

Ischemic Preconditioning in Pedicled Flap Division: A Cost-Effective Innovative Zip Tie Approach

Deepthi Batchu¹  Madhavi Chitta¹ Nikhil Panse¹

¹Department of Plastic Surgery, B.J. Medical College, Pune, Maharashtra, India

Indian J Plast Surg

Address for correspondence Deepthi Batchu, Mch, Department of Plastic Surgery, B.J. Medical College, Bund Garden Road, Pune 411001, Maharashtra, India
(e-mail: id-deepthibhaskar1990@gmail.com).

Pedicled flaps, such as groin flap employed for digital resurfacing in trauma cases, are susceptible to compromised neovascularization due to reduced area of inset, or underlying infections. To enhance flap viability, ischemic preconditioning through delay is performed before division, utilizing various techniques.

Kislov and Kelly¹ and Furnas et al² employed rubber band tourniquets and rubber-shod bowel clamps, respectively, for ischemic preconditioning. While economical, these techniques lack control and necessitate medical personnel for application.

George et al³ introduced a specialized device for ischemic preconditioning, consisting of two opposing V-shaped plates with screws for tightening and a groove for surgical division. This device facilitated early pedicled flap division through continuous, controlled, and clinically monitored ischemic preconditioning. While cost-effective, the fabrication and procurement of the flap clamp pose challenges in many centers.

In our institution, we have successfully implemented a cost-effective approach, achieving comparable results using a simple zip tie secured around the base of the pedicled flap. This zip tie is applied over a steri-tape around the base of the flap to prevent pressure necrosis of the skin and can be gradually tightened along its ridges (► **Fig. 1**) for controlled ischemic preconditioning.

In contrast to the flap clamp, the premade, simple, affordable, and economical zip tie can be utilized by the patient or their caregiver. The ridges on the zip tie enable controlled, continuous, and gradual ischemic preconditioning of the flap.

This zip tie method not only provides a practical solution but also addresses the limitations of existing techniques. We

believe this cost-effective approach could find widespread application in select group of patients particularly where the other modalities may not be available.

This article aims to present a viable alternative for ischemic preconditioning in pedicled flap surgery in diverse medical settings and used as an outpatient department procedure as well.

This method can be reversed by simply cutting the zip tie.



Fig. 1 Zip tie applied at the base of the flap.

DOI <https://doi.org/10.1055/s-0044-1787176>.
ISSN 0970-0358.

© 2024. 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

Conflict of Interest

None declared.

References

- 1 Kislov R, Kelly AP Jr. Cross-finger flaps in digital injuries, with notes on Kirschner wire fixation. *Plast Reconstr Surg Transplant Bull* 1960;25:312–322
- 2 Furnas DW, Lamb RC, Achauer BM, Turpin IM, Black KS. A pair of five-day flaps: early division of distant pedicles after serial cross-clamping and observation with oximetry and fluorometry. *Ann Plast Surg* 1985;15(03):262–267
- 3 George A, Cunha-Gomes D, Thatte RL. Early division of pedicled flaps using a simple device: a new technique. *Br J Plast Surg* 1996;49(02):119–122