

# Flaps: New Twists and Variations on Old Tricks

BY JEFF EVANS  
Senior Writer

NAPLES, FLA. — Well-known flaps can be modified in innovative ways to reconstruct facial defects made during Mohs micrographic surgery, speakers said at the annual meeting of the American College of Mohs Surgery.

Physicians described flaps that can reduce tension, spare skin in heavily scarred and damaged areas, repair difficult anatomic structures, waste less tissue, or allow much greater tissue advancement. **► Wave flap.** This flap involves advancement, rotation, and some spinning, hence the name. “The advantage of doing this wave flap is that it recruits tissue from primarily one direction and most of the movement is perpendicular to what would otherwise be used to close a defect in a linear fashion,” said Dr. Michael R. Migden of the department of dermatology at the University of Texas M.D. Anderson Cancer Center, Houston.

Dr. Migden uses the technique in situations where there are two adjacent defects. He creates small primary and large secondary Burow’s triangles and frees the intervening isthmus of tissue to close the bigger defect.

He extensively undermines the base of the isthmus flap’s pedicle. The superior edge and the base of this pedicle are then spun around the midpoint between the two by suturing the outside edge of the pedicle obliquely rather than at the inside edge further across the defect. The flap is then advanced. At the end of the procedure, the base of the pedicle has moved superiorly and laterally.

He has used the wave flap in areas with anatomic boundaries—in defects around the orbital rim it keeps the tension vector off of the eyelid to avoid ectropion. It is also helpful for situations in which all of

the tissue needs to be taken from one direction, such as in patients with lots of previous surgical scars and/or radiation adjacent to the defect.

The wave flap requires the use of “relatively thinner skin.” Dr. Migden said that he might not use the flap “on the back because there is some of that spinning motion that requires the tissue to be more distensible or plastic.”

Dr. Migden has revised the technique so that he uses most of the tip of the flap to help close the defect rather than trim it away. This allows for a smaller primary Burow’s triangle.

**► Alar rotation flap.** Reconstruction of the nasal ala should take into account airflow and the shape and curvature of the nasal ala, as well as symmetry of the alar rims, said Dr. Arash Kimyai-Asadi, who is with a dermatologic surgery group in Houston.

Many flaps in this area have problems involving effacement of boundaries of the nasal ala (alar crease, alar-facial sulcus, or melolabial fold) and alar notching, elevation, flare, or nasal valve collapse. “Trap-dooring” and swelling also can be problematic, he said.

Many Mohs surgeons use skin grafts to reconstruct the nasal ala because of these problems, but the quality of the graft in matching the color and texture of the skin of the ala can vary widely. Second-intention healing can be good for superficial and smaller defects, but contracture is a possibility for deeper or larger defects.

The ideal alar reconstruction uses local alar skin to match color and texture, avoid crossing the nasal cosmetic subunit boundaries or creases, prevent distortion of the

alar rim or nasal shape or symmetry, and prevent impediment of airflow, he said.

Dr. Kimyai-Asadi frequently uses a rotation flap that incorporates lateral alar skin. The flap is constructed by making an incision in the alar crease from the superior edge of the defect laterally to the alar-facial sulcus or the nasal sill and then undermining to the superficial subcutaneous plane.

The flap is then rotated into the defect. Sometimes nasal swelling can occur because of the anesthetic, but this can be treated by placing nasal packing for 48 hours. It is also common for the lateral ala to pull up with this flap, but this goes away by the time of suture removal.

Use of this flap too close to the alar rim runs the risk of elevating the rim. It is best to limit the flap to defects on the nasal ala and inferior part of the alar crease that are about 20%-35% of the alar surface area, he said.

Of 55 alar rotation flaps that he has performed on 33 patients, Dr. Kimyai-Asadi repaired defects with an average size of 0.9 by 0.7 cm. His only complications have been four cases of transient intranasal swelling.

**► Subcutaneous pedicle nasolabial transposition flap.** Classical nasolabial transposition flaps are limited by the requirement of a 1:1 ratio with the diameter of the primary defect, the frequent need for extensive undermining for proper flap rotation, and the creation of a large secondary defect, said Dr. Steven Chow, a second-year dermatology resident at the University of Minnesota in Minneapolis.

The subcutaneous pedicle nasolabial transposition flap uses a pedicle with an amount of full-thickness skin that is only one-half the diameter of the primary defect. The other half of the pedicle is formed by the subcutaneous fat in the primary defect.

