

# Superficial Circumflex Iliac Artery Perforator Flap, SCIP(ping) The Donor Site in Forefoot Soft Tissue Reconstruction: A Case Series

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## Learning Point of the Article:

The SCIP flap allows preservation of forefoot length in complex soft-tissue defects, preventing unnecessary bone shortening and improving functional outcomes.

## Abstract

**Introduction:** Preservation of forefoot length is crucial for gait mechanics and long-term function. However, soft-tissue defects in this region often lead to bone shortening or amputation. The superficial circumflex iliac artery perforator (SCIP) flap offers a thin and reliable reconstructive option with minimal donor-site morbidity.

**Case Report:** We present three patients with complex forefoot soft tissue loss in whom SCIP flaps were used for reconstruction. In all cases, the flap provided stable coverage, preserved bone length, and allowed functional recovery.

**Conclusion:** The SCIP flap is a valuable option in forefoot reconstruction, enabling preservation of viable structures while maintaining good functional and esthetic outcomes.

**Keywords:** Superficial circumflex iliac artery perforator flap, forefoot reconstruction, soft-tissue defect, microsurgery, and foot trauma.

## Introduction

Complex forefoot trauma remains poorly documented in literature. We present 3 case reports of forefoot injuries with tissue loss, in which the superficial circumflex iliac artery perforator (SCIP) flap was used for reconstruction. Based on these case reports, we illustrate the value of this flap for this type of injury.

osteotomy site at the first proximal phalanx, the extensor tendons, and the first metatarsophalangeal joint exposed. As osteomyelitis of the osteotomy site could not be excluded, a filleted toe flap was considered initially. After clinical evaluation and discussion with the patient, debridement, K-pin fixation, and coverage with a SCIP flap were chosen. Healing of the flap and donor site was uneventful. Bone healing and joint function were completely restored. Despite some bulkiness of the flap, the patient could wear normal shoes and declined flap thinning (Fig. 1).

## Case Report

### Case 1

A 27-year-old male patient was referred with infection and necrosis of the skin after a right hallux valgus correction. Osteosynthesis material was already removed, leaving the

### Case 2

A 19-year-old male patient sustained a crush injury with partial

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## Author's Photo Gallery



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**Figure 1:** A 27-year-old male patient with skin necrosis after hallux valgus correction. Before, immediately after, and long-term results after K-pin fixation and superficial circumflex iliac artery perforator flap coverage.



**Figure 2:** A 19-year-old male patient with a crush injury accompanied by a partial degloving of his right toes and forefoot. Before, immediately after, and long-term results after superficial circumflex iliac artery perforator flap coverage.

degloving of his right toes and forefoot. At the time of the referral, there was dry necrosis extending from digit 1 through digit 4. There was insufficient skin available for primary closure. A SCIP flap provided coverage of the metatarsal heads, preventing further shortening and preserving full functionality (Fig. 2).

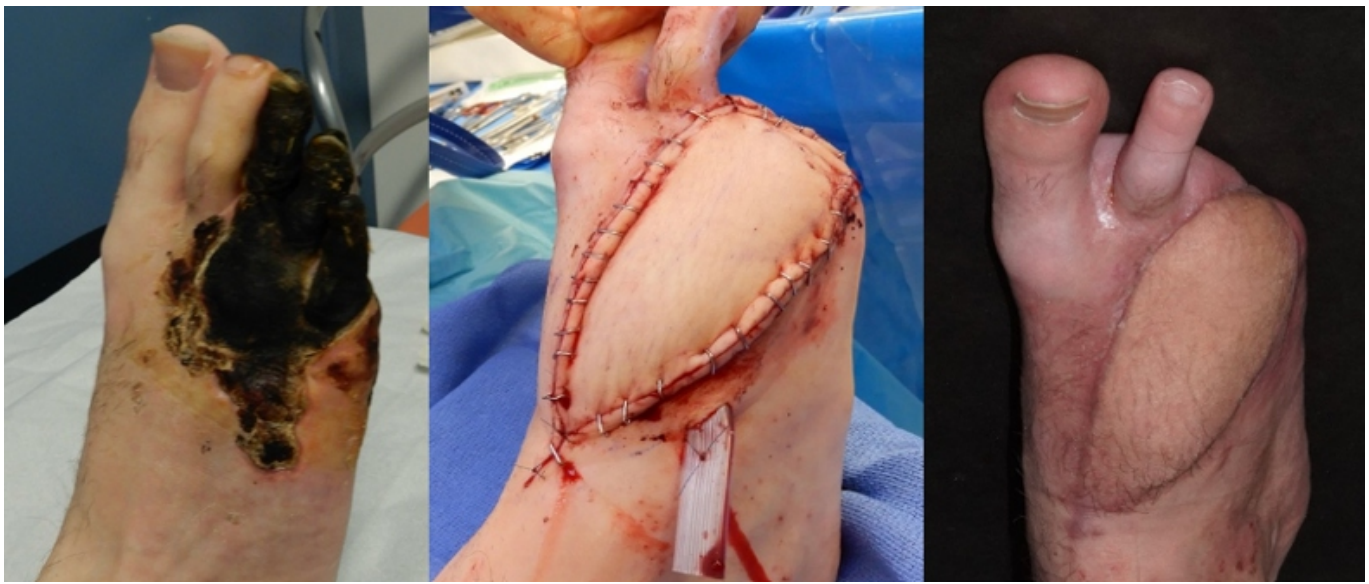
### Case 3

A 16-year-old boy presented with multiple fractures and partial degloving after a truck drove over his foot. There was full-thickness necrosis of digit 3 through digit 5. As in case 2, a SCIP flap provided wound closure without additional bone

shortening. The flap and underlying metatarsal fractures healed uneventfully. The patient regained full function and ambulates with normal footwear (Fig. 3).

