Comaneci

https://www.rapid-medical-us.com/comaneci

Comaneci (Rapid Medical) introduced in the United States in 2019 is a compliant, adjustable mesh that provides temporary scaffolding during coiling of Wide-neck intracranial aneurysms (WNAs) that preserves antegrade flow.

Adjunctive devices are commonly employed in the treatment of wide necked cerebral aneurysms. Balloon remodeling and permanent stent implantation may lead to thromboembolic complications or the need for antiplatelet use. A temporary stent that does not lead to complete flow arrest may be beneficial [1].

Videos

<html> <iframe src="https://player.vimeo.com/video/241491672" width="640" height="480" frameborder="0" allow="autoplay; fullscreen; picture-in-picture" allowfullscreen></iframe> Comaneci Madrid Dr Olier, Hospitalario de Navarra from Ronen Eckhouse on Vimeo. </html>

<html><iframe width="560" height="315" src="https://www.youtube.com/embed/zsWJpW-zssc" title="YouTube video player" frameborder="0" allow="accelerometer; autoplay; clipboard-write; encrypted-media; gyroscope; picture-in-picture" allowfullscreen></iframe></html>

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Case series

Taqi et al. reported a early multi-institutional experience with the Comaneci device in the USA.

They reviewed all patients with WNAs that were treated using the Comaneci device for coil remodeling of ruptured and unruptured aneurysms at 4 institutions between July 2019 and May 2020. Clinical characteristics, angiographic variables, and endovascular results were assessed.

A total of 26 patients were included (18 women). The mean age was 62.7 years (range 44-81). Fifteen patients presented with ruptured aneurysms and 11 with unruptured aneurysms. The mean aneurysm neck width was 3.91 mm (range 1.9-6.5) with a mean dome-to-neck ratio of 1.57 (range 0.59-3.39). The mean maximum width was 5.80 mm (range 3.0-9.9) and the mean maximum height was 5.61 mm (range 2.0-11.8). Successful aneurysm occlusion was achieved in 25 of 26 patients. Complete

occlusion was achieved in 16 patients, near-complete occlusion was observed in 9 patients, and 1 patient demonstrated residual filling. The mean time of device exposure was 24 min (range 8-76). No vasospasm was observed at the device location. Clot formation on the device was noted in 2 separate cases, but there were no clinical sequelae. There was 1 intraprocedural complication in a case that involved the simultaneous use of 2 Comaneci devices.

The initial experience shows that the Comaneci device is a promising and reliable tool that can safely support coil remodeling of WNAs [2].

Five patients underwent Comaneci-assisted wide-necked aneurysm coiling during the study period; 4 were treated via a radial artery approach, and 1 was treated via a femoral artery approach. Two patients presented with subarachnoid hemorrhage: 1 had a ruptured posterior inferior cerebellar artery aneurysm (Hunt-Hess 5, Fisher 4), and 1 had a ruptured middle cerebral artery aneurysm (Hunt-Hess 2, Fisher 1). Mean aneurysmal neck size was 4.4 ± 0.8mm; mean aspect ratio was 1.2 ± 0.3. Raymond-Roy 1 occlusion was achieved in all aneurysms except the posterior inferior cerebellar artery aneurysm. Systematic literature review identified 4 articles that found use of the Comaneci device to treat wide-necked aneurysms to be effective.

This device can be used with transfemoral and transradial approaches, allowing for continued flow through the parent vessel during the coiling procedure while providing a scaffold for dense coiling of the aneurysm and its neck [3].

Kara et al. from Bakirkoy, Istanbul, Turkey reported the experience of using single stent-assisted coiling combined with a Comaneci device in the treatment of unruptured WNBAs at 1-year angiographic follow-up, there was no filling in any aneurysm. There was no mortality or morbidity cases related to the procedure [4].

Molina-Nuevoet al. reported a retrospective single-center analysis taken from a prospective database of consecutive aneurysms of the anterior circulation treated using the Comaneci device in the period from March 2017 to March 2019.

Eighteen aneurysms were collected from 16 patients (9 women and 7 men) treated using the Comaneci device. The mean age was 48.4 years (range 36-81). Twelve patients had SAH, three were incidental aneurysms and one had compressive symptoms. A complete asymptomatic occlusion rate of 88.8% was obtained. The major complication rate was 5.55%.

The Comaneci embolization assist device is a safe, effective option for endovascular treatment of complex aneurysms with an unfavorable ratio [5].

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29 ruptured intracranial aneurysms from different locations were included. Successful embolization was achieved in all lesions; complete post-procedure occlusion was seen in 25 (86%) cases. Insufficient embolization or neck remnant was observed in four cases (13.7%). Complications probably related, directly related, or indirectly related to the device occurred in 3.44% of patients (1/29 patients). At least one angiographic follow-up was performed in each of the 29 cases. The 12 month

follow-up examination has yet to be done.

Conclusion: The Comaneci device offers a new promising and reliable technique that can safely support aneurysm coiling occlusion even in a rupture environment. However, long term monitoring of patients treated by this device is mandatory [6)]

All intracranial aneurysms treated by coil occlusion with the Comaneci device between December 2014 and November 2015 were included. Angiographic and clinical results were retrospectively analysed, including follow-up examinations. All aneurysms were unruptured.

18 aneurysms of the internal carotid artery were included. Successful coil occlusion assisted by the Comaneci device as intended was possible in 14 cases (77.8%). Insufficient coverage of the aneurysmal neck was observed in four cases (22.2%), with modification of the treatment to stent-assisted coiling or remodeling. One clinically relevant complication occurred (5.6%).

