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# Letters and Viewpoints

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- References—maximum of five
- Authors—no more than five
- Figures/Tables—no more than two figures and/or one table

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## LETTERS

### HARVESTING FAT FROM THE INFRATEMPORAL FOSSA

Sir:

We read with interest the July 2004 article by Guyuron and Rose entitled "Harvesting Fat from the Infratemporal Fossa" (*Plast. Reconstr. Surg.* 114: 245, 2004). The authors describe a new fat graft donor site in the infratemporal fossa, as well as the surgical approach and use of this graft. The first author of this letter had a chance to see Dr. Guyuron harvesting one such graft.

In the article, the donor fat tissue is called "infratemporal fat." In our opinion, this fat is the buccal fat pad (or Bichat's

fat pad). The buccal fat pad fills the space between the mastication muscles and helps these muscles to move freely over one another. It has many extensions between, over, and under the mastication muscles. One of the extensions covers the temporalis muscle and extends up to 2 to 4 cm above the zygomatic arch, separating the arch from the temporalis muscle.<sup>1,2</sup> We believe that the authors reached this temporal extension and that their donor tissue is Bichat's fat pad.

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## REFERENCES

1. Stuzin, J. M., Wagstrom, L., Kawamoto, H. K., et al. The anatomy and clinical applications of the buccal fat pad. *Plast. Reconstr. Surg.* 85: 29, 1990.
2. Latrenta, G. *Atlas of Aesthetic Face and Neck Surgery*. 1st Ed. Philadelphia: Saunders, 2004. Pp. 30-31.

### ASIAN "DOUBLE EYELID" BLEPHAROPLASTY: THE CONTRIBUTION OF L. FERNANDEZ

Sir:

I am writing to clarify a few points made by Dr. Mark Codner in his discussion of the October 2004 article by Chen et al. entitled "Strategies for a Successful Corrective Asian Blepharoplasty after Previously Failed Revisions" (*Plast. Reconstr. Surg.* 114: 1270, 2004). Dr. Codner writes, "It is important to discuss whether the patient wants a single fold with no visible crease or a double fold with a visible crease." First, it may be preferable to use the terms "single eye" and "double eye," or the term "double eyelid." No one wants a double fold. More importantly, the whole idea is to create a beautiful fold, or "double eyelid." I have never had a patient request an eyelid with no visible fold. What would the purpose be? The purpose of blepharoplasty in Asians is nearly always to create a single, crisp fold of a size suited to the size and style of the patient, so that the lid forms a glamorous frame for the globe.

What is really important is the size of the fold, and this should be discussed in detail, with knowledge of the different Asian cultures and aesthetics. Using only a 6-mm fold is laudably conservative but ultimately too limiting. The Chinese community of Taipei is largely homogeneous, but that does not hold true for most American cities. A tall Korean woman, for example, especially one who favors makeup and glamour, would find a 6-mm fold unacceptably small.

With regard to epicanthoplasty, I think it is important for surgeons to avoid it completely until they are very experienced. As is the case with an overly high fold, epicanthoplasty can Westernize the Asian lid, which is not desirable. The epicanthus can be softened with a sharply tapered, low incision directly into the fold. Epicanthoplasty is only for very, very experienced surgeons, and most of them rarely do it.

I am really perplexed, however, by Dr. Codner's view of the "two main techniques with respect to the creation of an upper lid crease." There are two main techniques and they were described by Leabert Fernandez in his classic 1960 article,<sup>1</sup> which Dr. Codner kindly references, but Dr. Codner's discussion relates to the importance of creating an unnoticeable crease in downward gaze. Perhaps that is important to Asians in Atlanta, Ga., but I have never had a patient mention it, and it certainly has nothing to do with the main point of Dr. Fernandez's article.

What did Fernandez describe as the two main techniques to create an upper lid crease? He described two very different operations. One, resecting a skin strip and suturing lower margin dermis to the deeper tissues, he labeled his "simple" technique. This was suitable for young patients with thin tissues who desired only a small, superficial fold. To raise a low fold, and to create a deeper, permanent crease, Fernandez proposed his "complex" technique: freeing the levator aponeurosis across the lid and then suturing the free edge into the lower margin dermis. His results were lovely, with deep, dramatic folds.

Fernandez's complex technique, slightly modified, is today known as invagination blepharoplasty. It is used by experienced surgeons throughout Asia, and is gaining popularity in the United States. It is important to understand that the power, flexibility, and longevity of invagination come from freeing the levator aponeurosis. This is the essential move that divides the two worlds of Asian blepharoplasty technique, not how skin stitches are put in. With the edge free, fold and fissure can be controlled, thereby simplifying ptosis repair. As with other "component separation" techniques elsewhere on the body, separating the component allows it to move effectively. The free edge of the aponeurosis is no different from the end of a tendon: it is inserted with a couple of sutures. So invagination brings the free levator aponeurosis edge to the site of the new crease. Many techniques, such as supratarsal fixation,<sup>2</sup> bring the crease (the cut lower margin) to somewhere on the undissected aponeurosis. This is Fernandez's simple technique, and it has very limited power, flexibility, and longevity, just as he pointed out nearly half a century ago.

Bert Fernandez, of Honolulu, is the father of invagination blepharoplasty. His concepts and his complex technique have stood the test of time, and his article should be studied carefully by anyone interested in blepharoplasty. I thank Dr. Codner for referencing Dr. Fernandez's landmark article.  
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#### REFERENCES

1. Fernandez, L. R. Double eyelid operation in the Oriental in Hawaii. *Plast. Reconstr. Surg.* 25: 257, 1960.
2. Sheen, J. H. Supratarsal fixation in upper blepharoplasty. *Plast. Reconstr. Surg.* 54: 424, 1974.

#### REPLY

Sir:

One of the most challenging aspects of eyelid surgery involves primary upper lid blepharoplasty in the Asian patient. As one can imagine, secondary correction of lid deformities in this group of patients is quite complicated, as recently pointed out in an excellent article by Dr. Chen and his colleagues entitled "Strategies for a Successful Corrective Asian Blepharoplasty after Previous Failed Revisions" (*Plast. Reconstr. Surg.* 114: 1270, 2004). The purpose of this letter is to thank Dr. Richard Siegel for taking the time to send in his comments. Dr. Siegel has significant experience in Asian blepharoplasty and has provided a number of very important, detailed observations.

The first point is that prefabricated markings and measurements cannot be applied to the Asian patient because of the fundamental differences in the underlying anatomy as well as differences in the desired aesthetic outcome based on regional and individual variations. The terms "lid crease" and "lid fold" are commonly confused in the literature and are not interchangeable, as suggested by Dr. Siegel's comments. Most classic textbooks in oculoplastic surgery define the anatomy of the crease as the concave line that represents the dermal insertion of the levator aponeurosis as it fuses with the septum, which is closer to the lid margin in Asian patients. The fold is the excess tissue consisting of skin, muscle, and preaponeurotic fat that overhangs the crease and varies with age. For example, the epicanthal fold is a fold, not a crease. Consistent nomenclature is important to avoid confusion and is more than mere semantics. I agree with Dr. Siegel's emphasis on the importance of the "size of the fold," which actually refers to the distance from the lid margin to the new lid crease. The techniques of Asian blepharoplasty described allow the surgeon to place the crease at variable distances from the lid margin. With this control comes great responsibility, which should be determined by the patient, not the surgeon.

The second point made by Dr. Siegel is that surgical correction of epicanthal folds should be considered a procedure of "last resort." Epicanthal folds are formed primarily by dense connective tissue and excess orbicularis and secondarily by hypoplasia of the nasal dorsum, horizontal cutaneous excess, and vertical shortening. While I agree that surgical correction of epicanthal folds using multiple flaps has a high incidence of complications because of visible scarring, severe epicanthal folds require excision. Although beyond the scope of this letter, in my experience, crescentic excision of the primary excess tissue to reduce rather than remove the fold with a bolster dressing has minimized scar formation. I agree with the statement that this is seldom required, but it should be considered a simple alternative to the "running man" flaps.

Finally, Dr. Siegel gives credit where credit is due. He has provided an excellent elaboration of the differing techniques mentioned in my discussion and originally described by Dr. Fernandez. Since crease formation is the key to Asian blepharoplasty, the surgeon should ensure two things: (1) that the crease is placed where the patient wants it and (2) that it stays there. The "complex" technique referred to by Dr. Siegel involves wide dissection of the levator aponeurosis from the tarsal plate and Muller's muscle, with re-insertion to the lower incision cutaneous margin. Despite desired initial incision placement, this technique may increase the risk of superior crease migration over time. The tradeoff is that this technique creates a well-defined crease that does not disappear over time, as has occurred with some of the static or simple techniques. Crease migration is a recognized risk of blepharo-

plasty for both Asian and Occidental patients. The "simple" technique described by Fernandez reduces the risk of crease migration and "fixes" the crease by supratarsal or "intratarsal fixation," since it is below the superior border of the tarsal plate. The static crease is thereby formed and this anatomical correction can be substantiated by the presence of the crease in downward gaze. This simple clinical test to assess a dynamic versus a static crease is useful for the surgeon preoperatively to determine which technique may have been used in secondary cases, rather than to imply that patients in Atlanta or elsewhere would request this.

Although there are few experts in this field of plastic surgery, Dr. Siegel has provided in his Letter to the Editor appropriate recognition of Dr. Fernandez, who pioneered the techniques described and elucidated a number of important points that clearly add to the discussion of this article. DOI: 10.1097/01.prs.0000188892.69436.c7

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#### DISTALLY BASED DORSAL FOREARM FASCIOSUBCUTANEOUS FLAP

Sir:

I read with great interest Dr. Kwang Seog Kim's article entitled "Distally Based Dorsal Forearm Fasciosubcutaneous Flap" (*Plast. Reconstr. Surg.* 114: 389, 2004) published in the August 2004 issue. I also enjoyed the discussion of the article by Drs. Gumener and Montandon (*Plast. Reconstr. Surg.* 114: 397, 2004). Unfortunately, I have to take issue with Dr. Kim's statement that he developed the flap. Gumener and Montandon describe this as a "milestone for better understanding and use of the fasciosubcutaneous flap," and I have to agree, but I would like to point out that at the 2000 Annual Meeting of the American Society of Plastic Surgeons, I presented "The Dorsal Forearm Adipofascial Flap: An Alternative Method of Coverage for Difficult Dorsal Hand Wounds," which was published in the *Plastic Surgery Forum*. In 2001, at the Southeastern Society meeting, I presented "Distally Based Forearm and Hand Adipofascial Flaps for the Coverage of Difficult Dorsal Hand Wounds." Finally, the article "Perforator-Based Forearm and Hand Adipofascial Flaps for the Coverage of Difficult Dorsal Hand Wounds" was published in *Annals of Plastic Surgery* (48: 477, 2002). This article included a description of the dorsal forearm adipofascial flap (called the fasciosubcutaneous flap by Dr. Kim) and how to use it in clinical practice.