### Discussion

It is well documented that maintaining the length of the forefoot, including maximum preservation of the metatarsal bones, is crucial for maintaining optimal gait mechanics, load distribution, and shoe compatibility. Loss of length can lead to reduced propulsion, abnormal pressure points, and secondary deformities, which can ultimately affect long-term function and patient satisfaction.

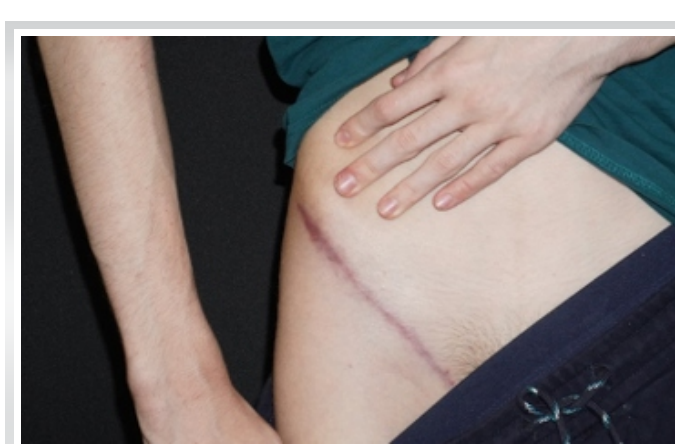


**Figure 3:** A 16-year-old boy with multiple fractures and partial deglovement after a truck drove over his foot. Before, immediately after, and long-term results after superficial circumflex iliac artery perforator flap coverage.

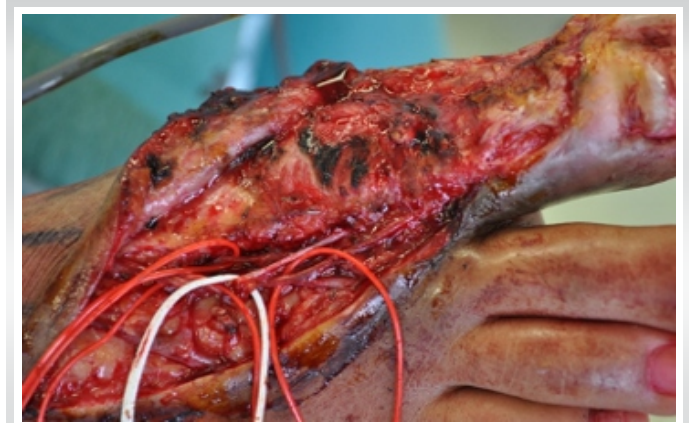
In patients with soft-tissue loss, the filleted toe flap and Lisfranc amputation are the prevalent treatment options for wound closure. These procedures often sacrifice viable bone through bone shortening. No other local flap options have proven reliable in the forefoot, making free flaps the method of choice if bone and tendon coverage is pursued. The decision whether to amputate or reconstruct is a collective decision between the surgeon and the patient. However, no data exist to guide this decision-making [1, 2]. Partial foot amputation has many long-term complications and needs to be avoided whenever possible [3, 4].

Traditional free skin flaps, such as the radial forearm flap, have a longer and larger vascular pedicle but are bulkier and have an unfavorable donor site. The free SCIP flap has evolved from the free groin flap, reducing its donor site morbidity and providing

a thinner flap with a longer pedicle [5, 6]. After its description in 2004 by Koshima, it has quickly gained popularity, with some authors advocating its use in lower extremity reconstruction [7, 8, 9, 10]. Dissection of the flap is well described in the literature and is beyond the scope of this article. We have recently adopted the medial to lateral dissection approach as propagated by Hong [10]. Although counterintuitive, we have found this approach to improve the ease of dissection. The donor site of the SCIP flap could be closed primarily in all cases. The donor site scar is hidden in underwear and swimwear, which makes it exceptionally advantageous (Fig. 4). The diameter of the superficial circumflex iliac artery and veins provides a good match for the dorsalis pedis artery and the ample veins of the dorsal foot (Fig. 5).



**Figure 4:** The donor site of the superficial circumflex iliac artery perforator flap could be closed primarily in all cases.



**Figure 5:** The diameter of the superficial circumflex iliac artery and veins provides a good match for the dorsalis pedis artery and the ample veins of the dorsal foot.

## Conclusion

Owing to its minimal donor site morbidity and thinness, the SCIP flap is a valuable reconstructive option in forefoot trauma, enabling maximal preservation of forefoot length.

## Clinical Message

In complex forefoot soft-tissue defects, preservation of metatarsal length is essential for maintaining normal gait and foot biomechanics. The SCIP flap offers thin, reliable coverage with minimal donor-site morbidity and should be considered before resorting to bone shortening or amputation.

**Declaration of patient consent:** The authors certify that they have obtained all appropriate patient consent forms. In the form, the patient has given the consent for his/ her images and other clinical information to be reported in the journal. The patient understands that his/ her names and initials will not be published and due efforts will be made to conceal their identity, but anonymity cannot be guaranteed.

**Conflict of interest:** Nil **Source of support:** None

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