Carotid Stenting and Surgery in 2016 in Russia

Novosibirsk research institute of circulation pathology named by Meshalkin, Novosibirsk, Russia

Starodubtsev V., Karpenko A., Ignatenko P.

Annually in Russia strokes are diagnosed in 450 000 people

30 000 strokes are developed in Moscow region

80% of strokes are ischemic

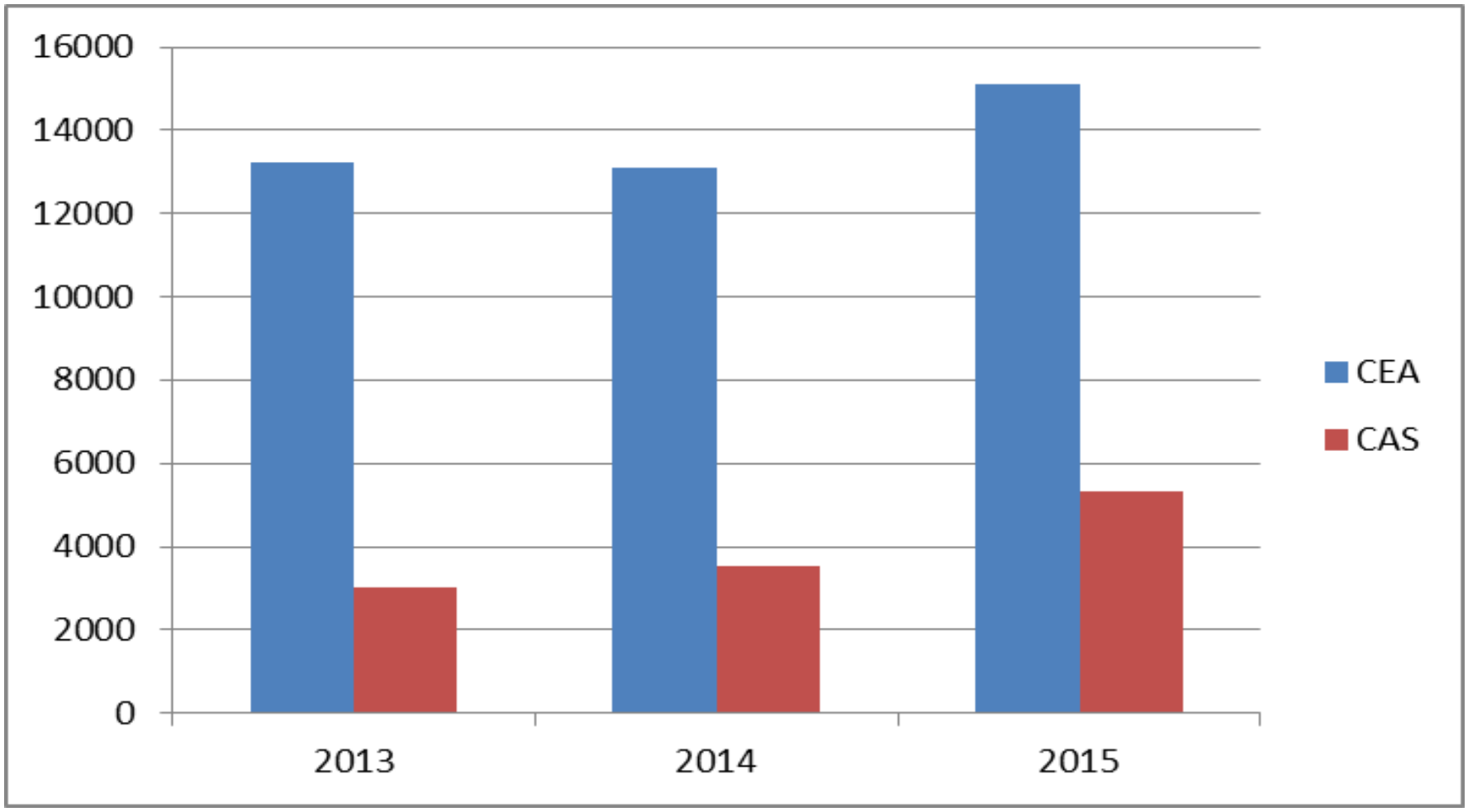
Russia, among all European countries, has the highest rate of the mortality from cerebrovascular disease

The Management Board Report of Russian Society of Angiology and Vascular Surgeons, 2015

CEA and CAS in Russia

Stroke after CEA 1.0-2.5 %

Stroke after CAS 1-1.5%



The Management Board Report of Russian Society of Angiology and Vascular Surgeons, 2015

