

EP-223

**복합 전족부 발바닥 결손의 재건:
ALT 유리피판 및 중족골 간 혈관
터널링 기법**

(Salvage of Complex Plantar Forefoot Defects: ALT Free Flap with Trans-metatarsal Pedicle Tunneling)



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Purpose: Reconstructing plantar forefoot defects in diabetic patients is challenging due to the limited availability of recipient vessels. This case reports a successful microvascular reconstruction of a plantar forefoot defect using an Anterolateral Thigh (ALT) free flap and a trans-metatarsal pedicle route to access the dorsalis pedis artery.

Methods: A 29-year-old male with a history of a previous ALT free flap presented with a soft tissue defect on the left plantar forefoot and progressed osteolysis in the 3rd proximal phalanx and metatarsal head. The patient's HbA1c was 10.1% and glucose 301 mg/dL. To cover the plantar defect, an ALT free flap was harvested, and the dorsalis pedis artery was selected as the recipient vessel. After vessel dissection, a tunnel was created through the first intermetatarsal space. A Hemovac tube and Penrose drain were utilized as guides to safely pull the pedicle from the dorsum to the plantar region.

Results: The microvascular anastomosis was performed successfully on the dorsal side. The pedicle remained stable within the intermetatarsal tunnel without any kinking or vascular compromise. The flap survived completely without complications. During the 4-month follow-up period, the patient recovered well and is currently capable of independent ambulation.

Conclusion: The intermetatarsal tunneling technique with an ALT free flap is an effective strategy for plantar forefoot reconstruction, especially when local recipient vessels are compromised. Using a surgical guide (Hemovac/Penrose) ensures the safe passage of the pedicle, providing a reliable alternative for complex diabetic foot salvage.



Fig.1

Complex defect on the right plantar forefoot of a poorly controlled diabetic patient. A deep, extensive ulcer with exposed bone and tendon is present over the second metatarsal head.



Fig.2

An intraoperative photograph demonstrates the creation of a tunnel through the intermetatarsal. The retrieved pedicle was anastomosed to the dorsalis pedis artery and its venae comitantes.



Fig.3

A clinical photograph taken 14 days postoperatively shows the Anterolateral Thigh (ALT) free flap well-settled over the forefoot defect. This demonstrates that the trans-metatarsal pedicle tunneling provided a stable and sufficient blood supply to the flap.