Internal carotid artery C7 segment

The communicating segment, or terminal segment, or C7, of the internal carotid artery passes between the optic nerve and oculomotor nerves to the anterior perforated substance at the medial extremity of the lateral cerebral fissure. Angiographically, this segment extends from the origin of the posterior communicating artery to the bifurcation of the internal carotid artery.

The named branches of the communicating segment are:

the posterior communicating artery.

the anterior choroidal artery.

The internal carotid then divides to form the anterior cerebral artery and middle cerebral artery. The internal carotid artery can receive blood flow via an important collateral pathway supplying the brain, the cerebral arterial circle, which is more commonly known as the Circle of Willis.

Aneurysms arising from the communicating segment (C7) of the internal carotid artery (ICA) are one of the most frequent locations of intracranial aneurysms. Stent-assisted coiling (SAC) and flow diversion therapies are both endovascular strategies used for the treatment of ICA aneurysms occurring at the C7 segment.

OBJECTIVE: The aim of this study is to compare both methods' angiographic and functional outcomes, and procedural complications. To our knowledge, this is the first study to compare both modalities for aneurysms at this location.

METHODS: A retrospective review was performed of our prospectively collected database from 2008 until 2017 for patients treated with SAC and from 2013 until 2017 for patients treated with pipeline embolization devices (PEDs).

RESULTS: We identified 35 patients for this cohort with 38 aneurysms; 17 treated with SAC and 21 with PED. Mean age was 59 years, and 30 patients were female (86%). Complete occlusion at last follow-up occurred in 70.6% of patients in the SAC group and in 81% in the PED group ($p = 0.45$). Posterior communicating artery patency at last follow-up did not differ significantly between the two groups (94.1% vs 85.7%; $p = 0.40$). Good functional outcome at last follow-up (mRS 0-2) was achieved in 100% and 88.2% of patients, respectively. Additionally, there was no significant difference between the two groups for retreatment rates, procedural hemorrhagic, or thromboembolic complications.

CONCLUSION: SAC and PED are two equally efficacious modalities for endovascular treatment of ICA aneurysms arising at the communicating segment of the ICA [1)].

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Enriquez-Marulanda A, Salem MM, Ascanio LC, Maragkos GA, Gupta R, Moore JM, Thomas AJ, Ogilvy CS, Alturki AY. No differences in effectiveness and safety between pipeline embolization device and stent-assisted coiling for the treatment of communicating segment internal carotid artery aneurysms. Neuroradiol J. 2019 Apr 18:1971400919845368. doi: 10.1177/1971400919845368. [Epub ahead of print] PubMed PMID: 30998116.