CEA and CAS in Russia, 2015

- ***Carotid shunts*** **< 20%**

- ***CEA with path*** **32%**

perioperative stroke **2.5%**, mortality **1%**

-***Eversion CEA*** **68%**

perioperative stroke **1.5%**, mortality **0.5%**

- ***CAS***, perioperative stroke **1.5%**, mortality **0.3%**

The Management Board Report of Russian Society of Angiology and Vascular Surgeons, 2015

CEA and CAS in
Novosibirsk Research Institute of Circulation Pathology

TOTAL (CEA+CAS)	CEA	CEA RELATED STROKES	CAS	CAS RELATED STROKES
2014 315 / 5 (1,6%) strokes	**186**	**2 (1,07%)**	**129**	**3 (2,3%)**
SYMPTOMATIC	87	1 (1,1%)	10	1
ASYMPTOMATIC	***99***	***1 (1%)***	***119***	***2 (1,6%)***
2015 349 / 5 (1,4%) strokes	**173**	**2 (1,2%)**	**176**	**3 (1,7%)**
SYMPTOMATIC	68	1(1,5%)	12	1
ASYMPTOMATIC	***105***	***1 (0,9%)***	***164***	***2 (1,2%)***

Diagnostic protocol in Russia

National guidelines on the management of patients with brachiocephalic artery disease, 2013

Before operations all patients are investigated with color Doppler ultrasonography,
MRI angiography (sensitivity 97–100% , specificity 82–96%) or
MDCT angiography (sensitivity 100%, specificity 63%)

For asymptomatic patients (stenosis ICA>70%) CEA or CAS are carried out

For symptomatic patients (stenosis >60%) CEA is performed

CAS for symptomatic patients is recommended in the case if they have high level operational risk, high bifurcation of CCA, radiation-associated stenosis etc.

Cerebral protection devices in Russia

1.Filters (Spider RX, FilterWire EZ, RX Accunetand and others) > 90%

2.Distal balloon (MOMA system, Invateck),

3.Proximal occlusion (the Parodi Anti-Emboli System)

The Management Board Report of Russian Society of Angiology and Vascular Surgeons, 2015

The case – controlled studies concerning the investigation of the presence of cerebral microembolic events after CAS and CAE

Those investigations compared the incidence and distribution of cerebral microembolic events after CAS with distal protection to standard CEA using diffusion-weighted MRI

They concluded that cerebral microembolic events occurred in over two-thirds of CAS despite the uniform use of distal protection

CEA offered a lower risk of periprocedural microembolic events detected by DW-MRI

Laura Capoccia, Francesco Speziale, Marianna Gazzetti, Paola Mariani, et al. Comparative study on carotid revascularization (CAS vs CEA) using markers of cellular brain injury, neuropsychometric tests, and diffusion-weighted magnetic resonance imaging. J Vasc Surg 2010;51:584-592.

Maureen M. Tedesco, Jason T. Lee, Ronald L. Dalman et al. Postprocedural microembolic events following carotid surgery and carotid angioplasty and stenting. J Vasc Surg 2007;46:244-250.

CAS and CEA for asymptomatic patients in Novosibirsk Research Institute of Circulation Pathology (2016)

Diffusion-weighted MRI for asymptomatic patients was performed before and after CAS (30 patients) and CEA (30 patients)

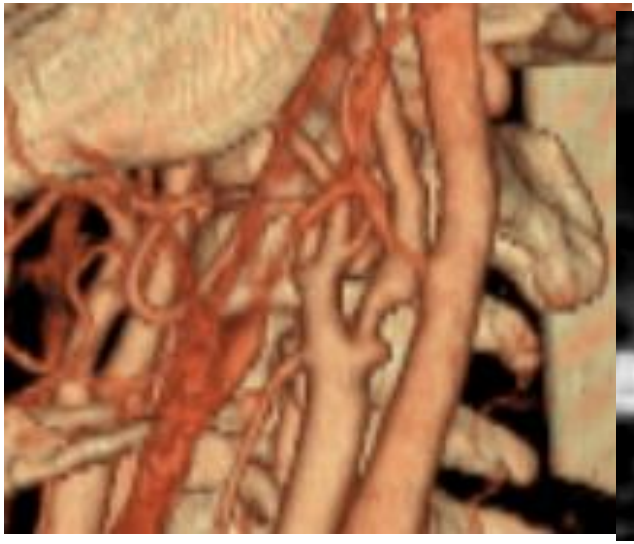
Few small focuses without clinical presentations after CAS were determined in 12 (40%) cases