Dr. Kim's article is an excellent description of the flap and its anatomy, as well as a good primer on its use, and I agree that it is a very useful addition to the literature. These types of procedures can solve difficult hand defects without the use of microsurgery or the sacrifice of major vascular structures. I have no doubt that the exclusion of references to my presentations and article was inadvertent, but I would like to point out that my initial description of the flap was published 4 years before that of Dr. Kim's. I look forward to seeing more publications from him, and hope that I will be included in subsequent reference sections.

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#### THORACOEPIGASTRIC FLAP IN DONOR-SITE CLOSURE OF THE PECTORALIS MAJOR MUSCULOCUTANEOUS TRANSFER: AXIAL OR RANDOM PATTERN?

Sir:

I read with interest the article published in the September 2004 issue entitled "Local Transposition Flap Repair of the Pectoralis Major Myocutaneous Flap Donor Site" by Drs. Belt and Emmett (*Plast. Reconstr. Surg.* 114: 732, 2004). I have had a few cases like those reported, with excellent results (in fact, I was in the process of sending a manuscript for publication when I found the article in the *Journal*). Indicated in medially located, moderate to large skin paddles, the device affords an elegant and straightforward donor-site closure that avoids the unsightly medial displacement of the nipple-areola complex often observed after direct closure, or the ugly appearance after skin grafting over the rib periosteum. I would like to point out a few technical details that have helped me in the adequate, uncomplicated flap transfer.

The time-honored, and occasionally valuable, thoracoepigastric flap (or transverse abdominal flap) is a type C fasciocutaneous axial flap based on the perforating branches (mostly musculocutaneous) of the deep epigastric system and/or subcostal vessels.<sup>1</sup> Indeed, it can be considered a variant of the superior epigastric artery musculocutaneous flap. Based on its axial nature, its length-to-base ratio can largely exceed 1 and be safely extended as far as the anterior axillary line. On the contrary, random-pattern skin flaps in the trunk and chest wall should always observe the classic 1:1 proportion. This basic differentiation is important because one can raise both kinds of flaps in the region with different outcomes. When I first used this flap to close a pectoralis major donor site, I really raised a random-pattern transposition skin flap. Although the base-to-length ratio did not surpass the proportion of 1:1, the tip underwent progressive necrosis and ultimately required débridement and skin grafting (Figs. 1 and 2). Since then, I have always followed some basic principles that have allowed excellent results with no further skin slough. Flap design is important and should always be based on distinct perforators (preferably two or three), which I always locate preoperatively with a Doppler device. The flap can then be designed as preferred (transverse, oblique, bilobed, and so on), always bearing in mind that the abdominal donor site should always be closed primarily. As with all skin transfers, flap dimensions should be slightly larger than those of the defect being repaired. Primary donor-site closure is the key to successful use of the thoracoepigastric flap. The skin of the anterior abdominal wall below the defect should be undermined as required, advanced superiorly, and approximated securely to the superior edge of the donor site. This maneuver relieves tension on the flap and allows its advancement onto the chest wall. The perforator-based axial, and not random-pattern, thoracoepigastric flap is an excellent choice in the management



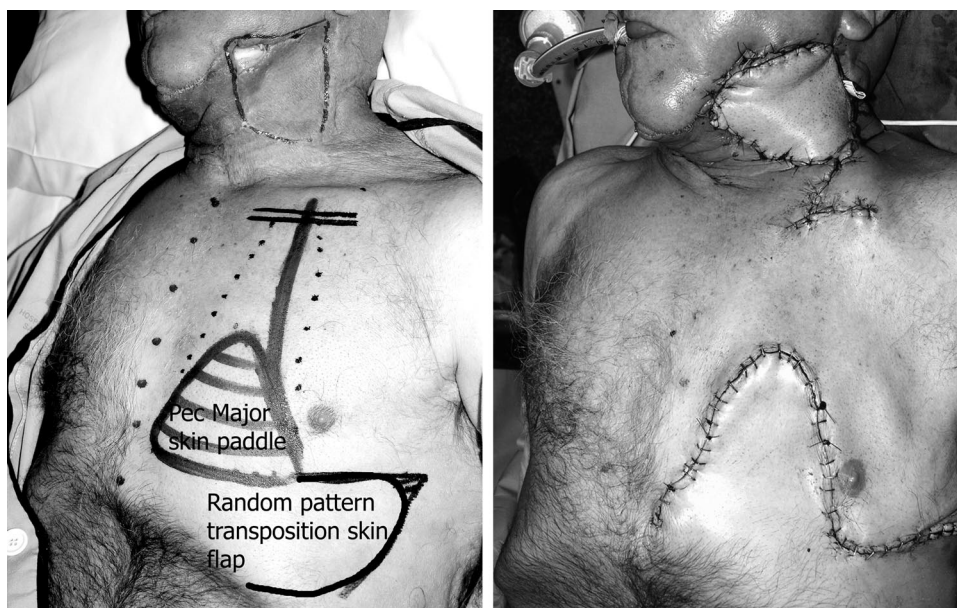


FIG. 1. (Left) Postradiation osteonecrosis and osteomyelitis of the mandible after oral cancer surgery in a patient unsuitable for free flap reconstruction. Preoperative view before pedicle pectoralis major musculocutaneous flap reconstruction and donor-site closure with a random-pattern transposition abdominal skin flap. (Right) Immediate postoperative view.



FIG. 2. Progressive tip necrosis of the abdominal flap despite preservation of the 1:1 base-to-width ratio.

of donor-site closure after pectoralis major musculocutaneous transfer.

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#### REFERENCE

1. Mathes, S. J., and Nahai, F. Thoracoepigastric (transverse abdominal) Flap. In S. J. Mathes and F. Nahai

(Eds.), *Reconstructive Surgery: Principles, Anatomy and Technique*. Vol. 2. New York: Churchill Livingstone, 1997. Pp. 1107-1116.

#### REPLY

Sir:

We read with interest the comments made by Dr. Rodriguez-Vegas in response to our article (*Plast. Reconstr. Surg.* 114: 732, 2004). We disagree with the comments made relating to the flap design. When we raise our flap, we ensure that it is truly fasciocutaneous by including the deep fascia, as stated in our article. We believe that this is the key to producing a longer



and more reliably viable flap. We have not experienced any cases of flap necrosis, even when we exceed a 1:1 length-to-width ratio, when the flap is raised as a fasciocutaneous flap. We have learned, subsequent to our series, that one of our colleagues has experienced one case of flap tip necrosis. This was in a flap that was raised suprafascially.

We regularly exceed a 1:1 ratio (refer to case 1 in our article). We do not routinely use Doppler technology to locate any perforators preoperatively. We agree that the perforators in the base should be carefully preserved, but equally important, the deep fascia over the muscle must be taken with the flap.

The reference quoted in Dr. Rodriguez-Vegas's letter<sup>1</sup> describes the thoracoepigastric flap as being a type C fasciocutaneous flap, with the (deep) superior epigastric system and two or three subcostal perforators as the codominant pedicles. The reference also explains that flaps as large as 25 × 7 cm can be raised extending from the midline to the midaxillary line laterally (3.6:1 ratio). However, the description of how to raise the flap indicates that the authors raise the flap suprafascially with respect to the deep fascia. This may explain the reasons for the comment in this reference that the distal flap is sometimes unreliable.

Cronin et al.<sup>2</sup> originally described the thoracoepigastric flap as being raised at the fascial level. A delay procedure was required only if the length-to-width ratio exceeded 2:1. Below this ratio, the flaps were found to be reliable.

We also notice when we are raising the flap that the perforators do appear to extend axially along the flap. Furthermore, these perforators appear to be widely spaced.

Taylor and Palmer<sup>3</sup> emphasize the distinction between the fasciocutaneous flaps in the trunk and the extremities and superficial and deep fasciocutaneous flaps. They also highlight that the deep fascia is modified at certain locations, including the rectus sheath and external oblique aponeurosis, whereas it is a well-defined sheet in the limbs. Although the dominant pedicles may course adjacent to the surface of the deep fascia, the authors describe how inclusion of the deep fascia avoids a tedious dissection and may also preserve the adjacent subfascial arteries in some situations.

Interestingly, Taylor and Palmer's angiosome article<sup>3</sup> also shows the thoracoepigastric flap (their Fig. 20) as a large axial cutaneous flap defined by their radiographic studies of the integument. The length-to-width ratio of the flap also exceeds unity.

In conclusion, we believe that the medially based epigastric transposition (thoracoepigastric) flap so described is axial in pattern. It is a reliable type C fasciocutaneous flap when raised at the level of the deep fascia. We believe that the latter ensures inclusion of the axial pedicle(s).

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#### REFERENCES

1. Mathes, S. J., and Nahai, F. Thoracoepigastric (transverse abdominal) flap. In S. J. Mathes and F. Nahai

(Eds.), *Reconstructive Surgery: Principles, Anatomy and Technique*. Vol. 2. New York: Churchill Livingstone, 1997. Pp. 1107-1116.

2. Cronin, T. D., Upton, J., and McDonough, J. M. Reconstruction of the breast after mastectomy. *Plast. Reconstr. Surg.* 59: 1, 1977.
3. Taylor, G. I., and Palmer, J. H. The vascular territories (angiosomes) of the body: Experimental study and clinical applications. *Br. J. Plast. Surg.* 40: 113, 1987.

#### ANALYSIS OF PUBLICATIONS IN THREE PLASTIC SURGERY JOURNALS FOR THE YEAR 2002

Sir:

I read with great interest the article by Huemer et al. entitled "Analysis of Publications in Three Plastic Surgery Journals for the Year 2002" (*Plast. Reconstr. Surg.* 114: 1147, 2004). I want to congratulate the authors on their meticulous study of 533 original articles. It incorporated many details, including information about authors, type of institution, presence of grant support, and previous presentation. One result that made me glad was that Turkey is described as one of the pioneer countries in publishing articles in three important international journals of plastic surgery, which shows the improving plastic and reconstructive surgery in my country. Actually, I think the number of publications from Turkey has increased in the last 2 years, but a new study may show the exact number.

