## Improving Radial Forearm Free Flap Donor Site **Closure with an Ulnar-Based Perforator Flap**

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#### BACKGROUND

- The radial forearm free flap (RFFF) is commonly used for distant microvascular reconstruction.
- Advantages include its pliable tissue, consistent anatomy, ease of elevation, and flap reliability.<sup>1-4</sup>
- Various techniques have been used to close the RFFF donor site:
  - Autologous skin graft, biologic allografts, and local random flap advancement
- Common complications of donor site closure:
  - Delayed wound healing, tendon exposure, and poor scarring.<sup>2,5–7</sup>
  - Skin graft-related morbidity
- Local, flap-based RFFF donor site reconstruction is employed to improve the aesthetic shortcomings while limiting the need for an additional remote donor site morbidity and/or complication.

#### PURPOSE

This study explores the use of an ulnar forearm perforator flap (UFPF) technique as an alternative closure mechanism for RFFF donor site.

### TECHNIQUE

- The UFPF is designed concurrently as the RFFF is marked on the forearm. UFPF template is approximately 80% of the planned RFFF size.
- The ulnar artery perforators are dopplered to mark the pivot point of the flap rotation.
- In cases where the defect is too large to be covered entirely by UFPF alone, autologous skin graft is employed for complete closure.

#### **CASE CORRELATES**

Case 1: 54-year-old female underwent a resection of a 4x6 cm tumor in the oral cavity floor. Reconstruction was performed using a left RFFF. Closure of the flap donor site used an UFPF measuring approximately 120  $cm^2$ . Case 2: 75-year-old female underwent reconstruction of the mandible due to SCC tumor of the right retromolar trigone with mandible invasion. The flap measured approximately 220 cm<sup>2</sup>. Due to the large size, UFPF plus a full thickness skin graft were used to achieve complete closure. Case 3: 82-year-old female underwent right forearm donor site closure breakdown secondary to a prior RFFF harvest for SCC of the oral cavity. The UFPF used for reconstruction measured approximately  $300 \text{ cm}^2$ .









For all three patients, the donor site closure remains stable without complication. Patients display no deficits in range of motion at the level of the wrist or sensation compromise.





Photos for Case 1

Fig.1-3: pre-operative markings, intra-operative flap, and post-operative closure, respectively. Fig. 4-7: post-operative follow-up at 4-months.



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#### CONCLUSION

•Benefits of an UFPF for donor site closure includes the use of the patient's local soft tissue, limiting additional donor sites, and improving aesthetic outcomes when compared to conventional STSG <sup>7,9,10</sup> In the setting of a large defect where UFPF alone is not sufficient for complete closure, the use of an UFPF reduces the STSG size burden for closure.

 Confirming ulnar artery perforation is important to ensure robust blood supply and to avoid perfusion related complications. •We recommend the UFPF for the

reconstructive surgeon's armamentarium as a RFFF donor site closure alternative.

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