

Acute carotid artery stenting in patients with high grade stenosis of carotid internal artery (ICA) presented with acute cerebrovascular accident. A single center experience.

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Introduction

The instability of an ICA plaque can become symptomatic due to emodynamic insufficiency or because of occlusion of the ICA and/or occlusion of an intracranial major artery.

In these cases the need for urgent revascularization is evident.

Intravenous thrombolysis is the first choice treatment for stroke but it is known that in large vessel occlusion it is not so effective (mRS of 0-2 is reached only in 10-29 % of cases).

In these cases endovascular treatment may play a role.

We report our initial experience regarding these conditions.

Results

From January 2016 to August 2017 five patients were treated. Range age was 63-75 years.

Clinical presentation was stroke, minor stroke and recurrent TIA.

NIHSS range was 11-19.

All patients underwent multiphase CT prior the treatment.

In all cases we found preocclusive stenosis of extracranial ICA; 3 patients presented a tandem occlusion.

3 patients were first treated with i.v. rTPA; in 1 case this treatment was not indicated.

All patients were submitted to angiography. Range time from the onset of symptoms to the puncture of common femoral artery was 140-270 minutes.

All patients were treated with carotid artery stenting. The rate of recanalisation was 100%.

Despite rTPA, just before stenting we subministrated ASA 250 mg i.v. followed, after 24 hour, by dual antiplatelet therapy, without any haemorrhagic complication.

In 2 patients with tandem occlusion we observed spontaneous reperfusion of the intracranial vessel after stenting of the proximal ICA with a TICI result (Trombolysis In Cerebral Infarction) of 2b/3. In one case recanalization was achieved after thromboaspiration.

Range time of endovascular procedure was 20-55 minutes.

A good outcome was achieved in all patients (mRS at three months 0-1).

Pt, age,	Symptoms	Time to CT/AngioCT (minutes)	TC/AngioCT	Time to Angiography (minutes)	End angiography (minutes)	Venous fibrinolysis	Follow-up (mRS)
1-TF, 75, NIHSS 11	Left haemiparesis	120	Right ICA preocclusive stenosis	270	345	YES	0
2-FA, 71 NIHSS 19	Right hemiparesis	120	Left ICA preocclusive stenosis, embolic occlusion M1 (fig1)	180	220	YES	1
3-AA, 63 NIHSS 11	Aphasic TIA	20	Stenosis >90% left ICA	240	300	NO	0
4-SR, 65 NIHSS 11	Right hemiparesis and aphasia	100	Stenosis >90% left ICA. Occlusion A2	140	210	YES	1
5-DBN, 71 NIHSS 18	Left hemiparesis	120	Right ICA occlusion and omolateral M1 occlusion	240	310	YES	0



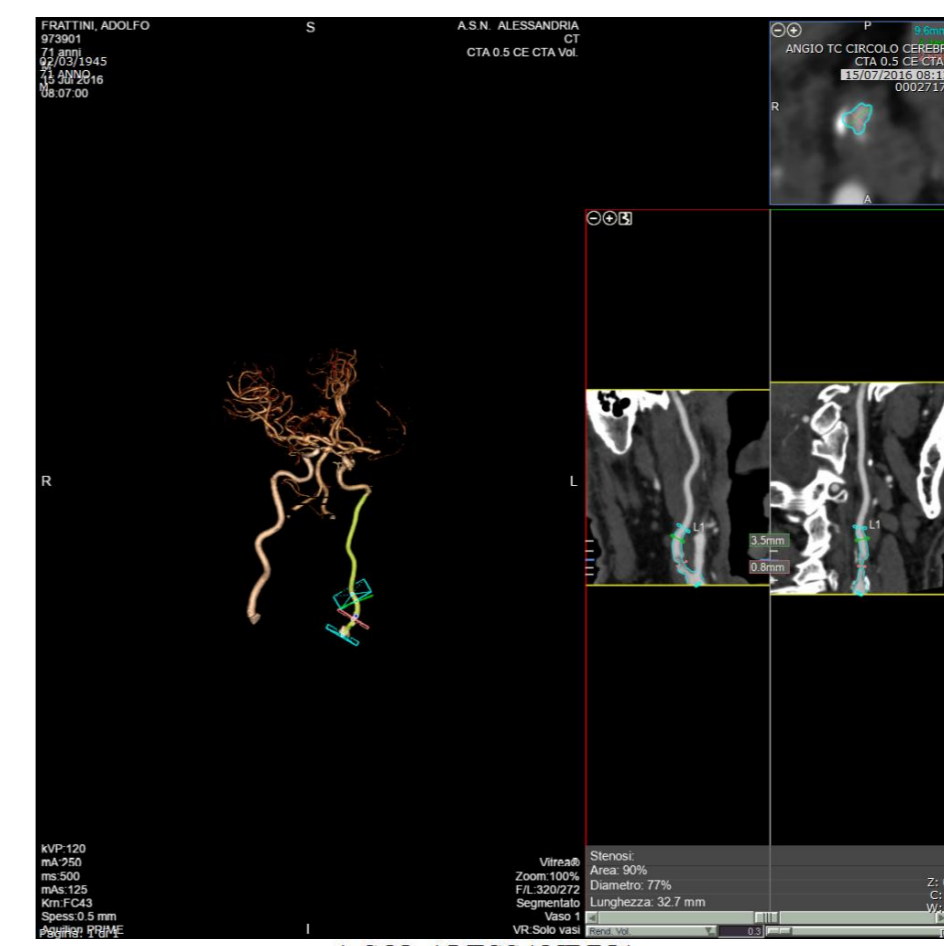
Right common carotidography: stent positioned (sheated): complete occlusion of ICA and M1.