Unfortunately, the authors made a mistake by incorporating Turkey among Asian countries. In all international activities, Turkey is accepted as a European country and is a well-known candidate for the European Community. As Turkey has land in both Europe and Asia, the authors probably mistakenly took the larger part of Turkey in Asia into consideration, although one of the coauthors (Raffi Gurunluoglu) is a citizen of the Turkish Republic and presently lives in Turkey. However, Turkey has chosen to be a European country and states this very obviously, and thus should be categorized in this manner.

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#### REPLY

Sir:

We appreciate Dr. Ozmen's comments regarding our recently published article in which we analyzed 533 original articles in three plastic surgery journals.<sup>1</sup> We agree that incorporating Turkey among Asian countries may elicit controversy with different readers. However, the basis for our categorization was geographical rather than social and political. As Dr. Ozmen correctly states, the larger part of Turkey (more than 75 percent) lies on the Asian continent, with Istanbul bridging the gap between Asia and Europe over the

Bosporus. It is true that one of the co-authors of the article, Dr. Raffi Gurunluoglu, is a citizen of Turkey, currently practicing in Istanbul. Without his contributions, the article could never have been realized. He, too, never felt that categorizing Turkey among Asian countries would be incorrect, for most of it is located in Asia. Our intention was never to offend any reader but instead to give a snapshot of the current trends in published plastic surgery literature. One of the main points of the article, which Dr. Ozmen seems to have overlooked, is that whether Turkey is an Asian or European country, on the basis of our analysis, plastic surgeons in Turkey significantly contributed to the published literature on plastic surgery in the year 2002. We would like to take this opportunity to congratulate those in European and Asian countries who have made a substantial contribution to the scientific plastic surgery literature.

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#### REFERENCE

1. Huemer, G. M., Bauer, T., Gurunluoglu, R., Sakho, C., Oehlbauer, M., and Dunst, K. M. Analysis of publications in three plastic surgery journals for the year 2002. *Plast. Reconstr. Surg.* 114: 1147, 2004.

#### CERCLAGE CLAMP

*Sir:*

The cerclage clamp described by Mitra et al. in the July 2004 issue (*Plast. Reconstr. Surg.* 114: 169, 2004) is a useful tool but may not be available in every operating room. A functional substitute may be made by bending a hypodermic needle around the barrel of a 3-cc syringe. This will maintain the lumen of the needle and permit passage of a wire through the needle. As the cerclage wire is usually not the primary means of immobilization, it is not necessary to use a heavy wire, and a 20-gauge needle works well.

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#### VIEWPOINTS

##### CLOSURE OF LARGE SCALP DEFECTS BY MODIFIED GILLIES TRIPLE SCALP FLAPS IN PATIENTS WITH SCALP TUMORS

*Sir:*

The methods used for closure of full-thickness scalp defects include conventional application of skin grafting after



FIG. 1. Flaps were planned to include one of the main arteries of the scalp.

elevation of external tabula or closure of large scalp flaps of the donor area by skin grafts and further expander administration, as well as free flaps.<sup>1</sup> However, on one occasion, scalp defects were closed using well-planned administration of three or four scalp flaps.<sup>2</sup> Use of triple scalp flaps, as reported by Gillies,<sup>3</sup> is an alternative method preferred for this purpose.

The operations were performed with the patient under general anesthesia. For reconstruction, three different flaps adjacent to the defect were raised in a slope tripod manner, with a base on one of the main arteries of the scalp (Fig 1). The flaps were elevated with wide dissection that included the entire scalp area (Fig. 2). These triple flaps were advanced to the defect area without any back-cut intervention. The flaps were combined carefully with enough dissection and without any tightness on the midline (Fig. 3). After hemostasis, a Hemovac drain was inserted under the flaps for drainage of the whole scalp region. Excellent results were seen at 1-year follow-up. The scars healed perfectly, and no alopecia was observed on any area of the scalp in either of two patients (Fig. 4).

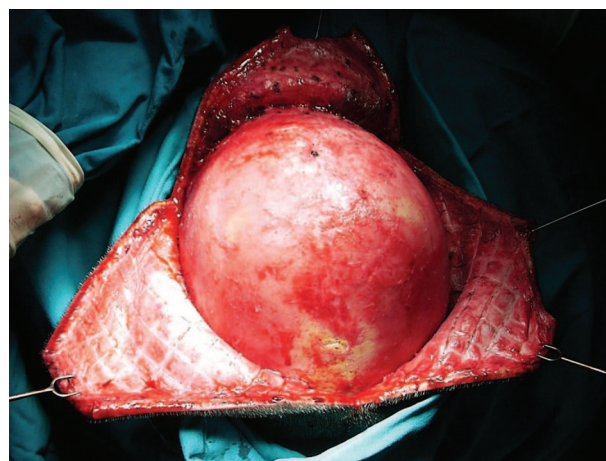


FIG. 2. Flaps were elevated around the entire scalp area.





FIG. 3. Flaps are shown after advancement, with no signs of graft and back-cut intervention.

A 45-year-old man presented with a scalp mass on the vertex measuring  $5 \times 6$  cm. Histologic examination led to a diagnosis of proliferate trichilemmal tumor. After tumor excision, the defect was closed with our triple-flap technique. No complications were observed postoperatively.

A 61-year-old woman was admitted with a  $6 \times 7 \times 5$ -cm tumor localized on the vertex in the midline. Microscopic examination confirmed the diagnosis of leiomyosarcoma. A full-thickness scalp defect (7 cm in diameter) was closed using the technique described above.

According to Gillies' description, any defect on any area of scalp can be repaired with randomized local flaps.<sup>3</sup> We prefer to use this technique for defects on the vertex or around it because of tumoral localization, but as has been emphasized by Gillies, it can be used in any likely area of the scalp with no main arterial support. In addition to the original procedure, for greater confidence in the flap and to prevent flap necrosis, we paid more attention to defining a nutrient artery inside the pedicle and avoiding vascular injury during elevation. In Gillies' original description, flaps were prepared

as rotation flaps, but we advanced the flaps without back-cut intervention. We believe our maneuvers made the flaps more reliable. Technically, the flaps are easy to plan and apply, and a second operation is not required. It is possible to achieve satisfactory aesthetic results in one session, making this technique superior to flap rotation methods or expander applications.

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#### REFERENCES

1. Dingman, R. O., and Argenta, L. C. The surgical repair of traumatic defects of the scalp. *Clin. Plast. Surg.* 9: 131, 1982.
2. Orticochea, M. Four flap scalp reconstructive surgeon. *Br. J. Plast. Surg.* 20: 159, 1967.
3. Gillies, H. Note on scalp closure. *Lancet* 1: 310, 1944.

#### SKIN ULCERATION IN TRIGEMINAL TROPHIC SYNDROME: REPORT OF A LESION OCCURRING 22 YEARS LATER

Sir:

Trigeminal trophic syndrome is a rare entity in which cutaneous ulceration develops within trigeminal dermatomes.<sup>1</sup> A 64-year old woman presented to our clinic complaining of three ulcerative cutaneous lesions on her face.

Her symptoms of trigeminal neuralgia had begun 27 years earlier. Four years later, branches of the right fifth cranial nerve were surgically divided. For several years the patient experienced no discomforting symptoms, but sensation over most of the right side of her face was lost (Fig. 1). In December of 2000, because of symptom recurrence, she underwent alcohol injection to the branches of the right fifth nerve. Ulcerative, painless skin lesions began to appear on her face 3 years later; they did not respond to conservative treatment. We decided to take a scrape cytology sample from the alar rim lesion and biopsy the remaining two lesions on her right lip and cheek.

Cytologic and histopathologic findings showed granulation tissue and inflammation, with no evidence of a neoplas-



FIG. 4. Late postoperative appearance.



tic, infectious, or autoimmune process. Three months later, two of the three biopsy sites had healed. The alar rim lesion persisted. The patient admitted to, unconsciously, picking her nose (Fig. 2).

Trigeminal trophic syndrome is found more often in women (2.2:1) and at an average age of 57 years. It occurs when the fifth cranial nerve is injured anywhere from its origin in the brain nuclei to its terminal branches. The most common causes of injury are surgical interventions along the course of the fifth nerve and cerebral vascular incidents. Other causes, such as Wallenberg syndrome, encephalitis, meningioma, craniotomy, and head trauma, are less common.<sup>2,3</sup>

Use of the term “trophic” is misleadingly, since the primary cause is self-induced trauma. Patients almost always pick their nose to alleviate the discomforting paresthesias, but they cannot feel the self-induced trauma.

Neurological examination reveals loss of sensation over the trigeminal area. The presence of painless, sickle-shaped ulcers on the ala nasi confirms the clinical diagnosis. Other areas of the face can be affected as well.

Differential diagnoses include neoplastic disease (basal cell or squamous cell carcinoma), infectious disease (tertiary syphilis, herpes simplex, cutaneous tuberculosis, or leprosy), and systemic disease (Wegener’s granulomatosis).<sup>4</sup>

The ulcers can be extremely persistent. Occlusive dressings help to control secondary infection and induration and also promote healing. Surgical repair seems to be worthwhile only if tissue with functional innervation and its own blood supply is used in the repair (e.g., a contralateral forehead flap).<sup>5</sup>

Patients should be advised not to manipulate the skin. It seems to be the single most important factor. The ulcers may heal progressively, but tissue loss is permanent unless surgical reconstruction is performed.

Trigeminal trophic syndrome is a rare phenomenon complicating peripheral or central damage to the trigeminal nerve. Many clinicians are not aware of it. Diagnosis is mainly clinical and can be made through observation and history alone. The triad of unilateral crescentic ala nasi ulceration, anesthesia, and paresthesia of the trigeminal



FIG. 2. Three-month postoperative view. The alar rim lesion persists. Small tissue loss is already evident.

dermatomes is classic. Histologic and cytologic analyses help to rule out other entities in the differential diagnosis. Because the ulcers can be persistent, treatment is difficult and should be directed mainly toward preventing further self-induced trauma.

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FIG. 1. The red border and crosses indicate the area of lost sensation. The lesion on her alar rim is not visible.

#### REFERENCES

1. Arasi, R., McKay, M., and Grist, W. Trigeminal trophic syndrome. *Laryngoscope* 98: 1330, 1988.
2. Weintraub, E., Soltani, K., Hekmatpanah, J., and Lorincz, A. L. Trigeminal trophic syndrome: A case report and review. *J. Am. Acad. Dermatol.* 6: 52, 1982.
3. Monrad, S. U., Terrel, J. E., and Aronoff, D. M. The trigeminal trophic syndrome: An unusual case of nasal ulceration. *J. Am. Acad. Dermatol.* 50: 949, 2004.
4. Datta, R. V., Zeitouni, N. C., Zollo, J. D., Loree, T. R., and Hicks, W. L. Trigeminal trophic syndrome mimicking Wegener’s granulomatosis: A case report with a review of the literature. *Ann. Otol. Rhinol. Laryngol.* 109: 331, 2000.
5. Shea, C. R., Scott, R. A., and Tompkins, S. D. Herpetic trigeminal trophic syndrome: Treatment with acyclovir and sublesional triamcinolone. *Arch. Dermatol.* 132: 613, 1996.

