the shunt is needed

10. Continue Pulling if OK
If there are no neurological signs, continue pulling all vessel loops to elevate the artery to the level of the skin

11. Direction of Incision
Typically, longitudinal incision from CCA to the ICA is performed

12. Movement
Typical endarterectomy is performed with "eversion-like movement"

13. Dissection of the Plaque
Using forceps to hold ICA above the narrowing, we performed eversion-like movement that makes dissection of the atherosclerotic plaque easy

Always allow 1-2 seconds back flow from ICA to remove potential debris by the blood flow

15. Unclamp CCA short
Unclamp CCA for a short period of time to remove potential debris from the proximal part

16. Shunt
Should a shunt be indicated, it is easy and quick to insert!!!

17. Loosen ICA Loop
As a first step the shunt is inserted into ICA. It is necessary to slightly loosen ICA vessel loop

18. Same way
The shunt into CCA is then inserted in the same way
19. Suture
Continues suture /5.0 or 6.0/ is used to close the arteriotomy.

20. Artificial Patch Possible
If the ICA diameter is below 2 mm, artificial /PTFE/ patch can easily be used.

**Important aspects of the operation's technique**

**SUTURED ARTERY**

**21. Redon Drainage**
Redon drainage always used.

**22. Incision for Redon drainage**
Another incision for Redon drainage due to small incision for endarterectomy.

**23. Intradermal Suture**
Intradermal suture usually closes the wound (good cosmetic effect).

**STEP BY STEP**

**MICE – Minimal Incision Carotid Endarterectomy**

- **Step 01:** Incision over bifurcation
- **Step 02:** Vessel loops applying
- **Step 03:** Elevation of the bifurcation
- **Step 04:** Longitudinal incision
- **Step 05:** Artery closing
- **Step 06:** Redon drainage

**RESULTS**

<table>
<thead>
<tr>
<th>1 month observation</th>
<th>CE</th>
<th>MICE</th>
</tr>
</thead>
<tbody>
<tr>
<td>Death</td>
<td>1</td>
<td>2</td>
</tr>
<tr>
<td>Ischemic Stroke</td>
<td>2</td>
<td>2</td>
</tr>
<tr>
<td>Haemorrhagic Stroke</td>
<td>1</td>
<td>0</td>
</tr>
<tr>
<td>Bleeding</td>
<td>1</td>
<td>1</td>
</tr>
<tr>
<td>Nerve injury</td>
<td>2</td>
<td>0</td>
</tr>
<tr>
<td>Hoarseness</td>
<td>1</td>
<td>0</td>
</tr>
</tbody>
</table>

**Patients randomly allocated**
Randomized patients into treatment groups. Surgical technique depended on the operator. 3 surgeons in group MICE, 2 surgeons in group CE.

165 Patients: 165 consecutive patients

**TEAM EXPERIENCE**

**Total 165 Patients:**
- **122 Patients** Minimal Incision Carotid Endarterectomy (MICE)
- **43 Patients** Classic Endarterectomy (CE)

**RESULTS**

- **Death**
  - CE: 1 (2.3%)
  - MICE: 2 (1.6%)
- **Ischemic Stroke**
  - CE: 2 (4.7%)
  - MICE: 2 (1.6%)
- **Haemorrhagic Stroke**
  - CE: 1 (2.3%)
  - MICE: 0 (0%)
- **Bleeding**
  - CE: 1 (2.3%)
  - MICE: 1 (0.8%)
- **Nerve injury**
  - CE: 2 (4.7%)
  - MICE: 0 (0%)
- **Hoarseness**
  - CE: 1 (2.3%)
  - MICE: 0 (0%)
SOME EXAMPLES 1

0
0
2

MICE – Minimal Incision Carotid Endarterectomy – automatic retractor not routinely used

Small Wound
Low possibility to damage neck anatomical structures
Safe Operation
The aim is safe operation, small incision – additional advantage
Easy to Reoperate
Small incision makes it easy if reoperation is needed
Quick Recovery of the Patient
On the next day post surgery patient can be safely discharged from the hospital

CONCLUSION

Thank YOU for Your Time

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Many thanks to my colleagues especially:
S. Mazur, P. Ciostek, J. Łastowiecki
Presented technique and data soon to be published

SOME EXAMPLES 2

MICE – Minimal Incision Carotid Endarterectomy – pictures of the neck

Small incision
Reaching the artery by tissue separation along the border of SternoCleidoMastoid muscle
Pulling the ECA vessel loop up enables visualization and applying a vessel loop on the CCA

Incision MUST be done over carotid bifurcation

SOME EXAMPLES 3

Post MICE – Minimal Incision Carotid Endarterectomy

Scare Length – MICE Method

Soon after Operation
Nearly no limitation in neck movement
Long Term Effect
Quick wound healing

Low Risk of SICE

LOW RISK OF SICE

Minimal incision reduces level of patients’ discomfort and aids quick recovery after surgery

CONCLUSION

According to my experience seem to be same as for classical CEA

PRECAUTIONS

MICE – less Ischemic stroke, less haemorrhagic stroke, less bleeding, less nerve injury, less hoarseness, lower risk, greater patient’s comfort, better, more innovative approach.

CONTRAINDICATIONS

End to Side Anastomosis
Remote movement of the leg of prosthesis

OTHER MINIMAL INCISIONS

Transverse Incision – 2 cm above umbilicus
Rectus abdominis not cut

3 cm Incision on the Medial Side of the Leg

Hook–Like Maneuver to Elevate Popliteal Artery
Deeply in an acute angle

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