

# Complications of endovascular treatment for acute ischemic stroke

While [endovascular](#) treatment can be highly effective in reducing the risk of disability and death from [acute ischemic stroke](#), there are potential [complications](#) associated with the [procedure](#). Some of the most common complications of endovascular treatment for acute ischemic stroke include:

**Reperfusion injury:** The restoration of blood flow to the brain can cause damage to brain tissue due to the release of toxic substances.

**Dissection:** The catheter used in endovascular treatment can cause injury to the walls of the arteries in the brain, leading to dissection or tearing.

**Embolization:** During the procedure, small pieces of the clot can break off and travel to other parts of the brain, causing additional blockages.

**Infection:** There is a risk of infection associated with any surgical procedure, including endovascular treatment.

**Neurological deficits:** In some cases, endovascular treatment may not be able to restore blood flow to the affected area of the brain, leading to long-term neurological deficits.

While these complications are rare, they can be serious and potentially life-threatening. It is important to discuss the risks and benefits of endovascular treatment with a healthcare provider to determine if this procedure is right for you.

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Infarct in a new territory (INT) is a known complication of endovascular stroke therapy. Singh et al. assessed the incidence of INT, outcomes after INT, and the impact of concurrent treatments with [intravenous thrombolysis](#) and [nerinetide](#).

Data are from the ESCAPE-NA1 trial (Safety and Efficacy of Nerinetide [NA-1] in Subjects Undergoing Endovascular Thrombectomy for Stroke), a multicenter, international randomized study that assessed the efficacy of intravenous nerinetide in subjects with acute ischemic stroke who underwent endovascular thrombectomy within 12 hours from onset. Concurrent treatment and outcomes were collected as part of the trial protocol. INTs were identified on core lab imaging review of follow-up brain imaging and defined by the presence of infarct in a new vascular territory, outside the baseline target occlusion(s) on follow-up brain imaging (computed tomography or magnetic resonance imaging). INTs were classified by maximum diameter (<2, 2-20, and >20 mm), number, and location. The association between INT and clinical outcomes (modified Rankin Scale and death) was assessed using standard descriptive techniques and adjusted estimates of effect were derived from Poisson regression models.

Among 1092 patients, 103 had INT (9.3%, median age 69.5 years, 49.5% females). There were no differences in baseline characteristics between those with and without INT. Most INTs (91/103, 88.3%) were not associated with visible occlusions on angiography and 39 out of 103 (37.8%) were >20 mm in maximal diameter. The most common INT territory was the anterior cerebral artery (27.8%). Almost half of the INTs were multiple (46 subjects, 43.5%, range, 2-12). INT was associated with poorer

outcomes as compared to no INT on the primary outcome of the modified Rankin Scale score of 0 to 2 at 90 days (adjusted risk ratio, 0.71 [95% CI, 0.57-0.89]). Infarct volume in those with INT was greater by a median of 21 cc compared with those without, and there was a greater risk of death as compared to patients with no INT(adjusted risk ratio, 2.15 [95% CI, 1.48-3.13]).

Infarcts in a new territory are common in individuals undergoing endovascular [thrombectomy](#) for acute ischemic stroke and are associated with poorer outcomes. Optimal therapeutic approaches, including technical strategies, to reduce INT represent a new target for incremental quality improvement of endovascular thrombectomy <sup>1)</sup>.

## Intracranial hemorrhage

### Intracranial hemorrhage after endovascular intervention

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Singh N, Cimflova P, Ospel JM, Kashani N, Marko M, Mayank A, Nogueira RG, McTaggart RA, Demchuk AM, Poppe AY, Rempel JL, Field TS, Dowlathshahi D, van Adel B, Swartz RH, Shah R, Sauvageau E, Puetz V, Silver FL, Campbell B, Chapot R, Tymianski M, Goyal M, Almekhlafi MA, Hill MD; ESCAPE-NA1 Trial Investigators. Infarcts in a New Territory: Insights From the ESCAPE-NA1 Trial. Stroke. 2023 Apr 21. doi: 10.1161/STROKEAHA.122.042200. Epub ahead of print. PMID: 37082967.

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