# A NEW, EASY, AND PRAGMATIC ASSESSMENT OF TEAR DRAINAGE AFTER POSTTRAUMATIC OBSTRUCTION OF THE UPPER LACRIMAL CANALICULUS

Sir:

Numerous studies have been performed to estimate tear drainage after canalicular operations, including the Johns dye test,<sup>1</sup> the Schirmer test,<sup>2</sup> the fluorescein dye disappearance test, duct irrigation, and radiographic analysis with radiopaque dye. One of the best methods of estimating tear drainage is to ask patients whether or not they have an epiphora. Most patients have no chief complaints of dacryorrhea after impairment of the upper lacrimal canaliculus. Indeed, it is difficult to assess the dacryorrhea with impairment of the upper canaliculus. It is even more difficult to evaluate the answers of children who deny symptoms while their parents claim otherwise. Many tests are uncomfortable and poorly tolerated, especially those performed on children. In this case, 5 minutes after the paper attached to the conjunctiva fills with fluorescein dye, the tear meniscus determines the degree of dacryorrhea. With the patient in the supine position, menisci appear at both the upper and lower lids of the impaired eye. The superior tear meniscus cannot be seen in the normal eye in 5 minutes. By measuring the height of the tear meniscus, one can evaluate the grade of epiphora using the Tear Meniscus Height Index<sup>3</sup> (Table I). This test is easy and useful, particularly in children.

We tested the Index by administering the fluorescein dye test to a 7-year-old boy with known upper duct obstruction. An increase in the height of the tear meniscus compared with the normal side suggested decreased drainage of the upper system (Fig. 1 and 2). The superior meniscus appeared on the injured side (Fig. 3), not on the normal side, and correlated with Kurihashi's Tear Meniscus Height Index, suggesting significant drainage dysfunction and mild epiphora.

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TABLE I

Tear Meniscus Height Index

Grade of Epiphora		Tear Meniscus Height (mm)
0	Normal	0.1
I	Mild	0.3
II	Moderate	0.5
III	Severe	0.7
IV	Severe	1.0
V	Severe	2.0
VI	Very severe	3.0

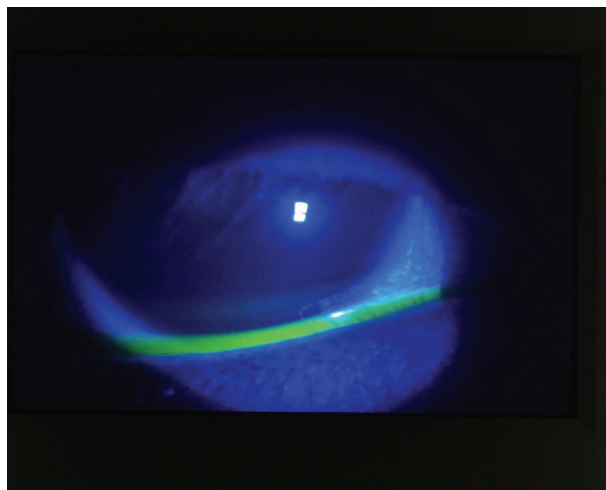


FIG. 1. A 0.2-mm meniscus was observed in the normal right eye. Photograph was taken by slit lamp.

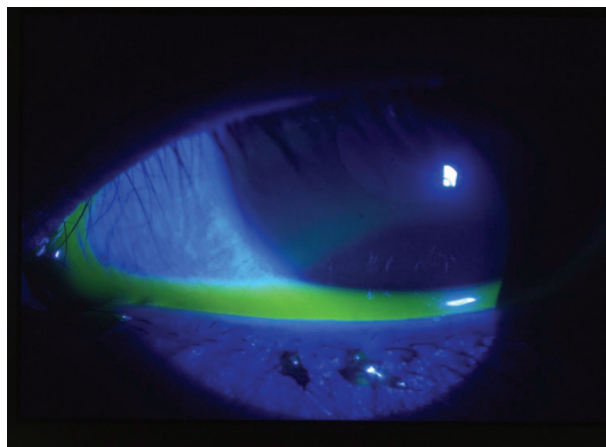


FIG. 2. A 0.4-mm meniscus was observed in the injured left eye. Photograph was taken by slit lamp.

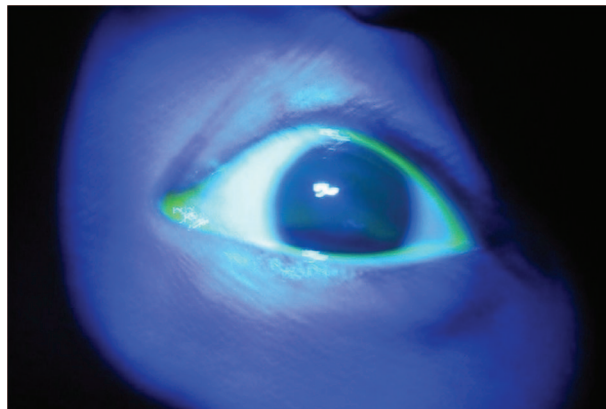


FIG. 3. The superior meniscus can be seen with the patient in the supine position. The meniscus was photographed with a high-resolution digital camera under blue light. The upper eyelid was elevated by finger, because the patient could not help closing his the eye when the photograph was taken.



## REFERENCES

1. Jones, L. T. The lacrimal tear system and its treatment. *Am. J. Ophthalmol.* 62: 47, 1966.
2. Lamberts, D. W., Foster, C. S., and Perry, H. D. Schirmer test after topical anesthesia and the tear meniscus height in normal eyes. *Arch. Ophthalmol.* 97: 1082, 1979.
3. Kurihashi, K. Practical ophthalmology. In K. Honda (Ed.), *Tear Drainage: Mechanism of the Pumps*. Vol. 7. Tokyo: Bunkodo, 1995. Pp. 18-23.

## HYPERTROPHY OF THE DEPRESSOR SEPTI NASI MUSCLE

Sir:

Hypertrophy of the masseter muscle is often reported, especially in Asian people.<sup>1</sup> We describe a rare case of hypertrophy of the depressor septi nasi muscle.

A 12-year-old boy was referred to our clinic for treatment of swelling of the columella. The deformity had been present since birth and had slowly increased in size. This was the second child, and the pregnancy and delivery had been uneventful. Results of a physical examination were normal. The swelling, covered with relatively atrophic skin and slightly scanty, downy hairs, was localized to the columella. When the boy tightened his lips, the columella collapsed, with peculiar dominance on the right side (Fig. 1). We suspected the collapse was due to the powerful contracture of the unilateral or right dominant bilateral depressor septi nasi muscles, indicating muscle hypertrophy.

Subcutaneous removal of soft tissue, including the bilateral depressor septi nasi muscles, was performed by right rim incision almost from the insertion to the origin. The thick depressor septi nasi muscles were identified intraoperatively. Histologically, the striated muscle bundles were also seen subcutaneously, with no diseased or dilated blood or lymph capillaries or any specific inflammatory cells (Fig. 2). The volume of the right muscle bundles was larger than that of the left bundles in the transverse section. These findings were compatible with hypertrophy of the depressor septi nasi muscle. The columella deformity was improved and abnormal muscle action disappeared 3 months after the operation, but mild recurrence was observed 6 months later. At present, there is no drooping of the nasal tip or tip-upper lip imbalance.

The muscles of the nose participate in facial movement in harmony with the other muscles of the face. This is particularly true of the lip muscles, with the point of convergence being the nasal spine.<sup>2</sup> The depressor septi nasi muscle is said to be underdeveloped in Japanese people compared with Cauca-



FIG. 1. Collapse or contracture of the columella is evident, predominantly on the right side, when the lips are tightened.

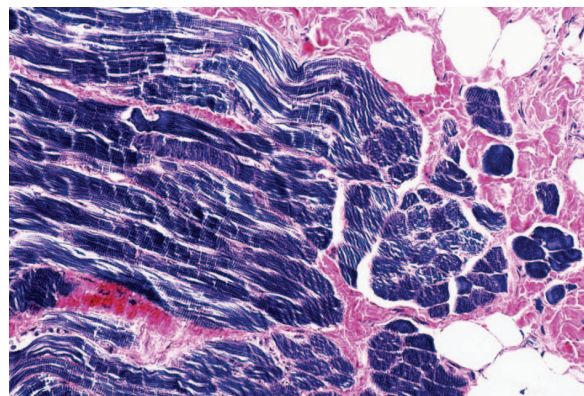


FIG. 2. Histological findings, showing the striated muscle bundles in the subcutaneous tissue (phosphotungstic acid hematoxylin stain,  $\times 200$ ).

sians. Consequently, little consideration is given to this muscle in augmentation rhinoplasty in Japanese patients, although Furukawa,<sup>3</sup> Rohrich et al.,<sup>4</sup> and others have emphasized the importance of the depressor septi nasi in rhinoplasty.

In our patient, the swelling or mass of the columella was rightly derived from hypertrophy of the depressor septi nasi muscle, just as angle deformity of the mandibular region is due to hypertrophy of the masseter muscle. Therefore, injections of botulinum toxin type A might produce desirable results.<sup>1</sup>

As for muscle tumors of the columella, a striated muscle hamartoma of the nostril has been reported.<sup>5</sup> However, hypertrophy of the depressor septi nasi muscle can easily be differentiated from a hamartoma clinically by the existence of muscle action.

In summary, an extremely rare case of hypertrophy of the depressor septi nasi muscle is described, with histological examination.

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## REFERENCES

1. Kim, H. J., Yum, K. W., Lee, S. S., Heo, M. S., and Seo, K. Effects of botulinum toxin type A on bilateral masseteric hypertrophy evaluated with computed tomographic measurement. *Dermatol. Surg.* 29: 484, 2003.
2. Zaoli, G. Surgical anatomy. In *Aesthetic Rhinoplasty*. Vol. 1. Padova: Piccin Nuova Libreria S.p.A., 1994. P. 32.
3. Furukawa, M. Oriental rhinoplasty. *Clin. Plast. Surg.* 1: 129, 1974.
4. Rohrich, R. J., Huynh, B., Muzaffar, A. R., Adams, W. P., Jr., and Robinson, J. B., Jr. Importance of the depressor septi nasi muscle in rhinoplasty: Anatomic study and clinical application. *Plast. Reconstr. Surg.* 105: 376, 2000.
5. Nakanishi, H., Hashimoto, I., Takiwaki, H., Urano, Y., and Arase, S. Striated muscle hamartoma of the nostril. *J. Dermatol.* 22: 504, 1995.



