

2019 WSLs Poster 006

Mechanical Dilation Using Nylon Monofilament Aids Multisite lymphaticovenous Anastomosis through Improving the Quality of Anastomosis

Shuhei Yoshida

syuheiyoshida44@gmail.com

Background: Lymphaticovenous anastomosis (LVA) is now a common treatment for lymphedema. It is important to create as many bypasses as possible to maximize the efficacy of LVA. We have developed a method whereby nylon monofilaments are placed inside the vessel lumen to act as dilators. We refer to this technique as “mechanical dilation (MD)” to distinguish it from intravascular stenting. In this study, we investigated the efficacy of the conventional supermicrosurgery technique performed with and without mechanical dilation as a treatment for lower limb lymphedema.

Methods: LVA was performed using conventional supermicrosurgery alone in 10 patients (the group without MD) and in combination with mechanical dilation in another 10 patients (the group with MD). Using this MD method, a smaller nylon monofilament is inserted into the vessel as a guide before inserting a larger nylon monofilament as a dilator. After the smaller guide monofilament has been inserted, it is then much easier to insert another monofilament for dilation, even if it is a larger one. At this point, it is much easier to insert the guide monofilament through a hole made by making an incision into the vessel measuring half the diameter of the vessel than inserting it through the free distal end. The anastomotic procedure becomes easier to perform when more than two nylon monofilaments larger than 6-0 are successfully inserted. The nylon dilator monofilament that is already in position in the first vessel is then inserted into the second vessel. The nylon dilator is then used as an intravascular stent in the anastomosis. Results

The mean number of successful LVAs performed per hour was significantly higher in the group with MD than in group without M.D. (1.42 ± 0.16 vs 1.14 ± 0.15 ; $P < 0.05$).

The mean amount of improvement in the lower extremity lymphedema index was significantly greater in group with MD than in group without MD (7.34 ± 1.57 vs 4.41 ± 1.53 ; $P = 0.003 < 0.05$). A statistically significant correlation was found between the number of successful LVAs and amount of improvement in lymphedema ($r = 0.449$, $P = 0.047 < 0.05$).

Conclusion: Our findings suggest that use of mechanical dilation does not shorten the operating time or increase the number of LVAs that can be performed but may make it possible to increase the number of successful LVAs that can be performed between vessels with a diameter < 0.3 mm. Use of mechanical dilation could increase the improvement rate of lymphedema to a greater extent than that achieved by conventional microsurgery alone.