High flow bypass surgery

High flow bypass surgery can be a last resort procedure for patients suffering from complex neurovascular pathology. Temporary occlusion of a recipient artery in these patients could result in debilitating neurological deficits.

de Boer et al. developed a sutureless, mechanical anastomotic connection device, the SELANA clip (Sutureless Excimer Laser-Assisted Non-occlusive Anastomosis clip: SEcl). In a study, they aimed to determine the long-term non-inferiority of the SEcl technique compared with historical data of the conventional ELANA anastomosis technique.

A total of 18 SEcl bypasses were created on the carotid artery in a porcine model in 6 different survival groups. Mean application times, flap retrieval rates, hemostasis, patency, flow, endothelialization, and remodeling were assessed.

The mean application time of the SEcl anastomoses was 15.2 ± 9.6 min, which was faster compared with the conventional ELANA anastomoses. The flap retrieval rate of the SEcl anastomoses was 86% (32/37). Direct hemostasis was achieved in 89% (33/37) SEcl anastomoses. Patency in all surviving animals was 94% (17/18). Bypass flow after six months was 156.5 ± 24.7 mL/min. Full endothelialization of the SEcl pins was observed after 3 weeks.

The SEcl technique is not inferior to the ELANA technique regarding patency, flap retrieval rate, flow, and endothelialization. On the basis of a significantly shorter application time and superior hemostasis, the SEcl technique could be preferable over the ELANA technique. A pilot study in patients is a logical next step based on our current results [1)].

1)
de Boer B, van Doormaal TPC, Tulleken CAF, Regli L, van der Zwan A. Long-term feasibility of the new sutureless excimer laser-assisted non-occlusive anastomosis clip in a pig model [published online ahead of print, 2020 Sep 2]. Acta Neurochir (Wien). 2020;10.1007/s00701-020-04533-0. doi:10.1007/s00701-020-04533-0