### A COMPOSITE CARILAGINOUS GRAFT

Sir:

Cartilage grafts, which are placed on the bridge of the nose to regain facial harmony lost due to iatrogenic causes or trauma, are frequently removed from the septum or the auricular concha. When these grafts are inserted as whole fragments, they are sometimes covered with a strip of muscular fascia or something else to alleviate the edge, which can be noticeable postoperatively in patients with very thin skin. Sometimes it is necessary to cover the grafts to increase their capacity to fill large depressions. In these cases, two or three fragments of cartilage are stacked on top of one another, making it even more possible that the edges will eventually lift.

Furthermore, the cartilage is always freed from the tissue that covers it and from the perichondrium because it is believed that the tissue can prevent graft take. To obtain ideal cartilage grafts that do not require any further covering, we start by removing the cartilage grafts from the auricular concha as a compound graft, including a portion of the perichondrium and some superficial connective tissue to obtain adequate thickness to cover the entire cartilage graft (Fig. 1). This tissue is, in fact, fixed to the edges of the graft with nylon or Vicryl, so that the portion that will come into contact with

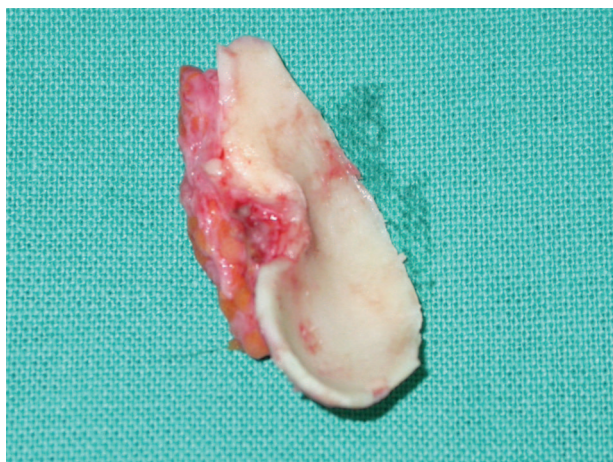


FIG. 1. View of compound graft that has just been removed.



FIG. 2. A 34-year-old patient after rhinoplasty.



FIG. 3. One-year postoperative view of the patient shown in Figure 2.

the skin will be completely covered. In addition, it is always possible to place other cartilaginous fragments on the lower part and fix them on the same cartilage until the desired thickness is obtained.

A cuneiform incision is made at the time of graft removal, by previously removing the skin from the retro-auricular area after identifying and isolating the area of cartilage to be removed together with all of the tissue covering it, as if it is an island of compound tissue. This incision should reach the cartilage of the concha and proceed by undermining the cartilage of the frontal plane. Moreover, with this technique, there is no limit to the amount of cartilage that can be removed. Consequently, greater thickness can be obtained as compared with a unique cartilage graft. Graft insertion can be performed as the surgeon wishes, with or without fixation, according to the space created and concerns that it can be displaced once it has been inserted.

In our previous experience with this type of operation using this kind of technique, the skin was covered with Steri-Strips for about 5 days and then left uncovered. The patient was warned not to wear glasses for about a month and not to massage or compress the bridge of the nose.

The results obtained in these operations have been extremely positive and remained exactly the same a year later. In two out of 10 cases treated with this type of graft, we noted a 20 to 30 percent rate of resorption, but this had absolutely no effect on the overall result obtained or the degree of patient satisfaction with the results (Figs. 2 and 3).

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### A HELPFUL ADJUNCT TO OTOPLASTY SURGERY

Sir:

Otoplasty for prominent ears is a common operation performed in all plastic surgical units in the United Kingdom.<sup>1</sup> Performing this procedure on patients with long hair can often be a trying experience, with hair obstructing the surgeon's view and getting caught in surgical implements. The current practice to prevent this involves either wetting or applying a messy, water-based lubricant over the offending hair.<sup>2</sup> We have found that access to the operative field can be markedly improved by braiding the hair preoperatively. The hair is washed the night before and, while it is still wet, plaited into various braids parallel to the antihelix, with redundant hair in the area incorporated into the braids (Fig. 1). This allows for easier handling and molding. There is no need for shaving or depilatory agents, and the application of dressings is far easier without the undue use of gels or mousses to rid the area of hair.<sup>2</sup>

Currently it is trendy for young people of both sexes to braid their hair, and it is a recognized technique used during face lift surgery. We suggest that preoperative braiding of long hair before otoplasty is an elegant and fashionable way to improve surgical accessibility during this procedure.

In summary, otoplasty surgery on patients with long hair can often be a difficult experience. Hair often gets caught within the surgical implements and obstructs the visual field. Current practices to improve access are often cumbersome and messy. We believe that parallel helical plaiting is a helpful adjunct to this procedure. It is not only fashionable and universally accepted, but easy, economical, and reproducible. DOI: 10.1097/01.prs.0000188860.59171.bb

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FIG. 1. Parallel helical plaiting of the hair.

### REFERENCES

1. Chongchet, V. A method of antihelix reconstruction. *Br. J. Plast. Surg.* 74: 268, 1962.
2. Davey, A., and Ince, C. *Fundamentals of Operating Department Practice*. Oxford: Oxford University Press, 2000.

### PRESSURE SORE OF THE CONTRALATERAL HELICAL RIM AS A COMPLICATION OF MIDDLE EAR SURGERY

Sir:

Complications related to wrong or improper perioperative positioning are preventable events. Nevertheless, patients may suffer from these complications much more than from the original pathology. The type of surgical position, the anesthesia used, and the patient's health status continue to be factors that contribute to optimizing the patient's outcome and preventing complications. Pressure ulcers result from prolonged pressure that causes skin tissue or muscle damage. Surgical patients present a unique challenge in preventing pressure ulcers, because they are immobile and unable to perceive the discomfort of prolonged pressure.<sup>1</sup>



FIG. 1. Anterior view of the bullous and edematous skin of the contralateral auricle in the postoperative period.



FIG. 2. Preoperative view of the 3 × 1-cm pressure sore over the helical rim.





FIG. 3. Nearly total wound healing with good contour was achieved after bipedicle advancement of a posterior auricular skin flap.

We report the case of a 55-year-old man who underwent middle ear surgery. In May of 2004, he presented with a pressure sore after undergoing left tympanomastoidectomy. The surgical procedure lasted 4 hours, and a special support surface was used during the operation, during which the patient's head was in the lateral decubitus position. In the early postoperative period, the unoperated contralateral auricle was edematous and bullous in appearance (Fig. 1). The patient was managed with acetylsalicylic acid (aspirin, 100 mg/daily). Despite 10 days of treatment, physical examination showed skin necrosis over the upper part of the contralateral helical rim (Fig. 2). With the patient under local anesthesia, the wound was débrided and the exposed segment of auricular cartilage was covered by advancement of a bipedicted skin flap from the posterior auricle. Three weeks later, complete wound healing was achieved (Fig. 3).

We must bear in mind that pressure sores may occur even when special support surfaces are used. There are reports in the literature of pressure sores developing as a result of strict head positioning during operative procedures.<sup>2,3</sup> Sachse et al.<sup>4</sup> found that interface pressures were higher in the lateral decubitus position than in the supine position, and they suggested that the lateral decubitus position should not be maintained for long periods of time, not even with many special support surfaces. In the presented case, the patient was operated on with his head in a lateral position and his body in a supine position.

To our knowledge, pressure sore development in this anatomical region has previously not been reported in the literature. In the acute setting, the primary clinical problem may overshadow other concerns and pressure sores may develop. DOI: 10.1097/01.prs.0000188858.17258.77

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## REFERENCES

1. Armstrong, D., and Bortz, P. An integrative review of pressure relief in surgical patients. *A.O.R.N. J.* 73: 645, 2001.
2. Treister, G., and Wignanski, T. Pressure sore in a patient who underwent repair of retinal tear with gas injection. *Graefes Arch. Clin. Exp. Ophthalmol.* 234: 657, 1996.
3. Vincent, J. M., Peyman, G. A., and Ratnakaram, R. Bilateral ulnar decubitus as a complication of macular hole surgery. *Ophthalmic Surg. Lasers Imaging* 34: 485, 2003.
4. Sachse, R. E., Fink, S. A., and Klitzman, B. Comparison of supine and lateral positioning on various clinically used support surfaces. *Ann. Plast. Surg.* 41: 513, 1998.

## ENDOSCOPICALLY ASSISTED, INTRAORALLY APPROACHED PALATOPLASTY

Sir:

Endoscopy was developed after the very first laparoscopy performed in 1901 by von Ott. Ever since then, endoscopic surgeons have been improving their techniques, developing new instruments, and exploring new areas.<sup>1</sup> Endoscopic plastic surgery has been embraced in certain areas of cosmetic and reconstructive surgery.<sup>2,3</sup>

Using an endoscope in cleft palate surgery is not a new concept—it has been used to diagnose and assess palatoplasty results<sup>4</sup>—but introducing it into the operating room is. We wanted to assess the benefits of the additional information provided as well as to ascertain whether different operative procedures may be possible under endoscopic vision.

Between September and October of 2003, the endoscope was used in 11 patients undergoing palatoplasty for unilateral cleft palate. The endoscopic unit consisted of a 10-mm-diameter, 30-degree-angle endoscope, a Telecam one-chip video camera equipped with zoom and focus functions, and a xenon light source (Karl Storz Endoscopy, Tuttlingen, Germany). The images were displayed on a 14-inch Trinitron (Sony) high-resolution color monitor, which was set up in front of the surgeon.

Endoscopically assisted palatoplasty was performed on 11 patients ranging in age from 4 to 52 months. Furlow's technique was used in three patients, and von Langenbeck's technique was used in the other eight patients. Use of the endoscope did not affect the choice of operative technique. No patient experienced complications during the first 9 months of follow-up.

Use of the endoscope has some potential benefits. Especially in most anterior cleft palate repairs, for good surgical performance, the surgeon needs to see the field magnified and at good resolution. These two requirements, together with better physical and visual comfort for the surgical team, can be achieved using the endoscope. The assistant obtains an excellent view through the monitor and quickly learns to cut sutures and assist through this view. A magnified image on the monitor greatly enhances the teaching experience for





FIG. 1. The surgeon works while watching the TV monitor.

