- Diagnostic performance of CT perfusion in detecting contralateral aplasia of the A1 segment in acute internal carotid artery occlusion
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- Erratum to "Crossing double stent retriever technique for refractory terminal internal carotid artery occlusion" [Radiology Case Reports 17 (2022) 1848-1852]
- Benchtop evaluation of a double stent retriever thrombectomy technique for acute ischemic stroke treatment

A double-stent retriever is a medical device used in neurointerventional procedures, particularly in acute ischemic stroke treatment. It is designed to help remove blood clots that block the arteries in the brain. The double-stent retriever consists of two stent-like structures that are deployed within the clot, which helps to trap and retrieve the clot when the device is withdrawn.

The device is often used in endovascular thrombectomy procedures, where it is inserted into the patient's artery through a catheter. Once the device is in place, it is expanded to capture the clot. After securing the clot, the device is retracted, pulling the clot out of the vessel and restoring blood flow to the brain. This technique has been shown to improve outcomes in stroke patients, reducing the risk of long-term disability when performed within an appropriate time window after the stroke.

The double-stent retriever (SR) technique has been described as an effective rescue technique when single-SR fails to induce recanalization. Tomasello et al. aimed to assess the safety and efficacy of first-line double-SR in patients with stroke undergoing thrombectomy.

This was a multicenter, randomized, controlled, blinded adjudicated primary outcome study. Patients with a large vessel occlusion stroke within 24 hours after onset and undergoing thrombectomy were included. Upon confirmation of large vessel occlusion on initial angiogram, patients were randomly allocated to receive a first-line strategy: single-SR versus double-SR technique. Investigators could use their technique of choice if further passes were needed. The primary objective was to evaluate the efficacy of double-SR defined as first-pass complete recanalization (expanded Treatment in Cerebral Infarction grade 2c-3) compared with single-SR. First-pass recanalization and final successful recanalization (expanded Treatment in Cerebral Infarction grade 2c-3) were centrally assessed by a blinded investigator. The safety outcome was the occurrence of a symptomatic intracerebral hemorrhage. The data safety monitoring board stopped the recruitment after a preplanned interim analysis because a predefined efficacy boundary was reached.

From April 2022 to October 2023, 108 patients were included: 50 (46%) in the single-SR group and 58 (54%) in the double-SR group. First-pass recanalization was achieved in 12 of 50 patients (24%) allocated to single-SR and 27 of 58 patients (46%) allocated to double-SR (adjusted odds ratio, 2.72

[95% CI, 1.19-6.46]). Substantial reperfusion within 3 attempts was obtained in 42 patients (84%) allocated to single-SR and in 52 patients (89%) allocated to double-SR (adjusted odds ratio, 1.74 [95% CI, 0.5-5.76]). The mean number of passes was 2 ± 1.3 with single-SR and 1.7 ± 1 with double-SR (mean difference, -0.37 [95% CI, -0.9 to 0.06]). Asymptomatic intracerebral hemorrhage occurred in 3 patients (6%) allocated to single-SR and in 6 patients (10%) allocated to double-SR (adjusted odds ratio, 1.66 [95% CI, 0.40-8.35]).

In patients with stroke undergoing thrombectomy, first-line double-SR is safe and superior to single-SR in achieving first-pass recanalization but not final recanalization. Implications on clinical outcomes should be studied in specifically designed trials.

Registration: URL: https://www.clinicaltrials.gov; Unique identifier: NCT05632458¹⁾.

The study provides compelling evidence that double-SR is superior to single-SR in achieving first-pass recanalization, which is a critical endpoint in acute ischemic stroke management. However, this benefit did not translate into a significant difference in final recanalization rates, suggesting that double-SR may not offer a clear advantage in all aspects of thrombectomy. The safety profile of double-SR appears comparable to that of single-SR, but the higher rate of asymptomatic intracerebral hemorrhage in the double-SR group warrants caution.

The results indicate that double-SR may be an effective rescue technique when single-SR fails, but further research is needed to assess the impact on long-term clinical outcomes, such as functional recovery, disability, and survival. Specifically designed trials focusing on clinical endpoints are crucial to determine whether the procedural success offered by double-SR translates into improved patient outcomes.

Additionally, the optimal patient selection, the role of subsequent passes, and the bleeding risks associated with double-SR require further investigation. The findings also raise questions about whether double-SR should be considered a first-line intervention or remain as a rescue technique after failure of single-SR.

1)

Tomasello A, Moreu M, Terceño M, Dinia L, Barrena Caballo MR, Requena M, Jablonska M, Cendrero J, Flores A, Ortega S, Diana F, Henandez D, de Dios M, Rubiera M, Garcia-Tornel A, Rizzo F, Olivé M, Pérez-García C, Trejo Gallego C, Carmona T, Rodrigo-Gisbert M, Molina C, Ribo M. Randomized Study Comparing First-Line Dual Versus Single-Stent Retriever Technique: TWIN2WIN. Stroke. 2024 Dec 20. doi: 10.1161/STROKEAHA.124.048496. Epub ahead of print. PMID: 39704055.

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