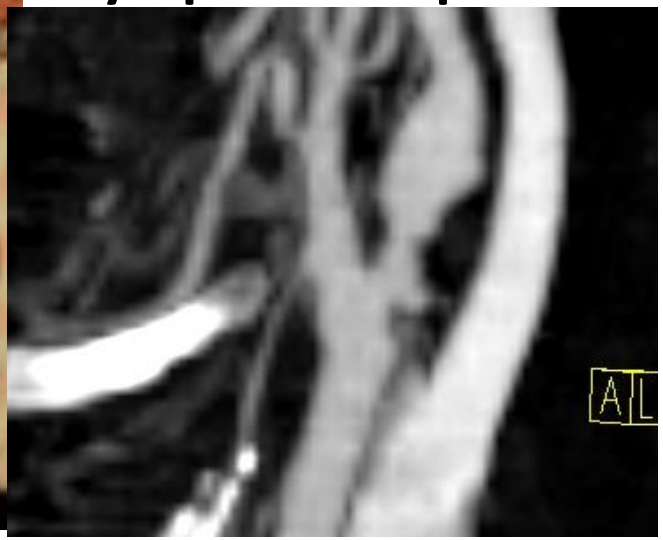
Filters were used in all cases

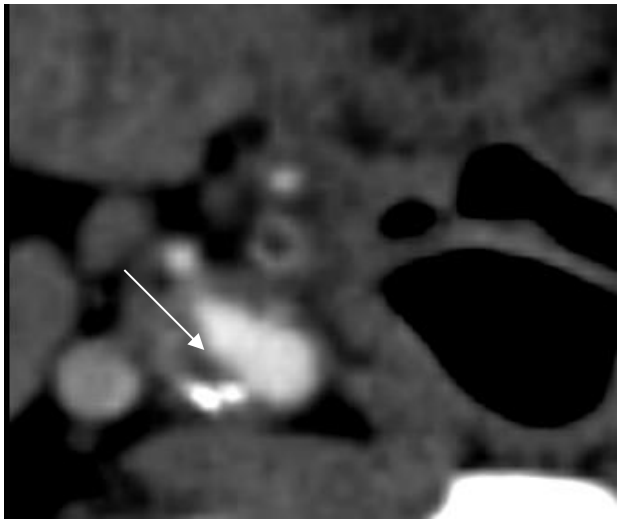
Few small focuses without clinical presentations after CEA were determined in 5 (16%) cases

Significant difference was found in the groups (p=0,04)
Strokes were not registered

MDCT assisted videodensitometric carotid plaque characterization in asymptomatic patients