Once the flap is freed, it is transposed into the defect. No Burow’s triangle is needed for proper flap transposition. The subcutaneous fat portion of the pedicle is placed along the adjacent undermined region. Any excess tissue is removed and the defect then is closed.

Compared with the classic nasolabial transposition flap, the subcutaneous pedicle technique provides greater flap mobility because it has a smaller width of full-thickness skin at the base, better “tissue economy” because of its smaller secondary defect and the use of the primary defect itself as part of the flap, and a lower rate of pin cushioning as a result of the fat redistribution involved, Dr. Chow said at the meeting.

**► Twisted and transposed island pedicle flaps.** The traditional island pedicle flap is a random pattern advancement flap that provides excellent vascular supply and can repair small- to intermediate-sized facial defects, but it does have a tendency to form pin cushioning and is difficult to camouflage because all of the incisions cannot be placed within relaxed skin tension lines, explained Dr. Todd E. Holmes, who is a procedural dermatology fellow at the University of Vermont in Burlington.

Dr. Holmes described Mohs cases on the nose, forehead, and cheek in which unilaterally or anteriorly based muscular pedicles were twisted and transposed up to 180°. Traditional advancement of an island pedicle flap in some of the cases would have been “very difficult or not possible,” he said. ■

## Science of Facial Anatomy Is ‘Evolving and Controversial’

BY DOUG BRUNK  
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SANTA ANA PUEBLO, N.M. — The way Dr. Jerry Feldman sees it, facial anatomy is like a peanut butter and jelly sandwich.

“It’s kind of mushed around rather than arranged like layers of bricks that are neatly piled on top of each other,” he said at a meeting of the American Society for Mohs Surgery.

Dr. Feldman explained that most of what is known about facial anatomy comes from studies of cadavers, in which tissue often is distorted and shrunken.

“Does this correlate with living anatomy?” he asked. “The science of anatomy is dynamic, evolving, and controversial. You would have

thought all these issues would have been worked out in the 19th century, but they haven’t been. There are plenty of articles that are still debating where certain nerves and fascial layers are.”

There also is wide variability in facial anatomy among patients, and facial anatomy can be asymmetric, emphasized Dr. Feldman, who is director of dermatologic surgery at Cook County Hospital in Chicago.

He offered four questions to keep in mind before and after every dermatologic procedure involving the face:

- What is the blood supply to the area?
- What motor and sensory nerves are involved?
- What layers of tissue will I cut through?
- How does my excision and

closure affect the function of the immediate and surrounding tissue? “It’s not just aesthetics that count, it’s function,” Dr. Feldman said.

He acknowledged that translating the facial anatomy described in a medical textbook or a scientific article to a patient can be difficult. “Don’t be discouraged,” he said. “Learning is a lifelong task. It’s best to take baby steps.”

Good ways to master facial anatomy include studying the original medical literature, taking a relevant course sponsored by the American Society for Dermatologic Surgery or by attending Dr. Hugh Greenway’s annual superficial anatomy and cutaneous surgery course in San Diego.

“The best tool is real patients,” he said. ■

### Summer Reading Recommendations

Dr. Feldman suggested several anatomy books:

**“Facial Danger Zones: Avoiding Nerve Injury in Facial Plastic Surgery”** (Brooke Seckel, M.D. St. Louis: Quality Medical Publishing, 1994)

**“Surgical Anatomy of the Face, Second Edition”** (Wayne F. Larrabee Jr., M.D., Kathleen H. Makielski, M.D., and Jenifer L. Henderson, M.D. Philadelphia: Lippincott, Williams & Wilkins, 2003)

**“Principles of Nasal Reconstruction”** (Shan R. Baker, M.D., Sam Naficy, M.D., and Brian Jewet, M.D. Philadelphia: Mosby, 2002)

**“Surgical Anatomy of the Skin”** (Stuart J. Salasche, M.D., Gerald Bernstein M.D., and Mickey Senkarik. Norwalk, Conn: Appleton & Lange, 1988)

**“The Forehead and Temporal Fossa: Anatomy and Technique”** (David M. Knize, M.D. Philadelphia: Lippincott Williams & Wilkins, 2001)

**“Surgical Anatomy Around the Orbit: The System of Zones”** (Barry M. Zide, M.D., and Glenn W. Jelks, M.D. Philadelphia: Lippincott Williams & Wilkins, 2005)

**“Atlas of Aesthetic Face & Neck Surgery”** (Gregory LaTrenta, M.D. London: W.B. Saunders Ltd., 2003)