Aneurysm Recanalization

- Risk factors for recanalization after coil embolization for cerebral aneurysms: importance of the first coil and prediction model
- Coincident intracranial aneurysm on the target vessel of acute ischemic stroke treated with mechanical thrombectomy: a multicentric case-control study
- Early diagnosis and rapid thrombectomy with stent placement in distal vertebral artery stenosis (Mori Type C) with mild symptoms
- Evaluation of Early Recurrence after Coil Embolization for Ruptured Anterior Communicating Artery Aneurysms
- Mechanical Thrombectomy for Large Vessel Occlusion Strokes Involving a Cerebral Aneurysm in the Target Vessel: Case Series
- Single-Disk's Plug-Based Embolization of Directional Branches During Urgent Complex Endovascular Aortic Aneurysm Repair
- Use of Fluid Imaging in Endovascular Neurotherapy
- Endovascular repair of a hypogastric artery aneurysm with arteriovenous fistula in a patient with iliac vein thrombosis: A case report

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Embolization coil made of soft and thin platinum wire called the “Guglielmi Detachable Coil (GDC)” enables safer treatment for brain aneurysms. However, patients may experience aneurysm recurrence because of incomplete coil filling or compaction over time. Unsatisfactory recanalization rates and incomplete occlusion are drawbacks for endovascular embolization. So, fabrication new medical devices and methods for usage at less invasive surgical techniques is mandatory to enhance long-term therapeutic performance of existing endovascular procedures [1)]

Large aneurysm neck size, wide neck morphology, large aneurysm diameter and ruptured aneurysm are significant predictors for recanalization of coiled aneurysms. Following endovascular treatment, ruptured intracranial aneurysms had a significantly increased risk of recanalization compared to matched unruptured intracranial aneurysms. The degree of recanalization of ruptured aneurysms is more significant and a higher percentage require retreatment. It takes a significantly shorter time for recanalization to occur in ruptured aneurysms compared to unruptured aneurysms. After endovascular treatment earlier, more frequent imaging follow-up is required for ruptured aneurysms compared to unruptured aneurysm [2)].

Endovascular treatment of intracranial aneurysms can be technically challenging in cases of wide aneurysm necks or unfavorable aneurysm dome-to-neck ratio. Coils deployed without supporting devices may herniate from the aneurysm sac into the parent artery, causing thromboembolic complications or vessel occlusion. Therefore, alternative strategies for managing wide-necked aneurysms have been introduced such as Stent-assisted coiling (SAC), balloon assisted coiling (BAC), and double-catheter coil embolization (DCC).

Aneurysm size remains the most important predictor of aneurysm recanalization and retreatment after stent-assisted coiling. Although higher packing densities were associated with increased rates of aneurysm occlusion in unadjusted statistical comparisons, this finding was no longer significant after adjusting for confounders [3)].

Stent implantation reduced the overall recanalization of the coiled cerebral aneurysms [4].

Scales

see Aneurysm Recanalization Stratification Scale.

Treatment

The drawback of endovascular treatment is aneurysmal remnants or recurrences, which is safely and durably amenable to flow diversion [5].

1)
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Griessenauer CJ, Adeeb N, Foreman PM, Gupta R, Patel AS, Moore J, Abud TG, Thomas AJ, Ogilvy CS, Baccin CE. Impact of Coil Packing Density and Coiling Technique on Occlusion Rates for Aneurysms Treated with Stent-Assisted Coil Embolization. World Neurosurg. 2016 Oct;94:157-166. doi: 10.1016/j.wneu.2016.06.127. Epub 2016 Jul 9. PubMed PMID: 27402438.
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