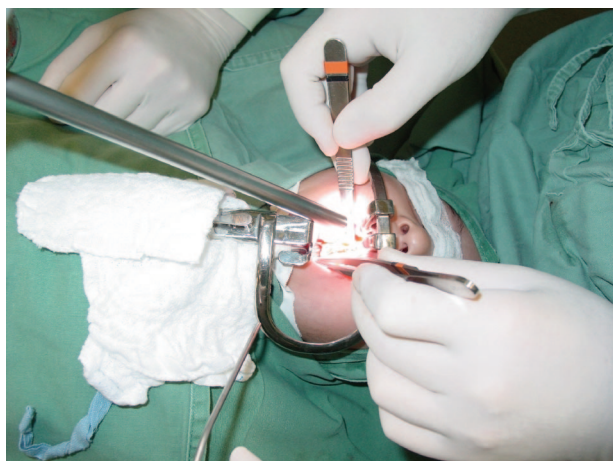


FIG. 2. The endoscope is held by the assistant.

residents and also allows other operating room staff to anticipate actions. It also provides additional information for current management and future records, as well as the potential for image archiving. The illumination provided by the scope ensures an excellent operating environment for the surgeon (Figs. 1 and 2).

Potential disadvantages of using the endoscope are the increase in cost because of the equipment used and the need for an additional assistant. When it is used at a short distance from the operative field, some surgical manipulations may become restricted.

Use of the operating video for cleft palate repair has made the procedure much more enjoyable, relaxing, and instructive. Visitors and trainees who have been able to view the procedure on a video screen have been very impressed, seeing anatomy they have never seen before.

It would be difficult to obtain proof that the video actually improves results. However, when performing this procedure, we discovered a way to facilitate visualization of anatomical structures and are now convinced that the endoscopically assisted, intraorally approached palatoplasty is a useful tool in cleft palate repair.

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#### REFERENCES

1. Davis, C. J. A history of endoscopic surgery. *Surg. Laparosc. Endosc.* 2: 216, 1992.
2. Thoma, A., Veltri, K., Haines, T., and Duku, E. A meta-analysis of randomized controlled trials comparing endoscopic and open carpal tunnel decompression. *Plast. Reconstr. Surg.* 114: 1137, 2004.
3. Jones, B. M., and Grover, R. Endoscopic brow lift: A personal review of 538 patients and comparison of fixation techniques. *Plast. Reconstr. Surg.* 113: 1242, 2004.
4. Trotman, C. A., Faraway, J. J., and Essick, G. K. Three-dimensional nasolabial displacement during movement in repaired cleft lip and palate patients. *Plast. Reconstr. Surg.* 105: 1273, 2000.

#### PALATAL PERFORATION AS A RESULT OF NEONATAL SEPSIS

Sir:

Both congenital and acquired conditions can cause defects of the palate. While cleft palate is a result of congenital factors, palatal perforation is a term which can be defined as a consequence of acquired factors.

A 25-day-old female newborn with a defect in her palate was referred to our clinic by the neonatal department. On intraoral examination, a 1.5 × 2-cm opening was observed in the central part, including all of the soft and a small part of the hard palate. The uvula was also absent. There were no pathologic findings or destructive lesions in the surrounding mucosa. There was also acquired and severe depression on the left lower lateral cartilage.

Her history revealed that she had a neonatal sepsis due to oronasal infection and had been treated for the past 20 days in the same service. Cultures showed that the infectious agents were *Escherichia coli* and *Klebsiella spp.* Third-generation cephalosporin (cefotaxime), ciprofloxacin, and amikacin were administered. Surgical treatment consisted of a standard V-Y push-back procedure performed when she was 1 year old. When she was 5 years old she was operated on again, using a superior pedicled pharyngeal flap, because of velopharyngeal insufficiency. All of the operations were successful and the postoperative courses were uneventful (Fig. 1). The fol-

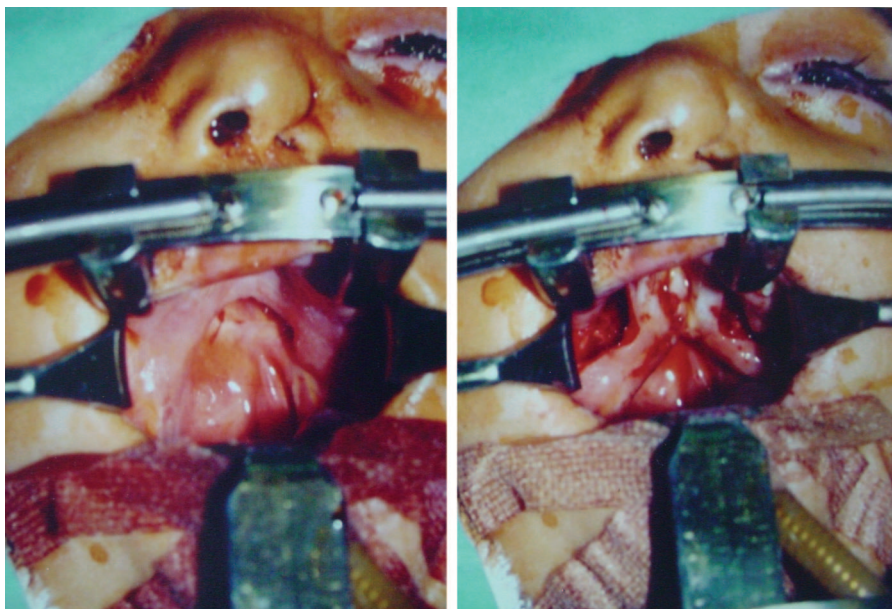


FIG. 1. (Left) Preoperative view of palatal defect. (Right) Postoperative view.

low-up time was 6.5 years for the first operation and 1.5 years for the second operation.

Several conditions have been reported to cause defects of the palate, including tertiary syphilis, deep mycoses, cancrum oris (seen among malnourished children in the Third World), cocaine abuse, and acute osteomyelitis of the maxilla. Osteomyelitis of the maxilla usually affects neonates, but in our case there were no findings for osteomyelitis, cocaine abuse, or the infections mentioned above. Other rare causes of palatal defects include primary or metastatic tumor, Wegener's granulomatosis, and trauma.<sup>1,2</sup> Ozgur and Tuncali reported the case of a 10-year-old boy who had acquired clefting as a result of palate infection by an unknown causal agent.<sup>3</sup> Our patient was a neonate and sepsis was the etiologic factor.

In conclusion, palatal defects in the neonatal period should be examined carefully to plan the surgical procedure. In some cases, the surgeon cannot distinguish conventional cleft palate from palatal perforation unless he or she takes a good history. The V-Y push-back procedure is one of the surgical options for palatal perforation. Care must be taken with neonatal patients with oronasal infections to avoid these kinds of pathologies.

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#### REFERENCES

1. Von Arx, D. P., and Cash, A. C. Spontaneous palatal fenestration: Review of the literature and report of a case. *Br. J. Oral Maxillofac. Surg.* 38: 235, 2000.
2. Monasterio, L., and Morovic, G. C. Midline palate perforation from cocaine abuse. *Plast. Reconstr. Surg.* 112: 914, 2003.
3. Ozgur, F., and Tuncali, D. Acquired clefting as a consequence of palate infection. *Plast. Reconstr. Surg.* 104: 1934, 1999.

#### THE "CHEWING GUM TEST" FOR CLEFT PALATE SPEECH

Sir:

Primary palatoplasty seeks to restore normal speech with minimum interference in midface growth. Surgery is often complicated, however, by the occurrence of palatal fistulas or velopharyngeal incompetence. Both result in similar speech disorders but demand different treatment approaches. Palatal fistulas can occur at any site of the original cleft as a complication of primary palatoplasty.<sup>1</sup> The incidence of these fistulas ranges from 0 to 34 percent of all patients with repaired clefts.<sup>2</sup> Palatal fistulas may result in audible nasal air escape during speech and the perception of hypernasality.<sup>3</sup> Postoperatively, velopharyngeal incompetence manifests with hypernasality, nasal escape, and misarticulation. Clinically, it is difficult to assess the relative contribution of the fistula or velopharyngeal incompetence to the speech disorder. It is important, therefore, to analyze and assess its individual contribution to achieve optimal speech. There is controversy regarding accurate identification of a symptomatic fistula, the extent of the effects on speech, and decisions regarding surgical management. Most speech pathologists agree that symptomatic fistulas may cause deterioration in speech quality and intelligibility and lead to significant communication impairment. Surgical repair of palatal fistulas can be techni-





FIG. 1. Anterior palatal fistula after group 3 cleft repair in an 18-year-old patient with velopharyngeal incompetence.



FIG. 2. The fistula was occluded with chewing gum to assess its contribution to the speech deficit.

cally difficult in many cases, because of the paucity of virgin local tissue for closure or excessive scarring.<sup>4</sup> Whether or not to operate is evidently based on how much the palatal fistula or velopharyngeal incompetence contributes to the speech deficit. Therefore, in clinical practice, many surgeons will operate only on those fistulas that they believe are likely to be the most symptomatic.

We describe a simple and effective means of obturating the anterior palatal fistula to assess the affect on speech; this method can be used in the outpatient department. Figure 1 shows a postoperative view of a patient after adult palatoplasty at the age of 18 years. The patient had significant hypernasality and nasal escape. We used the fogging of a mirror held at the anterior nares to assess nasal escape. Examination revealed an anterior palatal fistula. Soft palatal movements were evident during speech. To ascertain its contribution to the speech deficit, the anterior fistula was occluded with a piece of chewing gum (Fig. 2) and the patient was asked to speak. If there is decrease in nasality and no fogging, the fistula is considered to be the cause of hypernasality and is the focus of corrective surgery. If the speech deficit and nasal escape persist, the problem lies in the velopharynx and needs further investigation before any intervention. The degree of difference in speech after fistula occlusion is based on subjective assessment, with input from family members. We believe that this simple

clinical test, which we use in the outpatient department, gives a reasonable estimate of the relative contribution of the fistula or velopharyngeal incompetence to the overall speech defect. It can serve as a useful guide in planning the direction of subsequent interventions.

Henningsson and Isberg<sup>5</sup> demonstrated that occlusion of a fistula can cause concomitant improvement in velopharyngeal incompetence. Therefore, the relationships among palatal fistula, hypernasality, and nasal emission should be studied individually. In many cases, it may be wise to repair a symptomatic palatal fistula before further evaluation and management of velopharyngeal function. Our simple clinical test gives us reasonable input to draw a rational management algorithm. Repair of the symptomatic fistula alone may result in complete elimination of speech symptoms, obviating the need for velopharyngeal surgery.

