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VIDEO

Reconstructive

Technical Tips for Anastomosis of 0.2-mm Diameter Vessels during Lymphatic Venous Anastomosis

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INTRODUCTION

Lymphatic venous anastomosis (LVA) requires manipulation of the lymphatic channel and veins with diameters of 0.3–0.8 mm, which is called supermicrosurgery.[1,2] However, sometimes, the surgeon finds only approximately 0.2 mm of the lymphatic channel in the surgical field. Despite advances in supermicrosurgical techniques, anastomosis of vessels with a diameter of approximately 0.2 mm is still challenging.[3]

The lumen of the lymphatic channel is obscured because of the transparency of the wall, whereas the visibility of the lumens of small arteries and veins is high. In addition, the lymphatic channel has a flabby nature, making LVA difficult. Intravascular stenting has made it possible to anastomose small vessels more precisely and safely[4]; however, insertion of stents into a 0.2-mm lymphatic channel with an obscure lumen is not only difficult but can also potentially damage the intimal layer.

Several microsurgical practices using animal and nonanimal models have been reported.[5] However, detailed descriptions and technical tips about anastomosis of such small vessels have not been reported in LVA. Herein, we demonstrate the technical tips in the video. [**See Video (online),** which displays details of technical tips for anastomosis of 0.2- mm diameter vessels during lymphatic venous anastomosis. The developed supermicrosurgical skills are also useful in free perforator flap surgery and replantation of a fingertip.]

SURGICAL TECHNIQUE

Minimally invasive LVA is performed with a 1.5–2.0 cm incision under local anesthesia using a 50-micron needle. The lymphatic channel under the superficial fascia and nearby small vein is dissected gently. During anastomosis, vessel forceps cannot be placed in the lumen because of the small vessel diameter. The first suture is important for successful LVA. In the first suture, the vessel wall is strained to the opposite side and the needle threaded while holding its tip toward the lumen at the stump. Owing to the characteristics of the flabby lymphatic channel, the needle does not pierce the lymphatic channel wall with usual force; sticking the needle to the lymphatic channel wall and piercing with accelerating force is important for threading. The surgeon should pay attention to the back wall of the vessel being sutured during anastomosis. The first suture in a 0.2-mm vein is comparatively easy because the lumen is visible. The surgeon should be careful to avoid twisting the anastomosis with the suture. For the second suture, the author usually threads from 180 degrees opposite to the first suture. In the second suture, the vessel wall or knot of the first suture is strained to the opposite side, and the needle is threaded similar to the first suture. During threading, the needle must be held to ensure that its tip does not include the back wall. As vessel forceps cannot be placed in the lumen, the sensation of the tip of a 50-micron needle is important to prevent the back wall from being caught. The third and fourth sutures are performed similar to the second suture. Three or four sutures are sufficient to achieve an LVA of 0.2-mm vessels. After anastomosis, venous backflow to the lymphatic channel is observed sometimes; however, the lymphatic fluid gradually flows back to the vein. The wound should be sutured using a viewing microscope to ensure that the anastomosis site is not involved in the suture.

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