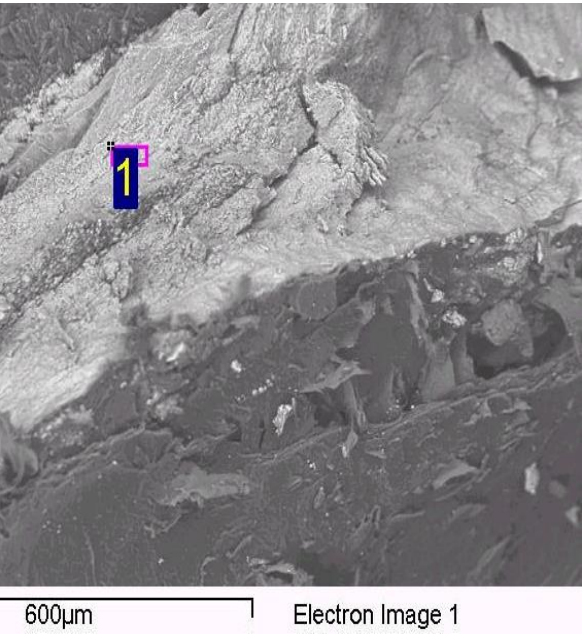


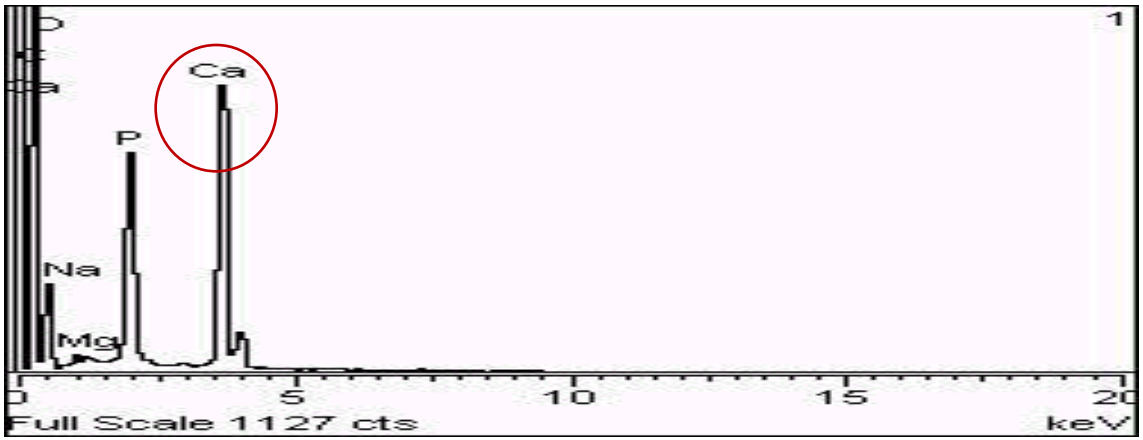




Ulcerated atherosclerotic plaques (+20;+70HU);

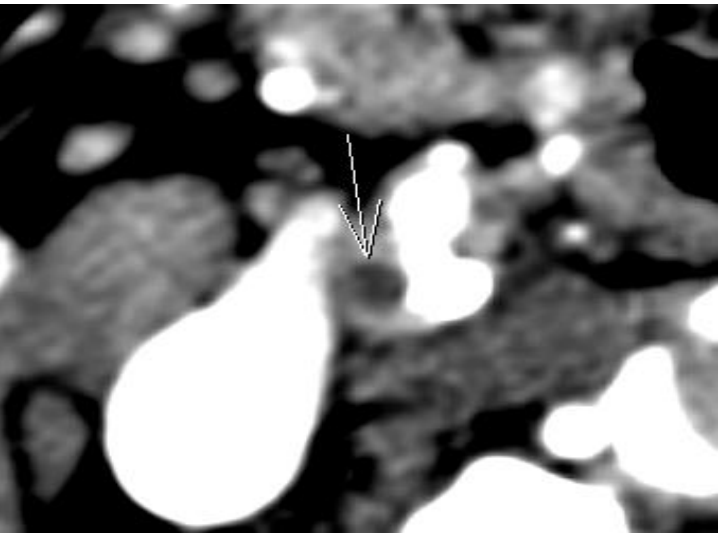
(+20;+240 HU);

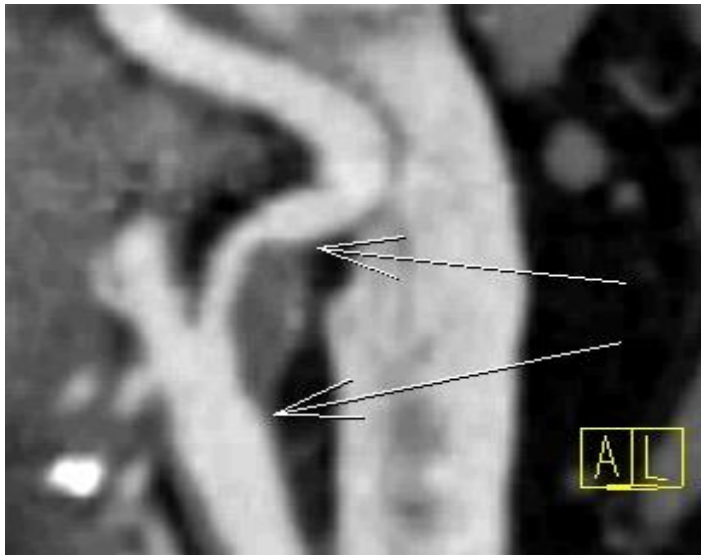




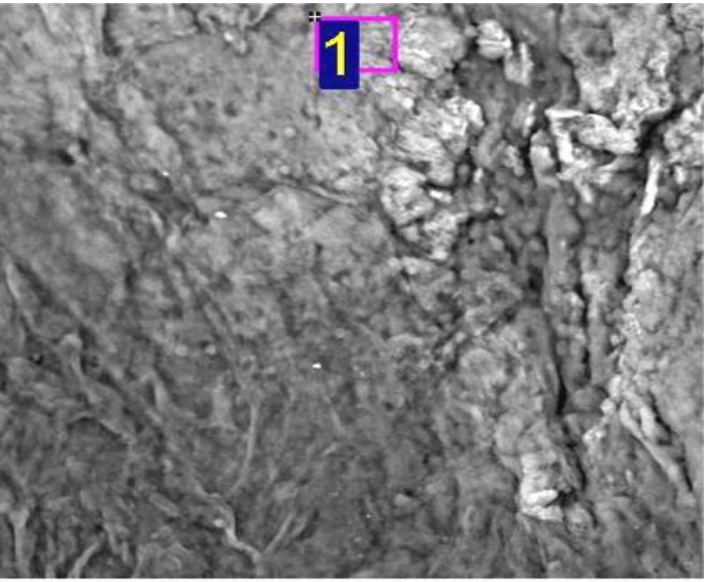
Spectroscopic analysis (Calcification)

