Trevo Stent Retriever

see alsoTrevo XP ProVue Retriever.

The Trevo Stent Retriever is a tiny stent-shaped medical device that is attached to a thin wire. In a minimally invasive procedure that utilizes X-ray, the physician navigates the retriever from the femoral artery, which is located in the upper leg, to the blocked blood artery in the brain. The retriever is designed to ensnare the blood clot and remove it from the body. Originally cleared by the FDA in 2012, the Trevo Retriever has been used in thousands of patients worldwide.

<html><iframe width="560" height="315" src="https://www.youtube.com/embed/PxcERzyI67I" frameborder="0" allow="accelerometer; autoplay; encrypted-media; gyroscope; picture-in-picture" allowfullscreen></iframe> </html>

The goal of a study was to evaluate whether use of a BGC with the Trevo stent retriever improves outcomes compared with a conventional guide catheter.

The TRACK registry recruited 23 sites to submit demographic, clinical, and site adjudicated angiographic and outcome data on consecutive patients treated with the Trevo stent retriever. BGC use was at the discretion of the physician.

536 anterior circulation patients (of whom 279 (52.1%) had BGC placement) were included in this analysis. Baseline characteristics were notable for younger patients in the BGC group (65.4±15.3 vs 68.1±13.6, P=0.03) and lower rate of hypertension (72% vs 79%, P=0.06). Mean time from symptom onset to groin puncture was longer in the BGC group (357 vs 319 min, P=0.06).Thrombolysis in Cerebral Infarction 2b/3 scores were higher in the BGC cohort (84% vs 75.5%, P=0.01). There was no difference in reperfusion time, first pass effect, number of passes, or rescue therapy. Good clinical outcome at 3 months was superior in patients with BGC (57% vs 40%; P=0.0004) with a lower mortality rate (13% vs 23%, P=0.008). Multivariate analysis demonstrated that BGC use was an independent predictor of good clinical outcome (OR 2; 95% CI 1.3 to 3.1, P=0.001).

In acute stroke patients presenting with anterior circulation large vessel occlusion, use of a BGC with the Trevo stent retriever resulted in improved reperfusion, improved clinical outcome, and lower mortality [1)].

Imahori et al., retrospectively reviewed 50 patients with acute middle cerebral artery occlusion treatment with the Trevo Stent retriever. Patients were divided into groups that achieved (1st-pass recanalization group, n=21) or did not achieve (non-1st-pass recanalization group, n=29) a modified Thrombolysis in Cerebral Ischemia score of 2b or 3 with the 1st-pass procedure. Patients were also divided into a thromboembolic (n=49) and atherosclerotic (n=11) group by occlusion etiology. They evaluated radiographic findings of the Trevo strut, e.g., degree of stent expansion and filling defect of the thrombus in the strut (in-stent thrombus sign) during the 1st-pass procedure among these groups.

The median stent expansion was significantly greater in the 1st-pass recanalization than non-1st-pass recanalization group (60% versus 34%; P<0.01), and in the thromboembolic than atherosclerotic group (45% versus 31%; P<0.01). The receiver operator characteristic curve shows moderate

capacity of the prediction for recanalization and etiology, with an area under the curve of 0.83 and 0.73, respectively. The in-stent thrombus sign was significantly more common in the thromboembolic than atherosclerotic groups (86% versus 10%; P<0.01).

Greater stent expansion was associated with recanalization after thrombectomy. The in-stent thrombus sign may be useful for etiology prediction. These radiographic findings could provide useful real-time feedback during procedure, reflecting the clot-stent interaction [2)].

1)
Nguyen TN, Castonguay AC, Nogueira RG, Haussen DC, English JD, Satti SR, Chen J, Farid H, Borders C, Veznedaroglu E, Binning MJ, Puri AS, Vora NA, Budzik RF, Dabus G, Linfante I, Janardhan V, Alshekhlee A, Abraham MG, Edgell RC, Taqi MA, El Khoury R, Mokin M, Majjhoo AQ, Kabbani MR, Froehler MT, Finch I, Ansari SA, Novakovic R, Abdalkader M, Zaidat OO. Effect of balloon guide catheter on clinical outcomes and reperfusion in Trevo thrombectomy. J Neurointerv Surg. 2019 Feb 2. pii: neurintsurg-2018-014452. doi: 10.1136/neurintsurg-2018-014452. [Epub ahead of print] PubMed PMID: 30712011.

2)
Imahori T, Okamura Y, Sakata J, Shose H, Yokote A, Matsushima K, Matsui D, Kobayashi M, Hosoda K, Tanaka K, Fujita A, Kohmura E. Stent expansion and in-stent thrombus sign in the Trevo stent retriever predict recanalization and possible etiology during mechanical thrombectomy: A case series of 50 patients with acute middle cerebral artery occlusion. World Neurosurg. 2018 Dec 28. pii: S1878-8750(18)32910-3. doi: 10.1016/j.wneu.2018.12.087. [Epub ahead of print] PubMed PMID: 30597281.