

Using Delay Principle to Create Two Viable Flaps Within one Distant Pedicled Flap: How We Did it— A Case Report

Narendra S. Mashalkar¹

¹Department of Plastic Surgery and Burns, St John's Medical College, Bangalore, Karnataka, India

Indian J Plast Surg 2023;56:90–91.

Address for correspondence Narendra S. Mashalkar, MBBS, MS, MCh, Department of Plastic Surgery and Burns, St John's Medical College, Bengaluru 560034, Karnataka, India (e-mail: plasticnaren2005@yahoo.co.in).

From the time reconstruction is being performed, delay is a part of standard surgical staged procedure, wherein the procedure results in inducing ischemia to the tissues and hence flap viability.¹ We present here a case, wherein we did a delay from the distal margin of an elevated flap, which bisected a single flap into two flaps to provide cover to two different regional defects with one flap acting as a distant pedicled flap and the other as a local transposition flap. A 24-year-old man presented with high-tension electrical burns with multiple exposed bones at multiple locations. The patient had 4-degree burn with an exposed left iliac crest bone and an exposed ulnar bone (→**Fig. 1A, B**). The patient was planned for a single pedicled thoraco-umbilical

flap (TU flap), which could cover both the ulna and iliac crest bones, the intention was to resurface two exposed bones with a single pedicled flap of two different anatomical regions. After 3 weeks, the flap was delayed from the distal margin and bisected from the middle of flap to produce two different individual flaps to resurface both the exposed bones without any pull in the opposite direction; hence flaps were lying snugly on their respective position (→**Fig. 2**). The delay to bisect the flap was done in two stages of 5 cm, 7 cm length, respectively, with an interval of 1 week. After bisecting the whole flap, the inset was given to cover both the defects without any tension (→**Fig. 3A, B**). The mechanism of delay makes the flap



Fig. 1 (A, B) Preoperative view of exposed ulna bone and iliac crest.

article published online
December 16, 2022

DOI <https://doi.org/10.1055/s-0042-1759725>.
ISSN 0970-0358.

© 2022. Association of Plastic Surgeons of India. All rights reserved. This is an open access article published by Thieme under the terms of the Creative Commons Attribution-NonDerivative-NonCommercial-License, permitting copying and reproduction so long as the original work is given appropriate credit. Contents may not be used for commercial purposes, or adapted, remixed, transformed or built upon. (<https://creativecommons.org/licenses/by-nc-nd/4.0/>)
Thieme Medical and Scientific Publishers Pvt. Ltd., A-12, 2nd Floor, Sector 2, Noida-201301 UP, India



Fig. 2 Flaps in situ.

cular flap, in view of the high rates of failure due to intimal vascular damage. Delay done from the distal margin of the flap has been described for the first time. We conclude that the principle of delay may be applied in creating two viable flaps within one distant pedicled flap, with adequate care being taken on the timing of delay, length of incision on the flap, and the area of inset given on the defect.

Funding

None.

Conflict of Interest

None declared.

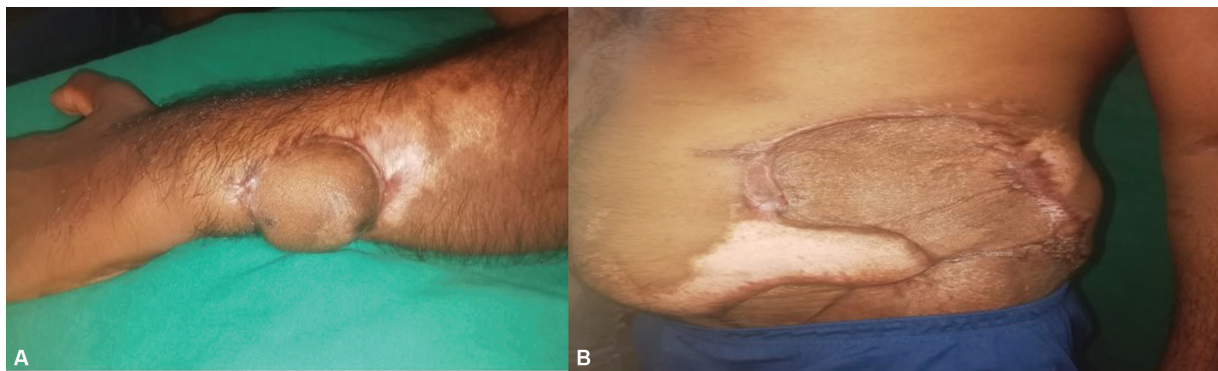


Fig. 3 (A, B) Postoperative view of flaps on forearm and iliac crest.

ischemic, wherein the length to breadth ratio of the harvested flap tissue may also be increased.^{2,3} Partial inset requires a staged delay that will help in increasing the dilatation of the existing vasculature, with proliferation in the choke area;⁴ also, it obtains perfusion from the recipient bed. Most of the time, the standard practice of performing delay is from the base of the flap; in our case, a TU flap with the per umbilical perforator being the main supply was elevated. The delay principle was used in bisecting the flap in the middle with an intention to increase blood supply⁵ in both halves of the flap to create two different flaps. Being an electrical burn, we were skeptical to perform a microvas-

References

- 1 Gersch RP, Fourman MS, Dracea C, Bui DT, Dagum AB. The delay phenomenon: is one surgical delay technique superior? *Plast Reconstr Surg Glob Open* 2017;5(10):e1519
- 2 Myers MB, Cherry G. Mechanism of the delay phenomenon. *Plast Reconstr Surg* 1969;44(01):52–57
- 3 Hamilton K, Wolfswinkel EM, Weathers WM, et al. The delay phenomenon: a compilation of knowledge across specialties. *Craniomaxillofac Trauma Reconstr* 2014;7(02):112–118
- 4 Dhar SC, Taylor GI. The delay phenomenon: the story unfolds. *Plast Reconstr Surg* 1999;104(07):2079–2091
- 5 Morris SF, Taylor GI. The time sequence of the delay phenomenon: when is a surgical delay effective? An experimental study. *Plast Reconstr Surg* 1995;95(03):526–533