Right common carotidography after PTA-stenting.

Recanalization of right MCA (M1) after thromboaspiration (TICI 3).

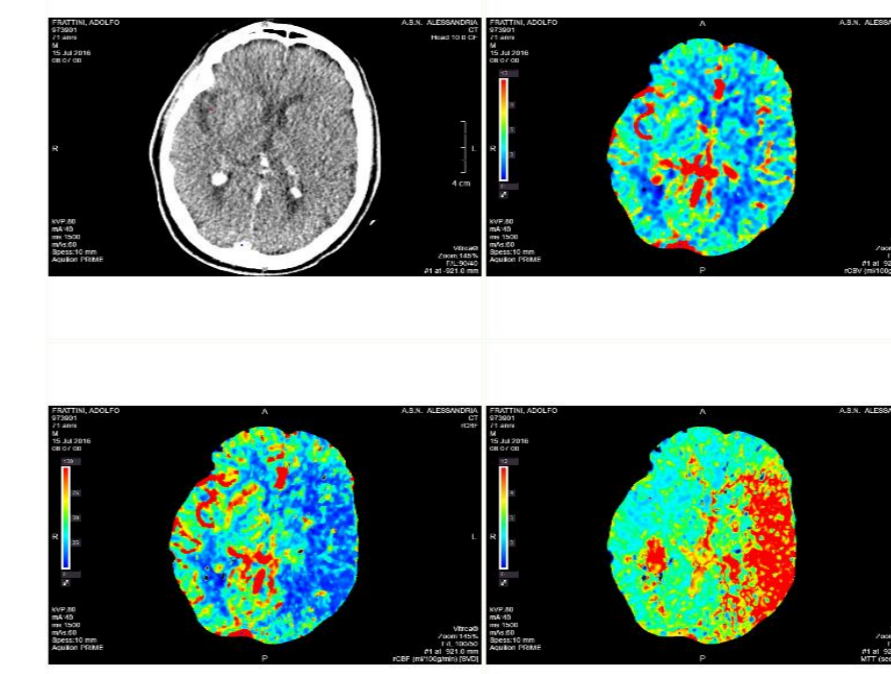
Conclusions

In ischemic stroke, caused by acute ICA stenosis/occlusion, carotid stenting is a safe and effective therapeutic option. In cases of tandem occlusion a spontaneous reperfusion of the intracranial vessel after stenting may be observed.



CASE 2

Fig 1:AngioCT
- left: stenosis ICA at the origin, M1 occlusion at the origin
- right: vessel analysis Stenosis right ICA 90%



CT- perfusion: wide ischaemic penumbra, ischaemic core in the basal ganglia.

