Geometric clot extractor

Despite advances in revascularization tools for large vessel occlusion presenting as acute ischemic stroke, a significant subset of clots remain recalcitrant to current strategies. We assessed the effectiveness of a novel thrombectomy device that was specifically designed to retrieve resistant fibrin rich clots, the geometric clot extractor (GCE; Neuravi, Galway, Ireland), in an in vitro cerebrovascular occlusion stroke model.

METHODS: After introducing fibrin rich clot analogues into the middle cerebral artery of the model, we compared the rates of recanalization between GCE and Solitaire flow restoration stent retriever (SR; Medtronic, Minneapolis, Minnesota, USA; control group) cases. A maximum of three passes of each device was allowed. If the SR failed to recanalize the vessel after three passes, one pass of the GCE was allowed (rescue cases).

RESULTS: In a total of 26 thrombectomy cases (13 GCE, 13 SR), successful recanalization (Thrombolysis in Cerebral Infarction score of 2b or 3) was achieved 100% of the time in the GCE cases with an average of 2.13 passes per case. This rate was significantly higher compared with the Solitaire recanalization rate (7.7%, P<0.0001) with an average of three passes per case. After SR failure (in 92% of cases), successful one pass GCE rescue recanalization was achieved 66% of the time (P<0.005).

CONCLUSION: Application of the GCE in this experimental stroke model to retrieve typically recalcitrant fibrin rich clots resulted in higher successful recanalization rates than the SR [1].

1)
Fennell VS, Setlur Nagesh SV, Meess KM, Gutierrez L, James RH, Springer ME, Siddiqui AH. What to do about fibrin rich 'tough clots'? Comparing the Solitaire stent retriever with a novel geometric clot extractor in an in vitro stroke model. J Neurointerv Surg. 2018 Jan 19. pii: neurintsurg-2017-013507. doi: 10.1136/neurintsurg-2017-013507. [Epub ahead of print] PubMed PMID: 29352061.