Sir:

Extensive soft-tissue defects of the upper extremity may present a challenge even for experienced surgeons. Free tissue transfer may be the best option to cover exposed tendons or bones when regional flaps are not feasible. However, at times, the defect size exceeds the possible coverage offered by any common flap. Confronted with such a situation, we used a giant mosaic flap to reconstruct the forearm of a 35-year-old male polytrauma patient with an extensive “decollement” injury caused by a car accident.

The patient sustained multiple fractures throughout the body and a large tissue defect of the volar forearm, extending from the cubital fossa to the basal joint of the thumb. In the initial operation, revascularization of the hand was achieved by reconstruction of the disrupted radial artery using a preserved part of the shredded ulnar artery as an interposition graft. A synthetic wound dressing (Syspur-derm, Hartmann, Austria) was applied for temporary defect coverage.

After serial debridement over a period of 19 days to ensure a clean wound bed, definitive defect coverage was planned. A very large, connected lateral circumflex femoral artery perforator (LCFA)-superficial circumflex iliac artery (SCIP) perforator flap from the right leg was chosen, applying the principles of the mosaic flap first described by Koshima et al.1,2 A skin paddle, 45 cm in length and 11 cm in width, was raised subfascially, starting at the lateral border to identify the perforators and the superficial circumflex iliac vessels. After preparation and dissection of the selected (and preferably long) vessels, the medial outlines of the flap were incised and the flap was completely raised. Subsequently, the superficial circumflex iliac vessels were anastomosed to distal part of the lateral circumflex femoral vessels after giving off the LCFA perforator to the flap using an end-to-end technique (Fig. 1). After the completed anastomosis, brisk bleeding could be seen on the skin edges of the SCIP part of the mosaic flap. Then the flap was completely dissected and transferred to the recipient region on the forearm. Microvascular anastomosis was performed between the proximal stump of the ligated ulnar vessels and the lateral circumflex vessels.

The donor site was amenable to direct closure with minimal donor-site morbidity. The combined LCFA-SCIP mosaic flap provided sufficient defect coverage, and the postoperative course was uneventful. There were no complications, and an excellent functional outcome at 18-month follow-up (Fig. 2) was achieved. The patient was able to resume normal daily activity by the second month and is very satisfied with the cosmetic and functional outcome of the reconstruction.

Fig. 1. The harvested large LCFA-SCIP mosaic flap. The circle denotes the end-to-end inflap anastomosis between the distal end of the LCF vessels and the SCI perforator vessels.
In cases of upper extremity soft-tissue defects, free muscle flaps such as the latissimus dorsi flap have traditionally resulted in a good functional outcome and sufficient defect coverage.\(^3,4\) However, muscle flaps need to be covered with split-thickness skin grafts further increasing donor-site morbidity. Additionally, skin-grafted muscle flaps are more tedious to cope with in cases of reoperation. With the advent of perforator flaps, a definite improvement of the aesthetic aspect of the reconstruction was added. Nevertheless, it is common knowledge that the size of certain perforator flaps is limited due to issues of flap circulation through a sufficient perforator. To overcome this problem, a combination of 2 perforator flaps might be a solution.

To the best of our knowledge, this is the largest mosaic flap described for upper extremity reconstruction. We believe this innovative approach offers great utility for extended upper limb coverage, with minimal donor-site morbidity. Although the planning and realization of such a complex flap is only reserved for the experienced microsurgeon, it provides an excellent functional and aesthetically pleasing reconstructive option.\(^5\)

**DISCLOSURE**

The authors have no financial interest to declare in relation to the content of this article. The Article Processing Charge was paid for by the authors.

**REFERENCES**

1. Koshima I, Yamamoto H, Moriguchi T, et al. Extended anterior thigh flaps for repair of massive cervical defects involving pharyngoesophagus and skin: an introduction to the "mosaic" flap principle. *Ann Plast Surg.* 1994;32:321–327.
2. Koshima I. A new classification of free combined or connected tissue transfers: introduction to the concept of bridge, siamese, chimeric, mosaic, and chain-circle flaps. *Acta Med Okayama* 2001;55:329–332.
3. Wang D, Levin LS. Composite tissue transfer in upper extremity trauma. *Injury* 2008;39(Suppl 3):S90–S96.
4. Schaverien MV, Hart AM. Free muscle flaps for reconstruction of upper limb defects. *Hand Clin.* 2014;30:165–183.
5. Cayci C, Carlsen BT, Saint-Cyr M. Optimizing functional and aesthetic outcomes of upper limb soft tissue reconstruction. *Hand Clin.* 2014;30:225–238.