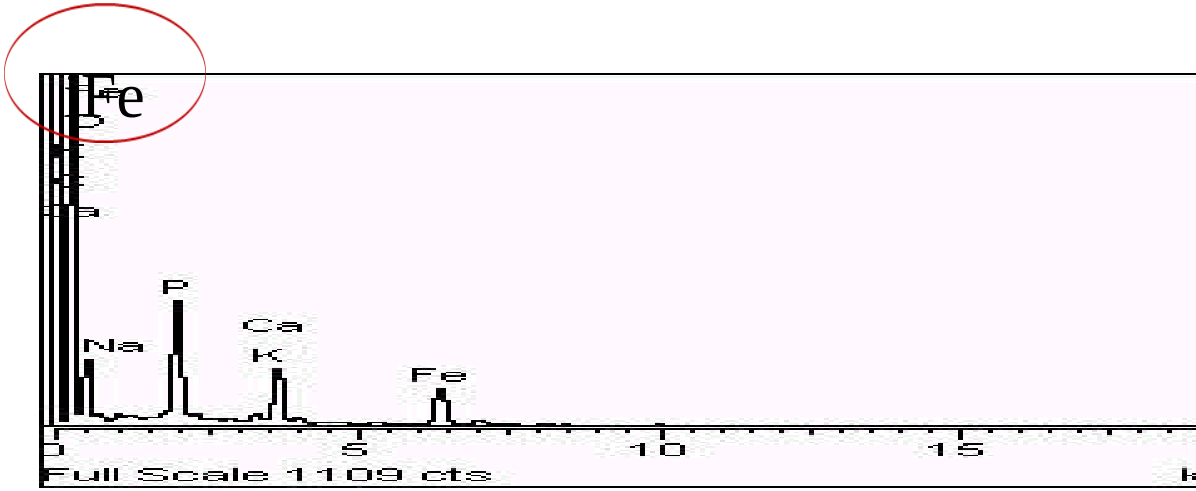
MDCT assisted videoddensitometric carotid plaque characterization in asymptomatic patients





Intra-plaque hemorrhage (focuses +20, +40 HU)





Spectroscopic analysis
(Increase in the number of iron

Hybrid interventions in the case of combined stenosis of the carotid bifurcations and supra-aortic arteries

2% of patients have hemodynamically significant inflow disease at the supra-aortic arteries (common carotid artery, brachiocephalic trunk) and carotid bifurcation

Branchereau A., Jacobs M. Hybrid Vascular Procedures. EVS. 2004; 254.
Allie D.E., Herbert C.J., Lirtzman M.D. et al. Intraoperative innominate and common carotid intervention combined with carotid endarterectomy: a “true” endovascular surgical approach. J Endovasc Ther. 2004;11: 258-262

Combined CEA and retrograde CCA or BCT stenting may represent the best option for intervention

László P., Cagiannos C., Bakoyiannis C.N., Kolvenbach R. Hybrid treatment of common carotid artery occlusion with ring-stripper endarterectomy plus stenting. J Vasc Surg. 2007; 46: 1: 135-139.
Jacqueline D. Moore, Peter A. Schneider. Management of Simultaneous Common and Internal Carotid Artery Occlusive Disease in the Endovascular Era. Semin Vasc Surg. 2011; 24:2-9.

The interventions in the case of combined stenosis of the carotid bifurcations and supra-aortic arteries

Main strategies :

