
Chernyavskiy M., MD, PhD, Chernova D., Zherdev N., Chernov A.
Almazov National Medical Research Centre,
Saint Petersburg, Russia

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Disclosure

Speaker name:

..........................Chernova DV..........................

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
Aims

The main objective of our experience is to assess the early and long-term results of hybrid surgical treatment in patients with aortic arch aneurysms (Z1-Z2).
Materials and methods.

- From December 2016 in Clinic of the Vascular Surgery Almazov National Medical Research Centre 23 patients with aortic arch aneurysm were treated.
- Mean age was 67 years (from 57 to 81)
- The significant concomitant pathology and risk factors were: arterial hypertension, CAD, dyslipidemia, smoking (Table 1).
- Preprocedural computer tomography (CT) angiography was done to confirm aneurysm morphology.

<table>
<thead>
<tr>
<th>Demography</th>
<th>Patients (n = 23)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Male</td>
<td>16 (69.5%)</td>
</tr>
<tr>
<td>Aneurysm diameter (cm, mean ± SD)</td>
<td>6.56 ± 3.21</td>
</tr>
<tr>
<td>Dyslipidemia</td>
<td>17</td>
</tr>
<tr>
<td>Smoking</td>
<td>17</td>
</tr>
<tr>
<td>Hypertension</td>
<td>18</td>
</tr>
<tr>
<td>Coronary artery disease</td>
<td>13</td>
</tr>
<tr>
<td>Chronic obstructive pulmonary disease</td>
<td>6</td>
</tr>
<tr>
<td>Peripheral artery occlusive disease</td>
<td>9</td>
</tr>
<tr>
<td>Stroke/ TIA</td>
<td>6</td>
</tr>
</tbody>
</table>

Table 1. Patient’s demography profile
The hybrid procedures were carried out in two stages:

- **first stage** for all patients was extra-anatomic bypass of brachiocephalic arteries for increase proximal landing zone (**Table 1**);

- **second stage** was TEVAR in Z1-Z2 zones.

<table>
<thead>
<tr>
<th>Zone</th>
<th>Bypass</th>
<th>N / %</th>
</tr>
</thead>
<tbody>
<tr>
<td>Z 1</td>
<td>Carotid – carotid – left subclavian artery bypass graft</td>
<td>9 / (39.2%)</td>
</tr>
<tr>
<td>Z 2</td>
<td>Carotid – left subclavian artery bypass graft</td>
<td>14 / (60.8%)</td>
</tr>
</tbody>
</table>

**Table 2. Types of extra-anatomic bypasses performed**

*We called this technique “soft” hybrid surgical interventions **in high risk patients** to avoid traumatic access, cardio-pulmonary bypass, to reduce the risk of perioperative complications, to accelerate postoperative rehabilitation*
Case presentation

A 78-year-old man with dysphagia, chest pain, hoarseness, saccular aneurysm (95mm x 61 mm) immediately distal to the ostium of the left common carotid artery (CCA) (*Figure 1*).

**Surgical strategy:**

- Open repair of the aortic aneurysm was associated with extremely high risk of postoperative complications due to the advanced age, comorbidities (*COPD and stroke in history*), location of the aneurysm, and specific features of proximal aortic branches.

*Figure 1. Preoperative CT-angiography*
- **First stage** (open surgical approach) performing an *extra-anatomic bypass* – left-right carotid and left subclavian-carotid arteries synthetic graft bypass.
- **Second stage** was TEVAR (*Figure 2*).
- On the 10\(^{th}\) day the patient was discharged (*Figure 3*).

*Figure 2. Intraoperative angio*

*Figure 3. Postprocedural CT-angiography*
Results

- Technical success was 100%.
- In the early post-operative period there were no renal and heart failure.
- In 1 patient after TEVAR with dislocation and overlapping of the left common carotid artery origin, were TIA and left upper extremity ischemia, which required stenting the left common carotid artery origin.
- The overall 30-day mortality rate was 0%.
- Mean in-hospital stay was 6,1 days.
- There were no endoleaks or dissection intra-operatively and in 9-12 months control CT-scan after the procedure.
- 1 year survival accounted for 96,2%. 
Conclusions.

The results may indicate that treatment of aortic arch aneurysm with hybrid technologies has potential benefits:

- the absence of a massive operating trauma and blood loss,
- reduced risk of complications,
- reduction of the patient's in-hospital stay with good long-term results.
Thanks for attention!

Chernyavskiy M., MD, PhD, Chernova D., Zherdev N., Chernov A.
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