The initial experience showed that use of the Comaneci device is straightforward for the treatment of selected wide-necked aneurysms. Further studies with long-term follow-up data are needed to identify the significance of the presented technique in the neurointerventional armamentarium [7)].

Three patients were treated with the Comaneci device. Two patients had acute ruptured posterior communicating aneurysms and one patient was treated electively for a carotico-ophthalmic aneurysm. Excellent occlusion of all three aneurysms was obtained. One patient developed a distal middle cerebral artery clot, that was treated with intravenous aspirin, with minor neurological consequences. These early results show that the Comaneci device can be used to achieve good cerebral aneurysm occlusion. Vessel patency is maintained throughout the procedure with potential advantages over conventional balloon assisted coiling [8)].

Case reports

A 57-year-old female patient presented to our hospital with a 3-month history of frequent multiple sentinel severe headaches. At the time of hospitalization, the patient was neurologically intact with a Glasgow Coma Scale score of 15. There was no evidence of focal neurologic deficits or cranial nerve lesions, but there was discrete neck stiffness and a diagnosed saccular aneurysm associated with a fenestration of the basilar artery. After multidisciplinary discussion involving neurosurgeons and interventional neuroradiologists and taking into consideration the patient's clinical presentation and previous history of subarachnoid hemorrhage, as well as the morphology of the posterior circulation aneurysm, endovascular treatment of the basilar fenestration aneurysm was deemed appropriate or simply use was chosen.

This case results are similar to previously published good results of endovascular coiling and add information regarding the relatively new Comaneci device, which helped to achieve considerable packing density of the aneurysmal sac. Using this device lowers the risk of peri- and postoperative complications. We believe that this technique is safer and better than the balloon-assisted and stent-assisted coiling in ruptured case scenarios of wide-neck aneurysms in the posterior circulation. [9)]

1)

Gupta R, Kolodgie FD, Virmani R, Eckhouse R. Comaneci neck bridging device for the treatment of cerebral aneurysms. J Neurointerv Surg. 2016 Feb;8(2):181-5. doi: 10.1136/neurintsurg-2014-011518. Epub 2015 Jan 12. PMID: 25583530.
2)

Taqi MA, Raz E, Vechera A, Shapiro M, Gupta R, Haynes J, Taussky P, Grandhi R, Riina HA, Nelson PK, Nossek E. Early Experience with Comaneci, a Newly FDA-Approved Controllable Assist Device for Wide-Necked Intracranial Aneurysm Coiling. Cerebrovasc Dis. 2021 May 10:1-8. doi: 10.1159/000514371. Epub ahead of print. PMID: 33971661.
3)

Lim J, Vakharia K, Waqas M, Affana C, Siddiqui AH, Davies JM, Levy EI. Comaneci Device for Temporary Coiling Assistance for Treatment of Wide-Necked Aneurysms: Initial Case Series and Systematic Literature Review. World Neurosurg. 2021 May;149:e85-e91. doi: 10.1016/j.wneu.2021.02.080. Epub 2021 Feb 25. PMID: 33640525.
4)

Kara B, Selcuk H, Kilinc F, Cakir C, Zalov H. Combination of temporary bridging device (Comaneci) and permanent stenting in the treatment of unruptured wide neck bifurcation aneurysms. Neuroradiology. 2021 Mar 7. doi: 10.1007/s00234-021-02677-z. Epub ahead of print. PMID: 33677621.
5)

Molina-Nuevo JD, López-Martínez L, Pedrosa-Jiménez MJ, Juliá-Molla E, Hernández-Fernández F. Comaneci device-assisted embolization of wide-necked carotid aneurysms with an unfavorable ratio. BMC Neurol. 2020 Oct 22;20(1):384. doi: 10.1186/s12883-020-01963-2. PMID: 33092561; PMCID: PMC7584075.
6)

Sirakov S, Sirakov A, Hristov H, Minkin K, Penkov M, Karakostov V. Early experience with a temporary bridging device (Comaneci) in the endovascular treatment of ruptured wide neck aneurysms. J Neurointerv Surg. 2018 Oct;10(10):978-982. doi: 10.1136/neurintsurg-2017-013641. Epub 2018 Feb 6. PMID: 29438035.
7)

Fischer S, Weber A, Carolus A, Drescher F, Götz F, Weber W. Coiling of wide-necked carotid artery aneurysms assisted by a temporary bridging device (Comaneci): preliminary experience. J Neurointerv Surg. 2017 Nov;9(11):1039-1097. doi: 10.1136/neurintsurg-2016-012664. Epub 2016 Oct 14. PMID: 27742747; PMCID: PMC5740552.
8)

Lawson AL, Chandran A, Puthuran M, Goddard T, Nahser H, Patankar T. Initial experience of coiling cerebral aneurysms using the new Comaneci device. BMJ Case Rep. 2015 Jun 29;2015:bcr2015011726. doi: 10.1136/bcr-2015-011726. PMID: 26123460; PMCID: PMC4488707.
9)

Sirakov S, Panayotova A, Sirakov A, Hristov H, Minkin K, Raychev R. Fenestration of the Basilar Artery associated with Aneurysm treated by support of temporary bridging device - Comaneci. A case report. World Neurosurg. 2018 Aug 18. pii: S1878-8750(18)31830-8. doi: 10.1016/j.wneu.2018.08.047. [Epub ahead of print] PubMed PMID: 30130570.