Superficial Circumflex Iliac Artery Perforator Flap for Dorsalis Pedis Reconstruction

Kensuke Tashiro, MD*†
Shuji Yamashita, MD†

Summary: Reconstruction of dorsalis pedis with soft tissue is challenging because it needs to preserve thin structure to ensure that the patient will be able to wear shoes. Here, we report the use of a thin superficial circumflex iliac artery perforator (SCIP) flap in dorsalis pedis reconstruction. A 67-year-old man presented with a third-degree burn, which exposed his extensor tendons. A thin SCIP flap from the left inguinal region measuring 15×4 cm was transferred to the dorsalis pedis region. Postoperatively, no major cosmetic or functional problems were observed. Because the invasiveness of the donor site is nearly same between SCIP flap and skin graft from inguinal region, SCIP flap is better solution in point of textural qualities for dorsalis pedis reconstruction. (Plast Reconstr Surg Glob Open 2017;5:e1308; doi: 10.1097/GOX.0000000000001308; Published online 20 April 2017.)

The dorsalis pedis is structurally thin and, as a result, burn injuries reach deep tissue. It is preferable to preserve this characteristic thin structure when performing soft-tissue reconstruction of the dorsalis pedis to ensure that the patient will be able to wear shoes.1–4 Skin grafts or flaps are used; however, skin grafts can cause problems, such as scar contracture, and have an inferior texture compared to flaps. Thin flaps are more suitable, but flap use is highly difficult from a technical point of view.5 Here, we report the use of a thin superficial circumflex iliac artery perforator (SCIP) flap in dorsalis pedis reconstruction.

CASE REPORT

A 67-year-old man presented to an outpatient reconstructive department after mistakenly spilling hot oil on his dorsalis pedis in his workplace (Fig. 1). He presented with a third-degree burn, which exposed his extensor tendons. He was scheduled for wound treatment using a SCIP flap. A thin SCIP flap from the left inguinal region measuring 15×4 cm was obtained with a deep branch of the superficial circumflex iliac artery as a vascular pedicle (Fig. 2). The donor site was processed using primary closure. The flap was positioned on the wound. Vascular end-to-side anastomosis was performed on the dorsalis pedis artery, and end-to-end anastomosis was performed on the subcutaneous veins. To prevent pressure, artificial dermis was positioned to cover the anastomosis sites. Secondary repair was performed under local anesthesia, and the wound was covered by the flap at 3 months postoperatively, with no major cosmetic or functional problems (Fig. 3). No major problems were observed at the donor site (Fig. 4).

DISCUSSION

SCIP flaps are perforator flaps and were first reported by Koshima et al.6 in 2004. They are used in a variety of reconstructions, including limb, head and neck, external auditory canal, and pudendal reconstruction.6–9 Although not as commonly used as anterolateral thigh flaps and deep inferior epigastric artery perforator flaps, its merits include its thinness, short surgical duration, and less invasiveness at the donor site. These characteristics make the SCIP flap especially suitable for dorsalis pedis reconstruction.

A disadvantage of SCIP flaps is that the blood vessel diameter is small. In particular, when performing arterial anastomosis, it is necessary to perform end-to-side anastomosis with the main trunk artery. In this case, we performed end-to-side anastomosis with the dorsalis pedis artery. In end-to-side anastomosis, to prevent postoperative pressure on the anastomosis site, the site can be covered with an artificial dermis without suture closure, and wound closure is performed with secondary repairs, which is considered as an effective method.

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The superficial circumflex iliac artery system has a large number of anatomical variations; however, preoperative examination using color Doppler ultrasound allows proper handling of this. The superficial circumflex iliac artery system and the superficial inferior epigastric artery system have a complementary relationship, and, therefore, it is important to have a flexible surgical plan. In this case, skin grafting was also a viable choice; however, a skin graft has inferior textural qualities compared to a flap and because the invasiveness at the donor site is nearly the same, we selected a flap. There was also the danger that ulcers would repeatedly form because of secondary treatment and that a graft would adhere to the extensor tendons on the dorsalis pedis.

SCIP flaps are similar to groin flaps; however, because they are thinner and have longer vascular pedicles, the flap can be freely positioned, which makes SCIP flaps more suitable for dorsalis pedis reconstruction and provides a higher degree of patient satisfaction.

**CONCLUSION**

Because the invasiveness of the donor site is nearly the same between SCIP flap and skin graft from inguinal region, SCIP flap is a better solution in point of textural qualities for dorsalis pedis reconstruction.
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