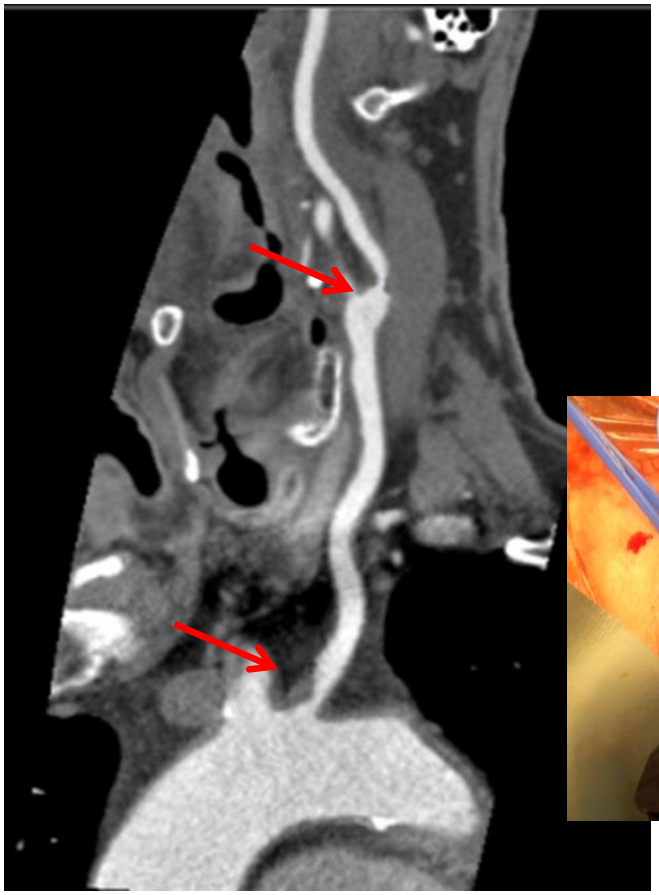
1.extra-anatomic bypass for inflow combined with CEA
2.proximal CCA or BCT stenting combined with CEA (hybrid)
3.completely endovascular approach of the proximal CCA and BCT and carotid bifurcation stent placement

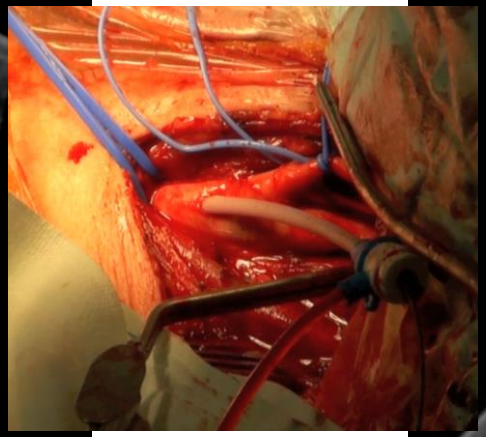
The technical success of the hybrid approach is 97% in case-controlled study (the absence of a randomized controlled trial)

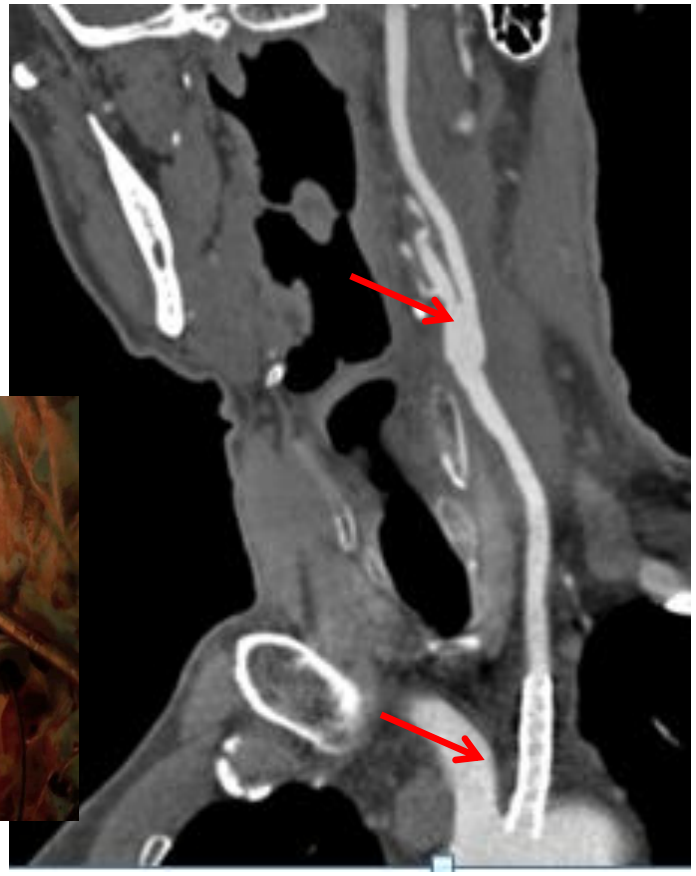
László P., Cagiannos C., Bakoyiannis C.N., Kolvenbach R. Hybrid treatment of common carotid artery occlusion with ring-stripper endarterectomy plus stenting. J Vasc Surg. 2007; 46: 135-139.
Jacqueline D. Moore, Peter A. Schneider. Management of Simultaneous Common and Internal Carotid Artery Occlusive Disease in the Endovascular Era. Semin Vasc Surg. 2011; 24:2-9.