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#### REFERENCES

1. Lindsay, W. K. The end results of cleft palate surgery and management. In R. M. Goldwyn (Ed.), *Long-Term Results in Plastic and Reconstructive Surgery*. Boston: Little, Brown, 1980. P. 62.
2. Cohen, S. R., Kalinowski, J., LaRossa, D., et al. Cleft palate fistulas: A multivariate statistical analysis of prevalence, etiology and surgical management. *Plast. Reconstr. Surg.* 87: 1041, 1991.
3. Converse, J. M. Palatal defects: Oronasal fistulas. In J. M. Converse (Ed.), *Reconstructive Plastic Surgery*. Philadelphia: Saunders, 1977. P. 2198.
4. Oneal, R. M. Oronasal fistulas. In S. W. Rosenstein and K. R. Bzoch (Eds.), *Cleft Lip and Palate*. Boston: Little, Brown, 1971. P. 490.
5. Henningsson, G., and Isberg, A. Oronasal fistulas and speech production. In J. Bardach and H. L. Morris (Eds.), *Multidisciplinary Management of Cleft Lip and Palate*. Philadelphia: Saunders, 1990. P. 787.

#### IS PSEUDOCHELINESTERASE ELEVATION A RISK FOR SURGERY?

Sir:

Pseudocholinesterase deficiency is known to cause a decrease in succinyl choline degradation and thus lead to an elongated neuromuscular blockage. In contrast, pseudocholinesterase hyperactivity has been reported to cause difficulty in laryngeal intubation when succinyl choline is used during anesthesia.<sup>1</sup>



A 4-month-old girl with a left unilateral complete cleft lip was admitted to our department. A routine preoperative examination was performed, revealing normal echocardiogram, chest radiograph, complete blood cell count, and biochemical blood test results. A pseudocholinesterase level about two times the normal range (21,287 U/L; normal, 5400 to 13,200 U/L) was detected. Pseudocholinesterase activity was normal in her parents, and the patient had a healthy brother with no known disease.

The cleft was repaired under inhalational anesthesia with sevoflurane. No neuromuscular blocking agent was used during intubation, and no problem was encountered during the perioperative and postoperative periods.

Although pseudocholinesterase's biological function is not clear, high serum activities have been observed in patients with obesity and diabetes mellitus.<sup>1</sup> Pseudocholinesterase hyperactivity coincident with obesity, diabetes mellitus, and hyperlipoproteinemia has also been shown in animal studies.<sup>2</sup> Pseudocholinesterase activity is low at birth. Between 3 and 6 years of life, the enzyme activity is approximately 30 percent above adult levels; it begins to decrease during the fifth year, and the adult level is reached at puberty.<sup>1</sup> Mild to moderate pseudocholinesterase hyperactivity has been reported in patients with diabetes mellitus, obesity, hyperlipemia, thyrotoxicosis, asthma, nephrosis, psoriasis, essential hypertension, alcoholism, schizophrenia, and nodular goiter.<sup>3</sup> Antiepileptic drugs, such as phenytoin, valproic acid, and carbamazepine, were reported to elevate pseudocholinesterase activity in epileptic patients.<sup>4</sup>

To the best of our knowledge, two German families are reported in the literature with elevated pseudocholinesterase activity.<sup>5</sup> There is no other reported case of pseudocholinesterase elevation during childhood. In our patient's situation, it did not seem to be familial, since her parents' pseudocholinesterase levels were in the normal range.

In addition, we could not find any pseudocholinesterase hyperactivity along with cleft lip and palate deformity. This concomitance in our patient may be a coincidence, but we think that pseudocholinesterase levels should be checked in cleft lip and palate patients to determine the significance of this concomitance between cleft lip and palate and pseudocholinesterase activity.

Although the results of our patient's routine preoperative tests were normal, she should be examined for possible lipid/glucose metabolism abnormalities later in life. In addition, her pseudocholinesterase levels should be checked to determine out whether this is a temporary or persistent elevation.

Besides these possible lipid metabolism abnormalities, thinking of surgery, we were interested in the possible drawbacks of pseudocholinesterase hyperactivity. As far we know, there are four reported cases of difficult intubation in which increased pseudocholinesterase activity resulted in succinyl choline resistance.<sup>3</sup> Therefore, our anesthesiologist did not use succinyl choline or any other neuromuscular blocking agent. We did not notice any problem during the intubation or the perioperative and postoperative periods.

We recommend avoiding succinyl choline in patients with pseudocholinesterase hyperactivity. Pseudocholinesterase hyperactivity should be kept in mind in cases of unknown difficulty with laryngeal intubation in which succinyl choline is used as a neuromuscular blocking agent.

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## REFERENCES

1. Yao, F. S. F., and Savarese, J. J. Pseudocholinesterase hyperactivity with succinylcholine resistance: An unusual cause of difficult intubation. *J. Clin. Anesth.* 9: 328, 1997.
2. Annapurna, V., Senciall, I., Davis, A. J., and Kutty, K. M. Relationship between serum pseudocholinesterase and triglycerides in experimentally induced diabetes mellitus in rats. *Diabetologia* 34: 320, 1991.
3. Kutty, K. M., and Payne, R. H. Serum pseudocholinesterase and very-low-density lipoprotein metabolism. *J. Clin. Lab. Anal.* 8: 247, 1994.
4. Puche, E., Garcia-Morillas, M., Garcia-De la Serrana, H., and Mota, C. Probable pseudocholinesterase induction by valproic acid, carbamazepine and phenytoin leading to increased serum aspirin-esterase activity in epileptics. *Int. J. Clin. Pharmacol. Res.* 9: 309, 1989.
5. Delbruck, A., and Henkel, E. A rare genetically determined variant of pseudocholinesterase in two German families with high plasma enzyme activity. *Eur. J. Biochem.* 99: 65, 1979.

## A SAFE WAY TO INSERT BREAST IMPLANTS

Sir:

Breast augmentation has become one of the most frequently performed procedures in plastic surgery. Plastic surgeons frequently prefer implants that offer a more realistic outcome based on the patient's physical profile. However, in the last decade, patients have been choosing larger breast implants because of a change in fashion. Since the ideal breast size depends on the patient's attitude and her psychological status, the ideal breast implant will be chosen with both the surgeon's and the patient's approval. Surgical incisions have become smaller for better aesthetic results, while at the same time the volume of breast implants has become larger. The site of incision depends on the preferences of the individual surgeon, and the goal is to insert the prosthesis on the first attempt to avoid damage. It has been demonstrated that the process of inserting breast implants has a detectable weakening effect on the average tensile strength, breaking energy, and moduli of the implant's elastomeric shell. This issue is relevant because the implant shell can be damaged locally by the insertion process, mainly in the areas where the surgeon's finger forces the implant through the incision.<sup>1</sup>

Thus, insertion of a prosthesis in the surgical breast pocket has become a true challenge for plastic surgeons. To insert breast implants, the "hourglass" technique seems to be a good method. When the assistant retracts the edges of the incision and exposes the pocket, the surgeon begins to insert the implant smoothly, placing the superior pole into the pocket. The surgeon uses one hand to squeeze the middle of the implant while the index finger of the other hand maintains the superior

pole in place. This first squeeze will allow a sufficient amount of the implant to pass through the narrow space created by the incision's edges. Then, the index finger starts to push the inferior pole of the implant upward in an intermittent movement as the prosthesis progresses into the pocket. This maneuver allows the surgeon to insert the implant progressively into the superior pole in the manner of sand through an hourglass. With the finger, the surgeon allows the air to come out of the pocket, facilitating insertion of the breast implant. When about half of prosthesis is in the pocket, insertion of the remainder of the implant becomes easy. The "hourglass" technique certainly facilitates insertion of breast implants and minimizes the risks of damaging the shell or the edges of the skin.

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#### REFERENCE

1. Wolf, C. J., Brandon, H. J., Young, V. L., and Jerina, K. L. Effect of surgical insertion on the local shell properties of Silastic II silicone gel breast implants. *J. Biomater. S Polym. Ed.* 11: 1007, 2000.

#### BAROTRAUMA: AN UNRECOGNIZED MECHANISM FOR PNEUMOTHORAX IN BREAST AUGMENTATION

Sir:

Pneumothorax is a rare but dramatic complication of cosmetic operations in general and breast augmentation in particular. A bilateral pneumothorax was diagnosed in a routine breast augmentation patient. As no obvious cause of the problem could be established, a hypothesis of barotrauma as an underlying mechanism was proposed. The hypothesis was tested in six patients and a preventative strategy was developed.

A healthy 26-year-old woman underwent a routine transaxillary breast augmentation. Her history was significant for smoking 20 cigarettes per day for 13 years. No other lung-related history was presented.

The procedure was performed with the patient under total intravenous anesthesia. Airway control was maintained with a laryngeal airway. No high ventilation pressures were noted during the operation. Monitoring, including pulse oximetry, was essentially normal, with the exception of a slight drop in partial pressure of oxygen to 94 toward the end of the 30-minute procedure. Local anesthetic was infiltrated into the surgical field in a fully controlled manner, and at no stage was there a suspicion of penetration of the needle through the intercostal space. The subpectoral pocket was dissected with subpectoral dissectors, and again, no penetration of the intercostal space occurred. The implants were placed in a subpectoral pocket in a routine manner. The patient's recovery was prompt. As she woke up in the recovery suite, she complained

of shortness of breath and chest pain. Examination suggested reduced air entry on the right side. An erect chest radiograph was requested that showed a bilateral pneumothorax involving some 30 percent of the right lung field and a smaller pneumothorax of the left lung field. The patient was returned to the operating room and bilateral intercostal drains were inserted in the midaxillary line of the fifth intercostal space. The patient's lungs expanded promptly. This was confirmed both clinically and by repeated chest radiographs. Drains were removed uneventfully 48 hours later.

A medical consultation was requested electively to exclude bullous lung disease. Investigations included a lung function test and a high-resolution computed tomography scan of the chest. Results of both investigations were normal. Her S- $\alpha$ 1-antitrypsin level was 233 mg/dl, which is higher than normal values. The cause of this patient's bilateral pneumothorax remained obscure.

The next three consecutive patients who underwent a transaxillary breast augmentation and did not complain of shortness of breath were then referred for chest radiographs. In all three patients, small, asymptomatic, bilateral pneumothorax was present. These pneumothoraces were not treated, but the patients were followed up clinically and radiologically until the pneumothorax resolved spontaneously within 2 to 3 days after surgery.

