

Flaps

by Lance Chapman, MD, MBA, Dorota Korta, MD, PhD, and Patrick Lee, MD

Table 1: Nomenclature	Description
Flap	Movement of adjacent skin and subcutaneous tissue with an intact vascular supply into a defect
Primary Defect	Initial or original wound to be closed (<i>yellow circumscribed area in drawings below</i>)
Secondary Defect	Wound created by elevation/mobilization of flap from adjacent tissue
Primary Motion	Movement of flap toward the primary defect to close it, creating stress or tension on flap
Secondary Motion	Movement of the tissue surrounding the secondary defect to close it, with resultant stress or tension placed on this tissue
Random Flap	Flaps with abundant collateral circulation with no named blood supply
Axial Flap	Flaps supplied by a named artery and vein



Lance Chapman, MD, MBA is a PGY-2 at UC Irvine



Dorota Korta, MD, PhD, is a PGY-2 at UC Irvine



Patrick Lee, MD, is director of dermatologic surgery at UC Irvine

Table 2: Advancement flap: Movement of adjacent tissue along unidirectional vector

Type	Description	Ideal Locations	Drawing
U-plasty (unilateral advancement flap)	Simplest advancement flap. Parallel incisions tangentially made on defect with subsequent advancement of flap.	Forehead in horizontal direction so incision lines can run parallel to relaxed skin tension lines (RSTLs). Not commonly used.	
H-plasty (bilateral advancement flap)	Essentially a "bilateral" U-plasty. Two sets of parallel incisions made in symmetric distribution on BOTH edges of defect.	Forehead and upper lip (in order to hide incision lines along RSTL and cosmetic unit junctions).	
T-plasty (O-to-T or A-to-T plasty)	Standing cone removed from one end of defect (converting the "O" into an "A") with subsequent single incisions extending beyond BOTH sides of base of defect.	Ideal for locations with broad base along free margin or cosmetic unit junction.	
L-plasty (O-to-L plasty)	Incision at base of defect made only on ONE end and extends outwards (1/2 of T-plasty).	Ideal for locations where limb of flap hidden in RSTL.	
Island pedicle (V-to-Y advancement flap)	Unique advancement flap in that advancement of tissue is perpendicular to the skin and vascular supply comes from SubQ pedicle, which is attached to the central portion of the flap – DEEP vascular blood supply rather than horizontal.	Ideal for locations with elastic and "spongy" SubQ tissue with rich vascular supply.	
Crescentic advancement	Removal of a crescent of tissue along advancement flap to better hide scar line or increase length of incision.	Upper lip and peri-alar region.	

Table 3: Rotation flap: Movement of adjacent tissue around a single pivot point along a radiating arc

Type	Description	Ideal Locations	Drawing
O-to-Z flap (bilateral advancement rotational flap)	Circular defect turned into Z-shaped incision, then tissue is rotated into defect from two opposite sides.	Large defects on scalp and lower lip.	
Dorsal nasal rotation flap (Rieger flap)	Curvilinear incision that involves entire rotation of dorsum of nose (undermining at perichondrium).	Distal dorsum or tip of nose.	

Flaps (cont.)

by Lance Chapman, MD, MBA, Dorota Korta, MD, PhD, and Patrick Lee, MD

Table 4: Transposition flap: Movement of flap by lifting and "transposing" tissue over intervening skin

Type	Description	Ideal Locations	Drawing
Z-plasty	Used in scars that cross RSTLs to elongate scars or rotate scar tension lines.	Locations with contracted surgical scars and/or scars distorting a free margin (i.e. lower eyelid margin).	
Nasolabial transposition flap	Alar wound defect in which flap from medial cheek adjacent to melolabial fold transposed to defect (flap taken from sebaceous skin in medial cheek).	Lateral nasal side-wall and central alar wounds.	
Rhombic flap	Defect converted into four-sided parallelogram with angles 60 and 120. Incisions extended from one of 120 degree angle tips (length of incision equal to one of sides of rhombus; see line a-b). Then from free end of extended line, a second line is incised with angle of 60 degrees (line b-c).	Medial canthus, upper nose, lower eyelid, temple, peripheral cheek.	
Bilobed transposition flap	Two transposition flaps performed in succession. Primary defect filled with adjacent primary lobe and secondary defect filled with secondary lobe, leaving a triangular tertiary defect to be closed primarily.	Distal lower one-third of nose.	

Table 5: Interpolation (importation) flap: Two-stage tissue flap in which the base of the flap is not immediately adjacent to recipient site (often axial flap)

Type	Description	Ideal Locations	Drawing
Paramedian forehead flap	Axial flap based on the supratrochlear artery. Tissue is mobilized from forehead and transposed to a large distal nasal defect. Requires pedicle division often at three weeks.	Subtotal and total nasal defects, particularly nasal tip and alae.	
Nasolabial (melolabial) interpolation flap	Random pattern pedicle flap. Tissue is mobilized from the cheek and transposed to a defect in the nasal alar rim. Requires pedicle division at three weeks.	Medium to large defects involving the nasal alar rim. The disadvantage is the mild blunting of the alar crease.	
Reverse nasolabial pedicle flap (Spear's flap)	Tissue is mobilized from the cheek to a defect in the nasal alar rim; flap is folded upon itself to recreate the alar rim and internal and external nasal surface.	Full-thickness defects of the ala that involve the alar groove (attachment point of the lateral ala to the cheek).	
Retroauricular flap	Random pattern flap. Tissue is mobilized from the retroauricular skin to a defect in the helical rim. Requires pedicle division at three weeks. The donor site can either be closed with a skin graft or left to heal by second intention.	Large defects of the helical rim that involves loss of cartilaginous support.	
Abbe flap	Tissue is mobilized from normal lip and turned 180 degrees to fill the defect on the opposite lip. Requires pedicle division at three weeks.	Medially based defects of the upper lip most frequently.	

Double the Boards' Fodders online!

In addition to this issue's Boards' Fodder, you can download two new Boards' Fodder online exclusives from www.aad.org.

The latest online Boards' Fodders are Advanced & Immuno-therapies by Helena Pasieka, MD and **Wound Healing** by Aileen Santos, MD. To view, download, or print every Boards' Fodder ever published, check out the archives at www.aad.org/boardsfodder.

1. Bolognia, Jean, Joseph L. Jorizzo, and Julie V. Schaffer. "Chapter 147." *Dermatology*. 3rd ed. Philadelphia: Elsevier Saunders, 2012.
 2. Lee, Ken, Neil A. Swanson, Han N. Lee. *Color Atlas of Cutaneous Excisions and Repairs*. Cambridge: Cambridge University Press, 2008.
 3. Goldsmith, Lowell, Stephen Katz, et al. *Fitzpatrick's Dermatology in General Medicine*. "Part 11: Surgery in Dermatology." Eighth ed. McGraw-Hill, 2008.