EP-005

광범위 두피 재건에서 천공지 가지 박리를 이용한 초박형 DIEP 피판의 이상적 윤곽 형성

(Superthin DIEP Flap: Achieving Ideal Contour in Extensive Scalp Reconstruction via Perforator Branch Dissection)

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Purpose: Achieving ideal contours in extensive scalp reconstruction is challenging due to the need for thin, pliable, large-surface-area coverage matching cranial convexity. While the deep inferior epigastric artery perforator (DIEP) flap provides an extensive donor source, its inherent bulkiness has traditionally restricted its application in scalp resurfacing. In this study, we propose the perforator branch dissection concept to overcome this limitation.

Methods: Retrospective review of 6 patients (Jan 2024-Jun 2025) with large scalp defects post-oncologic resection was conducted.

Surgical Technique

1) The flap was initially elevated in a standard suprafascial plane until the dominant perforators were identified. 2) Under loupe magnification, the intra-adipose branches of these primary perforators were meticulously traced and skeletonized as they ascended through the deep and intermediate fatty layers, which is 'perforator branch dissection'. 3) By tracing the distal branching patterns within the subcutaneous tissue, the flap could be thinned to the desired 7–8 mm profile without jeopardizing the primary perfusion source.

Bipedicled flaps used turbocharge or supercharge for perfusion.

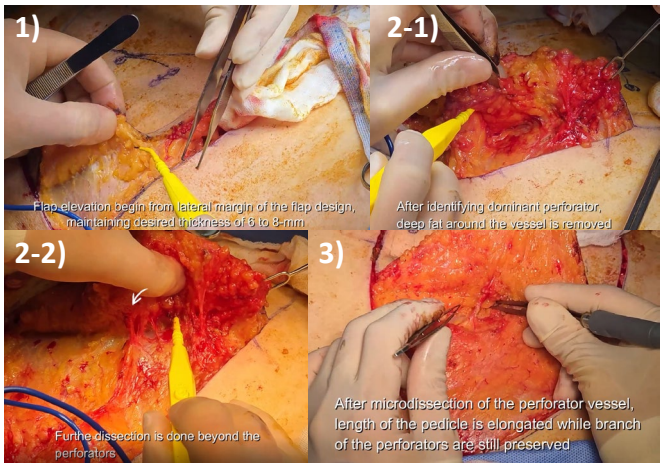

Fig. 1. Intraoperative view of the skeletonization

Results: All flaps survived (100%), with five patients (83.3%) achieving excellent aesthetic results and natural contours matching the native scalp profile. One case of focal distal necrosis defined a critical safety threshold: thinning beyond the superficial adipose plane jeopardizes the subdermal plexus despite preserved distal branches. There was no donor morbidity. Mean RPI was 81.7%.

Fig. 2. Postoperative 6-month photographs of a patient

Case	Age/Sex	BMI	Abdominal Fat thickness (mm)*	Pathology	Chemo-radiation	Comorbidities	Flap Size (cm)	Thickness (mm)	Initial perforator (nubmers)	Final perforator (nubmers)	Recipient Vessels	Microanastomosis augmentation
1	60/M	25.98	21.9	Angiosarcoma	Post-C	Smoking	11 x 33	8	2	5	STA/STV	Turbocharge
2	82/M	24.8	17.9	Angiosarcoma	Pre-R	None	7 x 16	6	1	3	STA/STV	None
3	58/M	27.49	28.6	DFSP	None	HTN, DM, Smoking	12 x 15	9	1	2	STA/STV	None
4	73/M	25.01	16	Angiosarcoma	Post-R	HTN	9 x 29	7	2	4	STA/STV	Turbocharge
5	60/M	24.02	14	Angiosarcoma	None	HTN, DM	11 x 24	8	2	3	STA/STV	Supercharge
6	71/M	21.88	17	Angiosarcoma	None	HTN, DM, CAD	30 x 15	8	2	5	STA/STV	Turbocharge

Note: *Abdominal Fat thickness (mm) represents the average value of four subcutaneous fat thickness four measurements (umbilicus and 2, 4, 6 cm below).

Abbreviations: BMI, body mass index; Abd Fat, abdominal fat; DFSP, dermatofibrosarcoma pr1otuberans; Pre-C, preoperative chemotherapy; Pre-R, preoperative radiotherapy; Post-C, postoperative chemotherapy; Post-R, postoperative radiotherapy; HTN, hypertension; DM, diabetes mellitus; CAD, coronary artery disease; Perfs, perforators; STA, superficial temporal artery; STV, superficial temporal vein.

Table 1. Patient demographics, flap characteristics, and surgical details

Conclusion:

The thin DIEP flap based on the perforator branch dissection concept offers a versatile solution for large-scale scalp reconstruction. By matching the native scalp profile while ensuring primary closure, it optimizes both aesthetic and clinical outcomes.