

# Wide necked aneurysm treatment

Despite widespread use of [flow diverters](#), wide necked large and [giant aneurysms](#) are still treated with other techniques as well.

A contemporary review of results from different endovascular treatment is timely.

A literature review of the English language literature since 2011 was conducted using Pubmed and Science Direct. Keywords and MeSH terms included large and giant aneurysms, ruptured aneurysms, aneurysms located in posterior circulation and aneurysm occlusion status. Case reports were excluded. A combined model was built including both flow diverters and coils treatments in addition to separate models. Efficacy and safety were pooled using random effects analysis and regression.

29 studies were included in the review. For coiling techniques, complete occlusion ranged from 40.2% to 82.8%, adjusted regression resulted in 53% (95% CI 22% to 81%). Flow diverters complete occlusion rate ranged from 40.5% to 87.8%. Adjusted regression resulted in 87% (95% CI 76% to 93%). Combined results of both techniques overall occlusion rates ranged from 62% to 75% and adjusted regression revealed 81% (95% CI 68% to 89%). Overall stroke and death regression rates was 5% (95% CI 3% to 10%), while flow diverters showed slightly higher rates than coiling (6% vs 3%).

All current approaches for treatment of large and giant wide-necked aneurysms have comparable safety and efficacy with a trend of superiority of efficacy towards flow diverters. Future treatment options and devices can compare its results to current technology to evaluate feasibility <sup>1)</sup>.

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Many endovascular techniques have been described in recent years for the management of wide necked aneurysms. The Y stent assisted technique has been generally used for coil embolization of wide necked bifurcation aneurysms. This technique was first described for the treatment of basilar tip aneurysms in combination with several different devices, demonstrating encouraging results.

If endovascular treatment is now the first-line treatment for both ruptured and unruptured aneurysms, wide neck aneurysms are sometimes untreatable or difficult to treat with standard [coiling](#). <sup>2) 3)</sup>.

Endovascular treatment of wide-necked aneurysms with preservation of the parent artery remains a challenge. Ito et al. describe a novel and simple technique to navigate a balloon or stent-delivery catheter across a wide-necked aneurysm in which previously existing methods could have failed to pass the catheter across the neck of the aneurysm, which they have named "temporary caging" technique. The technical results using this method are presented in 6 cases <sup>4)</sup>.

The two primary indications for the deployment of microstents in intracranial vessels are [stentassisted coil embolization](#) of wide-necked or fusiform aneurysms and treatment of atherosclerotic stenosis <sup>5)</sup>.

<sup>1)</sup>

Agnoletto GJ, Meyers PM, Coon A, Man Kan PT, Wakhloo AK, Hanel RA. A Contemporary Review of Endovascular Treatment of Wide-Neck Large/Giant Aneurysms. World Neurosurg. 2019 Jul 4. pii: S1878-8750(19)31858-3. doi: 10.1016/j.wneu.2019.06.201. [Epub ahead of print] Review. PubMed PMID: 31279111.

2)

Cognard C, Pierot L, Anxionnat R, Ricolfi F; Clarity Study Group. Results of embolization used as the first treatment choice in a consecutive nonselected population of ruptured aneurysms: clinical results of the Clarity GDC study. *Neurosurgery*. 2011;69(4):837-841.

3)

Pierot L, Spelle L, Vitry F; ATENA Investigators. Clinical outcome of patients harbouring unruptured intracranial aneurysms treated by endovascular approach: results of the ATENA trial. *Stroke*. 2008;39(9):2497-2504.

4)

Ito H, Onodera H, Wakui D, Uchida M, Sase T, Morishima H, Oshio K, Tanaka Y. The “temporary caging” technique for catheter navigation in patients with intracranial wide-necked aneurysms. *Int J Clin Exp Med*. 2015 Jul 15;8(7):11214-11219. eCollection 2015. PubMed PMID: 26379926.

5)

Kessler IM, Mounayer C, Pötting M, Spelle L, Vanzin JR, Moret J: The use of balloon-expandable stents in the management of intracranial arterial diseases: A 5-year single-center experience. *AJNR Am J Neuroradiol* 26: 2342-2348, 2005

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