

Use of Fat Grafts for Stabilizing Microvascular Pedicle Geometry in Lower Limb Reconstruction

Shunjiro Yagi, MD, PhD*; Yoshiko Suyama, MD*; Kensaku Yamaga, MD, PhD†; Maki Morita, MD*; Kohei Fukuoka, MD*

Sir:

Lower limb reconstruction using a free flap after resection of a malignant neoplasm remains a great challenge because of the limited alternatives for recipient vessel selection. Moreover, successful free flap transfer needs both microvascular anastomosis and proper orientation of the microvascular pedicle considering its 3-dimensional geometry. The use of free fat grafts to stabilize the pedicle in lower limb reconstruction using a free flap is described.

A 16-year-old man presented with a tumor and sharp pain on the medial side of his left lower limb. A biopsy showed myxofibrosarcoma of the left lower leg. Under general anesthesia, we resected the tumor including the medial head of gastrocnemius, the sartorius, the gracilis, and the semitendinosus muscles and part of the tibia. The size of the cutaneous defect was 17 × 14 cm. The patellar ligament was reconstructed with the iliotibial tract. The cutaneous and soft-tissue defects were covered with a free latissimus dorsi flap and skin graft. At first, we tried to dissect the left descending genicular vessels for the recipient vessels. However, we could not confirm reliable blood flow and sufficient venous caliber. Therefore, we selected the posterior tibial vessels for microanastomosis (Fig. 1). After flap fixation, we turned the posterior tibial vessels cephalad and anastomosed them to the flap pedicle under a microscope. After microanastomosis, there was unfavorable 3-dimensional geometry of the pedicle. Autologous fat grafts were harvested from the subcutaneous tissue of a discarded flap with a size of 1 cm³. Adequate fat graft volumes were set to stabilize the pedicle at the appropriate position to prevent kinking (Fig. 2). The patient's postoperative course was good without any complications.

Bar-Meir et al.¹ first reported the use of a fat graft for stabilization of the microvascular pedicle in breast reconstruction using a deep inferior epigastric perforator flap. Sader et al.² reported the use of fat grafts for stabilizing



Fig. 1. Intraoperative view of the defect after tumor resection. The posterior tibial artery has been prepared as the recipient artery (arrow).

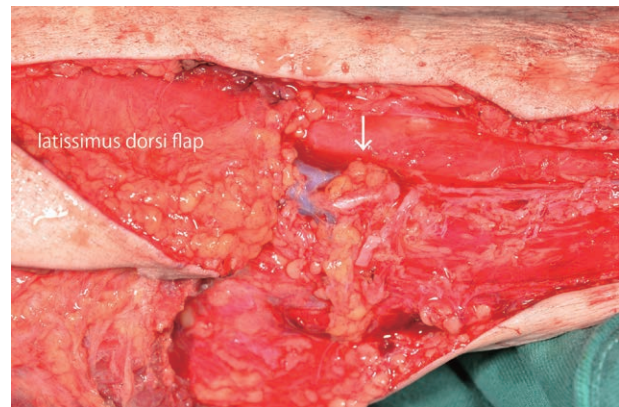


Fig. 2. The posterior tibial artery is turned cephalad and anastomosed to the flap pedicle under a microscope. A fat graft is used to create proper 3-dimensional geometry of the pedicle.

microvascular pedicles in head and neck reconstruction. There is no previous report of the use of a fat graft for stabilizing a microvascular pedicle in lower limb reconstruction. Yagi et al.³ reported that the use of a fat graft is more frequent in head and neck reconstruction when the superior thyroid artery is selected as a recipient artery, because the direction of the artery should be changed to be cephalad for microanastomosis.³ In this case, we turned it cephalad for microanastomosis, but then unfavorable 3-dimensional geometry of the pedicle emerged.

Although reanastomosis takes time, it is not always successful. A fat graft is a reliable and easy procedure to correct pedicle geometry in lower limb reconstruction using a free flap.

Shunjiro Yagi, MD, PhD

Department of Plastic and Reconstructive Surgery
Tottori University Hospital
36-1, Nishi-machi, Yonago
Tottori, Japan, 683-8504
E-mail: yagishun68@gmail.com

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From the *Department of Plastic and Reconstructive Surgery, Tottori University Hospital, Yonago, Japan; and †Department of Orthopedic Surgery, Faculty of Medicine, Tottori University, Yonago, Japan.

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DISCLOSURE

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