In 16 cases the stenting of the stenosis of the left CCA and CEA were performed

Novosibirsk research institute of circulation pathology named by Meshalkin,



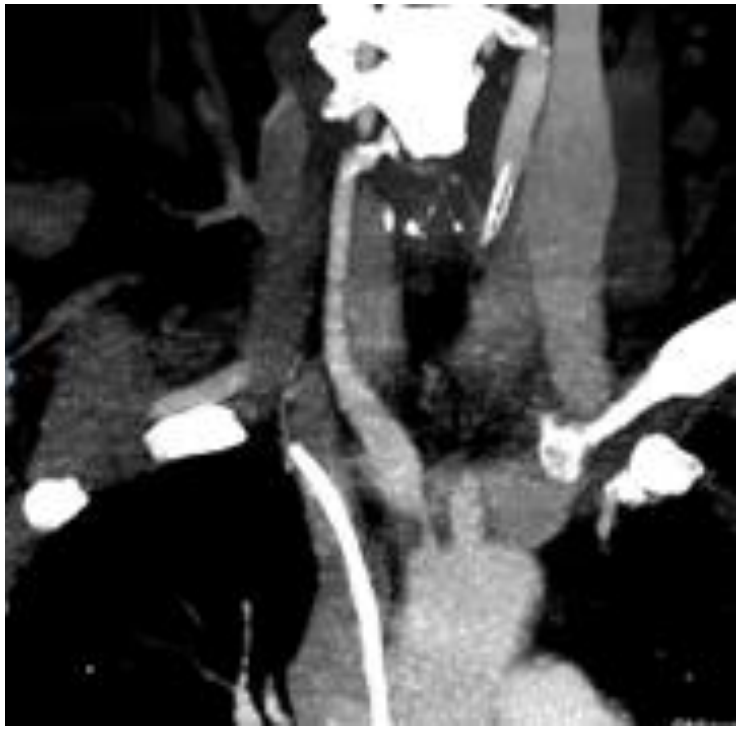




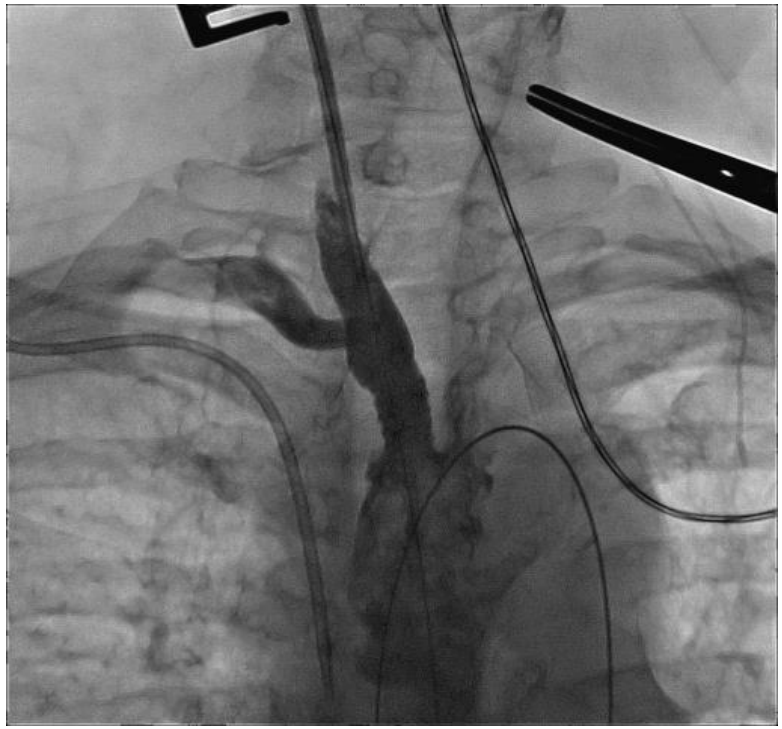
Patient C. 80% stenosis of the left ICA in combination with 70% stenosis of the left CCA

