Carotid artery stenting with the use of proximal neuroprotection device and mesh–covered stent implantation for the treatment of severe, bilateral carotid artery stenosis.

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Background:
Double-protection of the brain during carotid artery stenting (CAS) by embolic protection device (EPD) and mesh-covered stent is a novel treatment modality.

Case:
We present 62-year-old man with advanced multi-level atherosclerosis.

The medical history included:
• recent right-hemisphere stroke,
• two myocardial infarctions,
• coronary artery bypass surgery,
• congestive heart failure
• lower extremity arterial disease,
• type 2 diabetes,
• chronic kidney disease,
• hypertension,
• hyperlipidemia

On non-invasive examination (carotid Doppler ultrasound) severe bilateral internal carotid arteries (ICA) stenosis and occlusion of the left vertebral artery was shown. (LICA: PSV: 7.0 m/s, EDV: 3.5 m/s RICA: PSV: 6.1 m/s, EDV: 2.5 m/s)

Our initial strategy was to perform angioplasty of right (symptomatic) ICA at the first stage. However, after carotid and intracranial angiography, where subtotal stenosis of left ICA and good collateral flow from the right to the left hemisphere were observed, we changed our strategy.

At the first stage, we performed left ICA stenting with the use of Mo.Ma Ultra 8F embolic protection device (EPD) and Roadsaver 8x30mm stent postdilated to 4.5 mm without any complications. After the procedure change in cerebral blood flow was observed – now from the left to the right hemisphere.

Next, five weeks later, we performed second-stage procedure. Due to the right external carotid artery occlusion, Mono Mo.Ma Ultra 8F EPD with only one proximal balloon was used (telescopic technique with V-18 Control Wire and Judkins Right 5F). We implanted Roadsaver 8x30mm stent, postdilated to 5.0 mm – again without any complications.

Follow-up:
On the 8-month observation after second-stage procedure patient remained asymptomatic and Doppler ultrasound showed no evidence of in-stent restenosis.

Conclusions:
The use of the proximal embolic protection device and new generation of carotid mesh-covered stent (Roadsaver) is the best treatment modality for brain protection during carotid stenting in high-risk patients.