

Non-adherent dressings to make skin flaps stick

Yelena Dokic MD, Suzanna Alkul MD, Ikue Shimizu MD, Jennifer Song Ranario MD

Affiliations: Department of Dermatology, Baylor College of Medicine, Houston, Texas, USA

Corresponding Author: Yelena Dokic MD, Department of Dermatology, Baylor College of Medicine, 1977 Butler Boulevard, Houston, TX 77030, Tel: 512-779-0046, Email: Yelena.dokic@bcm.edu

Keywords: dermatologic surgery, flaps, Mohs surgery, resident education, surgical training

To the Editor:

With the rise in incidence of skin cancer in an aging population, the necessity for Mohs surgery has become an increasingly important part of dermatology. Proper, thorough training is important for the success of future skin surgeons. Non-adherent dressings can be an effective, easily accessible, and reusable tool for training flap surgery to dermatology residents and Mohs fellows. A circular defect in the dressing is created; then various advancement, rotation, and transposition flaps are designed and incised with scissors, simulating lifting the flap and removing standing cones. The trainee is then able to repeatedly move the flap and surrounding "skin" to visualize flap movement.

Visualizing flaps for Mohs defect reconstructions requires a high level of spatial reasoning and the understanding of complex geometry. Flap design, movement, and visualization of the final flap result are skills that must be practiced for a trainee to become a skilled Mohs surgeon. Building expertise is practiced primarily by hands-on Mohs reconstructions under the supervision of experienced surgeons in the clinical setting. However, it is important for a trainee's knowledge regarding flaps to be supplemented with various study tools to help them achieve a greater understanding of this complex topic.

Traditionally, mannequin heads, cadavers, or pig's feet have been used to teach surgical flaps and techniques, but these are expensive, can be difficult to access, and may have other drawbacks. Mannequin heads can be very expensive and thus a financial barrier exists for residents, fellows, or

residency programs to acquire them. Additionally, wear and tear over time limits the number of demonstrations that can be performed on the mannequin before exhausting its use. Cadavers or pig's feet can be messy, odorous, lack laxity, and impractical to practice with on a semi-frequent basis [1]. Additionally, storage and transport require refrigeration and extra precautions to ensure cleanliness. The inability to keep used specimens in a safe, sanitary manner is another constraint arguing against their use [2]. Polyurethane foam dressing, open cell foam, and elastic foam tape have been used as skin simulator substitutes, with the primary goal of being used for suturing practice rather than flap visualization due to their rigidity [1,2].

Non-adherent dressings are a flexible, inexpensive, and easily accessible material that can be used as an alternative teaching tool for demonstrating flap motion. They are commonly used to transport Mohs layers, as non-stick dressings for wounds, and as templates for grafts [3]. Our team of dermatologic surgeons has used these non-adherent dressings to teach flap design and movement to dermatology residents and Mohs fellows.

To use non-adherent dressings as a training tool, a circular defect is created upon the non-adherent dressing. Then, various advancement, rotation, and transposition flaps are designed, one per dressing, with a surgical marker. These lines on the non-adherent dressing are then incised with scissors, simulating lifting the flap and removing standing cones. The flaps that our Mohs surgeons have demonstrated with this technique include the O-to-

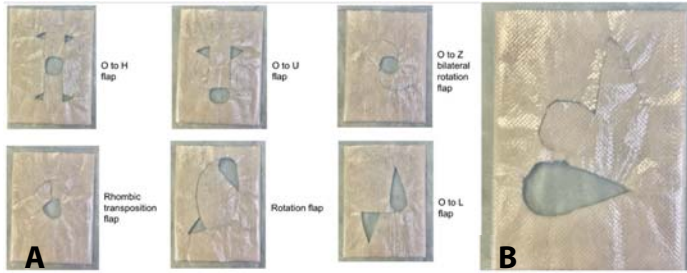


Figure 1. **A)** Depiction of nonadherent flaps. **B)** Bilobed transposition flap.

H flap, O-to-U flap, rotation flap, O-to-Z bilateral rotation flap, rhombic transposition flap, O-to-L flap (**Figure 1A**), and bilobed transposition flap (**Figure 1B**).

The flap and surrounding “skin” can be moved repeatedly without damaging the non-adherent dressing to visualize the movement of the flap and compare the appearance of the final closure to the original defect. A video demonstration is available,

which can be viewed in the online version of the journal.

A collection of non-adherent dressings, one flap per dressing, can be created to form a library of surgical flaps that can be easily stored, used, and continuously reused, for hands-on, visual learning. The residents and Mohs fellows in our dermatology department have given positive feedback regarding the teaching tool and have indicated that it has helped them learn the flap design and movement in a more experiential fashion.

We recommend non-adherent dressings as an effective, easily accessible, and reusable tool for training flap surgery to dermatology residents and Mohs fellows to help make skin flaps “stick.”

Potential conflicts of interest

The authors declare no conflicts of interest.

References

1. Bjellerup M. Novel method for training skin flap surgery: Polyurethane foam dressing used as a skin equivalent. *Dermatol Surg.* 2006;31:1107-1111. [PMID: 16164858]
2. Janus JR, Hamilton GS 3rd. The use of open-cell foam and elastic foam tape as an affordable skin simulator for teaching suture technique. *JAMA Facial Plast Surg.* 2013;15:385-387. [PMID: 23846432]
3. Crawford KM, Harrington A, Boyd J, Veneracion M. Utilization of Mohs specimen as a sizing template in full-thickness skin grafts. *Dermatol Surg.* 2007;33:973-975. [PMID: 17661942]