Patient C. Status post stenting of the left CCA stenosis in combination with CCA

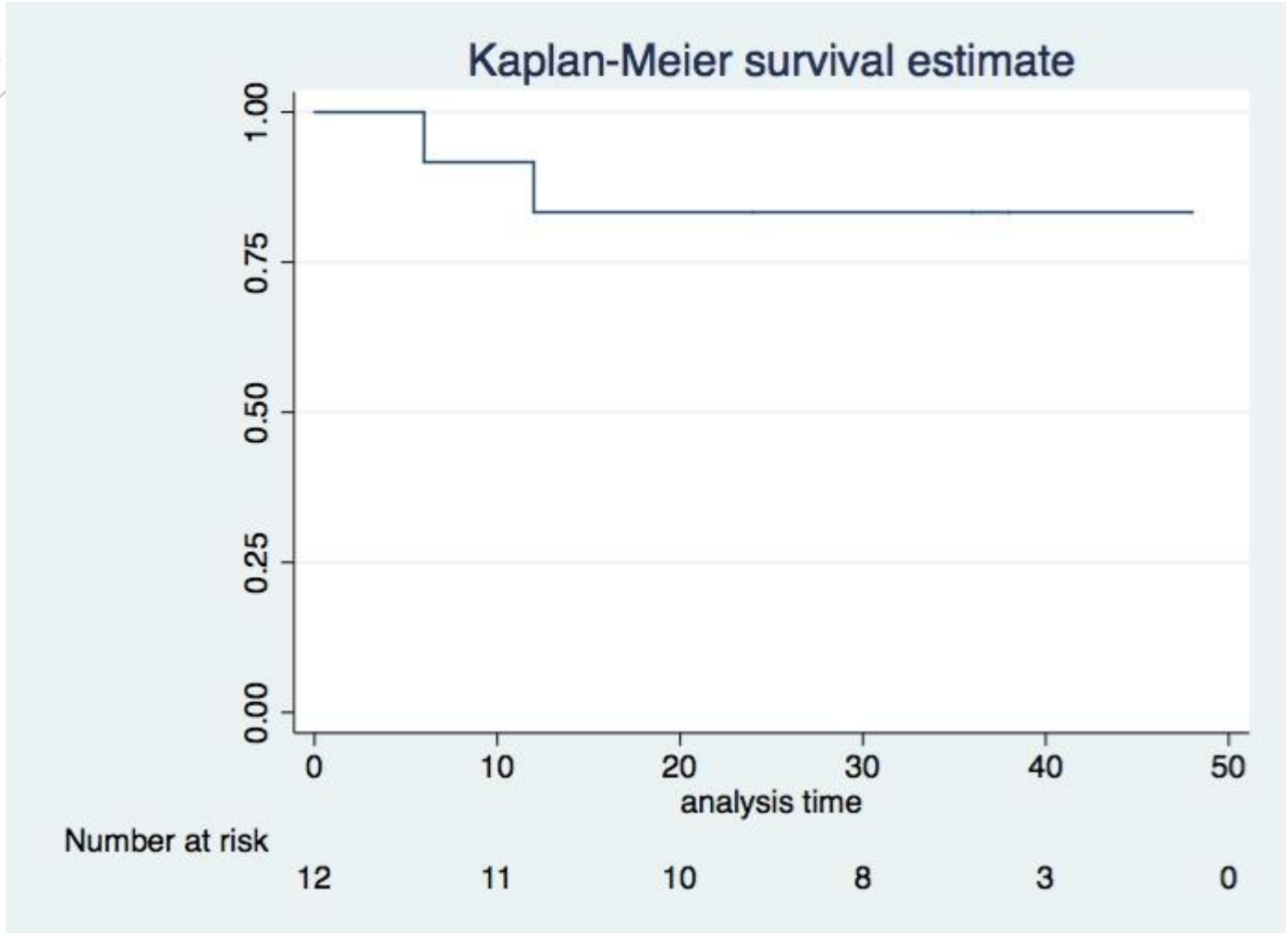
In 2 cases the stenting of the stenosis of BCT and right CEA were performed



before operation



stenting BCT



During the early postoperative period and follow-up to 48 months, no strokes were registered

Starodubtsev V., Karpenko A., Ignatenko P. Hybrid interventions in the case of combined stenosis of the carotid bifurcations and supra-aortic arteries. Journal Stroke and cerebrovascular diseases. 2015; 25(1): 63-67

Our single-center study supports the safety and durable efficacy of hybrid procedures in a limited cohort of patients, thus emphasizing the need for larger scale clinical trials to further evaluation of this approach against other potential methods

In conclusion it should be mentioned that the number of carotid stenting in Russia has been increased among carotid reconstructions

This tendency is being kept in 2016 for asymptomatic patients

Thank you for your attention