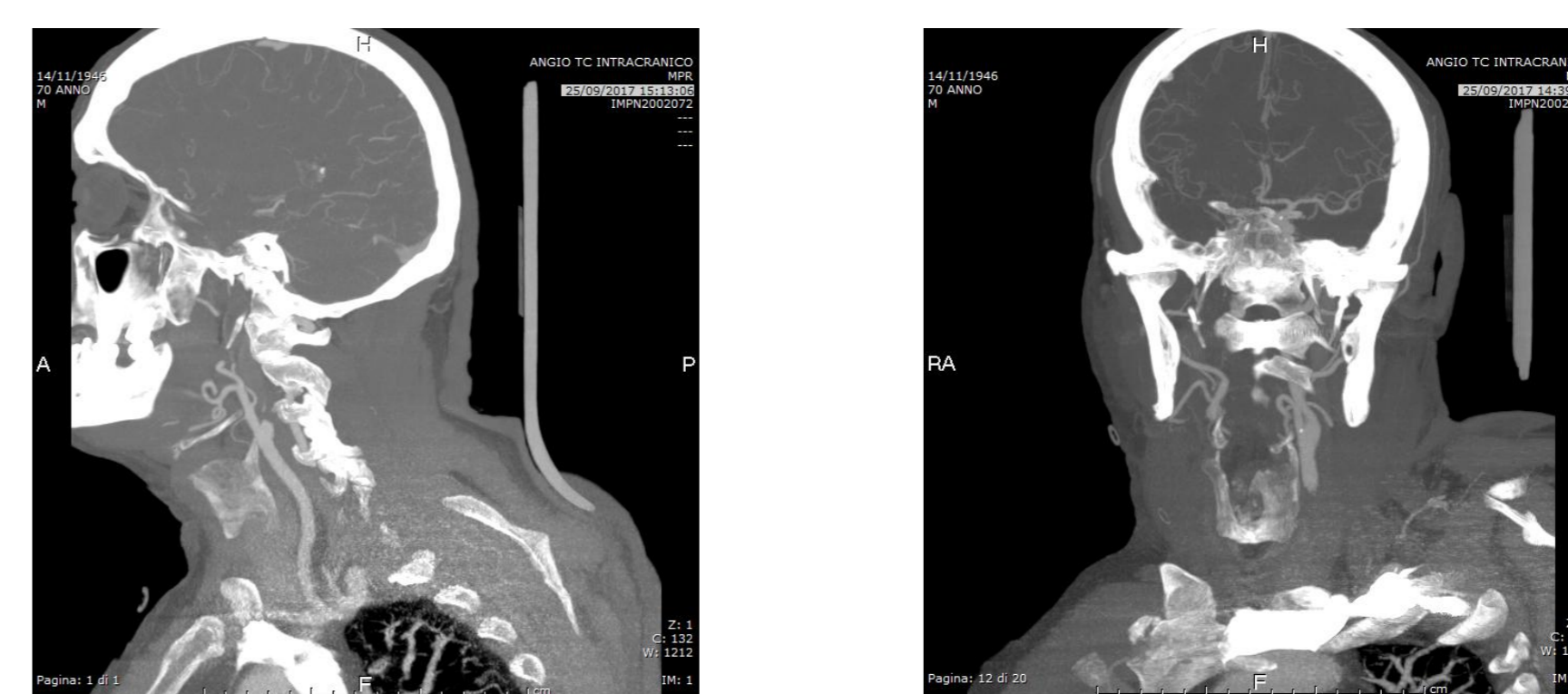


CASE 2

Left common carotidography (microguide .014") preocclusive ICA stenosis, M1 occlusion.

Left common carotidography after PTA-stenting of ICA. Spontaneous recanalization of the middle cerebral artery

Left common carotidography for the intracranial circle: spontaneous recanalization of the middle cerebral artery after PTA-stenting of ICA.



CASE 5

MIP sagittal: right ICA occlusion at the origin

MIP coronal: right ICA occlusion and M1 occlusion with good collateral circles. More than 50% of reperfusion in the right MCA circle. Congenital hypoplasia of right A1, both A2 supplied by the contralateral carotid.

Bibliography

- JE Cohen et al, Emergency revascularization of acute internal carotid artery occlusion: follow the spike, it guides you. Journal of Clinical Neuroscience, 29 (2016) 95-99
- N. Mbabuikwe et al, Revascularization of tandem occlusions in acute ischemic stroke: review of the literature and illustrative case. Neurosurg Focus 42 (4):E15, 2017
- M Kappelhof et al, Intra-arterial treatment of patients with acute ischemic stroke and internal carotid artery occlusion: a literature review. J NeuroIntervent Surg 2015;7:8-15