When Is Open Surgery Indicated After CAS With ISR: What Procedure Should Be Done So It Is Safe

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Outcome of the surgical repair of carotid in-stent restenosis

Indications
- Plaque proximally placed to deployed stent
- Unsuccessful redo endovascular approach
- Heavy calcified plaque, protrusion, LAL Type 4/5
- Refuse of new endovascular approach

Type of CAS ISR
- Primary CAS
- CAS for Post-CEA restenosis

Operative techniques
- Endarterectomy with stent removal
- Bypass graft

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Operative management and outcome

<table>
<thead>
<tr>
<th>Procedure</th>
<th>Operative Time</th>
<th>Postoperative Complications</th>
<th>Outcome</th>
</tr>
</thead>
<tbody>
<tr>
<td>Dacron Patch</td>
<td>75 minutes</td>
<td>-</td>
<td>no complications</td>
</tr>
<tr>
<td>Dacron Patch</td>
<td>89 minutes</td>
<td>-</td>
<td>no complications</td>
</tr>
<tr>
<td>Dacron Patch</td>
<td>70 minutes</td>
<td>-</td>
<td>no complications</td>
</tr>
<tr>
<td>Dacron Patch</td>
<td>74 minutes</td>
<td>-</td>
<td>no complications</td>
</tr>
<tr>
<td>Dacron Patch</td>
<td>65 minutes</td>
<td>-</td>
<td>no complications</td>
</tr>
<tr>
<td>PTFE graft</td>
<td>135 minutes</td>
<td>XII CN damage</td>
<td>good vocal cord impairment</td>
</tr>
<tr>
<td>PTFE graft</td>
<td>128 minutes</td>
<td>-</td>
<td>no complications</td>
</tr>
</tbody>
</table>

12 months Follow-up (3-18 months)

- 2 patients (28.5%) died for Myocardial Infarction without restenosis at duplex scan
- 5 patients (71.5%) were asymptomatic without recurrent restenosis at duplex scan

Disclosure

Nothing to disclose
Outcome of the surgical repair of carotid in-stent restenosis

Patient 1

Plaque proximally placed

Patient 2

Plaque proximally placed

Patient 3

Plaque Protrusion

Technical tips in surgical stent rescue in Post CEA-CAS

- Wide cervicotomy
- Dissection of CCA and ICA in disease free tissue (post CEA diffuse fibrosis)
- No Bulb dissection (no stent extraction)
- Extensive mobilization of hypoglossal-vagal confluence
- Bypass (PTFE, Cormier technique)
- End-to side proximal anastomosis on CCA
- End-to end distal anastomosis after ligation of ICA above the carotid stent

Advantages
- Avoidance of difficult dissection of the bulb in presence of periadventitial fibrosis
- Very distal dissection of ICA
- Longer operative time
- Cranial nerve injuries

Disadvantages
Outcome of the surgical repair of carotid in-stent restenosis

Conclusions

- Surgical treatment must be proposed only in selective cases preferring the endovascular approach treatment whenever possible.

- Surgical rescue is feasible and safe.

- In cases of surgical rescue after primary CAS a classical CEA is safe, not technically demanding with very low morbidity and mortality rate and optimal long-term results.

- In cases of surgical rescue after post CEA CAS, bypass graft with PTFE presents the advantage to avoid difficult dissection but seems to be more technical demanding especially in cases of very distal dissection and closure of ICA is requested.