A suggestion of barotrauma as an underlying cause was considered. It was assumed that air was trapped in the subpectoral pocket, which was sealed by the implant at the axillary wound. The air was forced into the pleural cavity as a result of the high pressure created in the subpectoral pocket by the advancing implant. Surgical emphysema was found in all these patients and was not considered to be a pathological event, as it has previously been noted in breast augmentation patients as a result of air trapped in the cavity and forced into the tissue by the advancing implant.

Further evidence to support the hypothesis was obtained from a patient in whom large implants were inserted with air drainage on one side and no drainage on the contralateral side. This patient complained of substantial postoperative pain on the side where air drainage was not performed. A chest radiography of this patient revealed a 25 percent non-tension pneumothorax on the nondrained side.

The surgical technique was then modified. A large-bore suction catheter was introduced into the subpectoral pocket before insertion of the implant. It was assumed that air would escape through the tube and thus reduced pressures would prevent air dissection into the pleural cavity. Postoperative radiographs were obtained in the next three consecutive asymptomatic breast augmentation patients. No pneumothorax was noted in any of them.

Pneumothorax is a rarely reported complication of cosmetic surgery.<sup>1,2</sup> The mechanism by which breast augmentation can cause pneumothorax has never been adequately described. Barotrauma, or air forced into the pleural cavity as a result of raised air pressure in the surgical pocket caused by the advancing implant in an airtight cavity, seems to be the most logical explanation. The diagnosis of pneumothorax was made in three consecutive cosmetic transaxillary breast augmentation patients. Subsequent occurrences of pneumothorax were averted by allowing a channel for air to escape from the pocket in the next three consecutive cases.

We now use a drainage tube in the surgical pocket routinely during insertion of breast implants through an axillary incision. It seems that patients report less postoperative pain compared with patients who had breast augmentation before



insertion of the drainage tube, which seems to be an added advantage of this technique.

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#### REFERENCES

1. Keyes, G. R., Singer, R., Iverson, R. E., et al. Analysis of outpatient surgery center safety using an internet-based quality improvement and peer review program. *Plast. Reconstr. Surg.* 113: 1760, 2004.
2. Eroglu, L., Akbas, H., Guneren, E., Demir, A., Baris, S., and Demircan, S. An unexpected complication after rhinoplasty: Pneumothorax. *Plast. Reconstr. Surg.* 110: 992, 2002.

#### IMPLANT FOUND IN THORACIC CAVITY AFTER BREAST AUGMENTATION

Sir:

As a common aesthetic operation, it is now relatively safe to perform breast augmentation with silicone gel-filled implants. Serious complications rarely occur. In this report, we describe a case in which one silicone implant entered the left side of the chest after breast augmentation.

A 29-year-old woman underwent breast augmentation with silicone gel-filled implants in a private hospital. Axillary incisions were made, and the procedure on the right side was sound. However, sudden dyspnea appeared during the operation on the left side but was alleviated after immediate administration of oxygen. The operation then continued. One 200-ml silicone implant was implanted in each breast. According to the doctor's instructions, the woman massaged her breasts after the operation. Two months later, the implant on the left side *disappeared* and was not felt. The patient herself usually did not feel at ease on the left side of her chest. She returned to the same hospital for further consultation with her doctor. She was considered to have a ruptured left implant, so another operation was performed. The surgeon made a left inframammary incision, but no implant was found. Nevertheless, a hole of about  $5 \times 2$  cm<sup>2</sup> was found in the fourth intercostal space. The surgeon closed the incision immediately and discontinued the operation.

Four months later, she came to our hospital. Physical examination demonstrated that her two breasts were asymmetrical, with the right one being bigger than the left. The implant could be felt in the right breast, but its position had moved up to the second and fifth intercostal spaces. No implant was found on the left side. A computed tomography scan of her chest indicated a circular entity in the fundus on the left side of her chest; it was intact and the same density as the implant in the right breast.

Cooperating with a surgeon from the department of thoracic surgery, we performed another operation to remove the foreign body in the left side of her chest and augment the

breast again. First, with a thoracoscope, we found that there was a rectangular defect measuring about  $5 \times 2$  cm<sup>2</sup> in the fourth intercostal space and that the foreign body was the lost implant. Along the original inframammary incision, we cut open the implant capsule and found the implant capsule cavity communicating with the thoracic cavity through the defect (Fig. 1). After removing the implant through the defect (Fig. 2), we mended the orifice and reinforced the chest wall. We then placed a new silicone gel-filled implant below the pectoralis major muscle. We then cut along the original incision on the right side, removed that original implant, again created a new pocket below the pectoralis major muscle, and placed a new implant in that pocket. Thereafter, closed thoracic drainage was used on the left side of the chest and drainage tubes were inserted in each pocket. The process was sound.

We believe the implant entered the left side of the chest for the following reasons: (1) there was a large defect in the chest wall (this was the basis for the migration); (2) the breast was massaged after the operation; the implant had certain liquidity and was squeezed constantly, so it was bound to flee; and (3) there was a difference in pressure between the outside and the inside of the chest wall. Once the implant capsule formed, the capsule cavity communicated with the thoracic cavity through the defect and one closed cavity was formed. When the breast

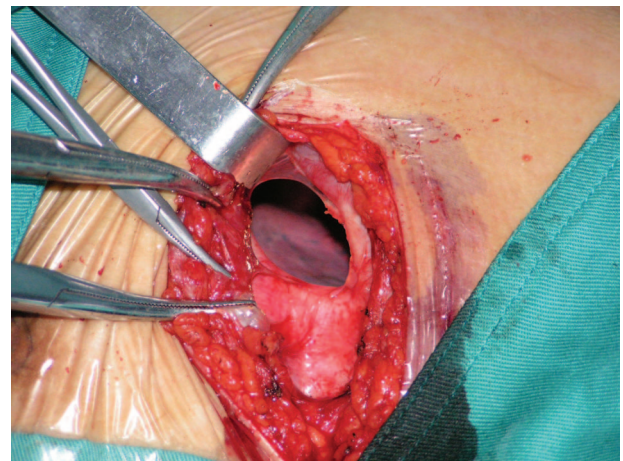


FIG. 1. The defect in the fourth intercostal space.

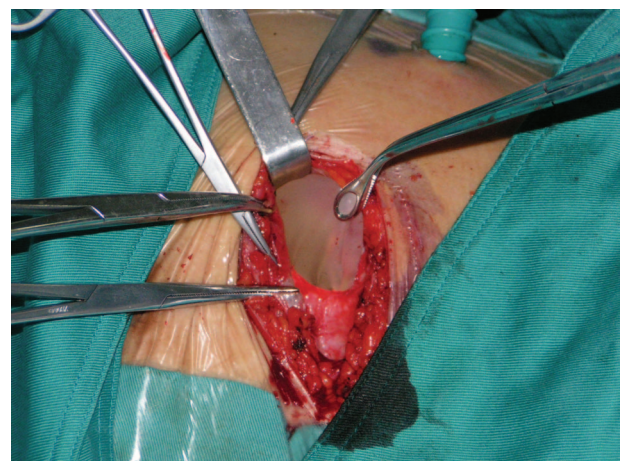


FIG. 2. The implant was removed through the defect.

was massaged, the pressure in the implant capsule rose, creating a pressure difference between the outside and the inside of the chest wall. Thus, the implant was literally squeezed into the chest under the pressure difference.

Pneumothorax occurring during breast augmentation because of a syringe needle piercing the patient's chest wall has been reported.<sup>1,2</sup> Camirand et al.<sup>3</sup> once reported that a patient suffered from a pneumothorax on one side during the operation and recovered after timely treatment. The appearance of a hemothorax has also been reported after reduction mammoplasty.<sup>4,5</sup>

This case shows that surgeons should strictly abide by operating principles, using careful procedures to avoid injuring the chest wall during breast augmentation. If pneumothorax occurs, it should be treated calmly and positively. DOI: 10.1097/01.prs.0000188851.06592.97

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#### REFERENCES

1. Kaye, A. D., Eaton, W. M., Jahr, J. S., et al. Local anesthesia infiltration as a cause of intraoperative tension pneumothorax in a young healthy woman undergoing breast augmentation with general anesthesia. *J. Clin. Anesth.* 7: 422, 1995.
2. Kazachkov, E. L., Fridman, A. B., Friss, S. A., et al. Granulomatous pleurisy after mammoplasty, induced by polyacrylamide gel. *Arkh. Patol.* 60: 58, 1998.
3. Camirand, A., Doucet, J., and Harris, J. Breast augmentation: Compression: A very important factor in preventing capsular contracture. *Plast. Reconstr. Surg.* 104: 529, 1999.
4. Gokalan, K. Hemothorax as an unusual complication of reduction mammoplasty. *Plast. Reconstr. Surg.* 105: 2628, 2000.
5. Vijayasekaran, V., and Briggs, P. Massive spontaneous hemothorax following bilateral reduction mammoplasty. *Plast. Reconstr. Surg.* 107: 1797, 2001.

#### REMOVAL OF THE DIFFICULT SUBCUTICULAR SUTURE

Sir:

The subcuticular suture is commonly used in cosmetic surgery to obtain even skin edges without surrounding suture marks. To remove the suture, tension is applied to one end



FIG. 1. (Above) A hemostat applied to the end of the subcuticular suture. (Below) Tension is applied in the same direction as the subcuticular suture.

of the suture so that it slips out from under the skin. Sometimes this suture is difficult to remove because the subcuticular suture is placed in a long wound and does not exit the skin between the ends. When a surgeon encounters this problem, he or she usually cuts the ends of the suture under some tension and leaves the suture in the subcuticular tissues. If there is difficulty removing the subcuticular suture, certain maneuvers can be applied.

A hemostat is placed on the end of the suture and firm but gentle pressure, without pain to the patient, is applied subcutaneously in the direction of the suture for several minutes (Fig. 1). In most cases, this will loosen the suture in the subcutaneous tissues and allow traction removal.

In the event that the suture does not come out easily with hemostat traction, the rubber band technique can be used. The end of the suture is tied to a semithick rubber band (eighth of an inch). One-inch plastic tape (not paper tape) is placed inside the rubber band (Fig. 2, above). The rubber band is stretched to create tension, without pain to the patient, and taped to the skin (Fig. 2, center). The smaller the suture (5-0 nylon), the less tension that can be applied without breaking it. Another strip of tape is applied to the skin, transversely across the entire rubber band (Fig. 2, below). More than one piece of tape may be needed to hold the rubber band, depending on the tension. After several minutes, this traction will usually loosen the subcuticular attachments of the suture and the suture can be removed with a hemostat or finger traction. Sometimes the rubber band traction has to be maintained for as long as 10 minutes.



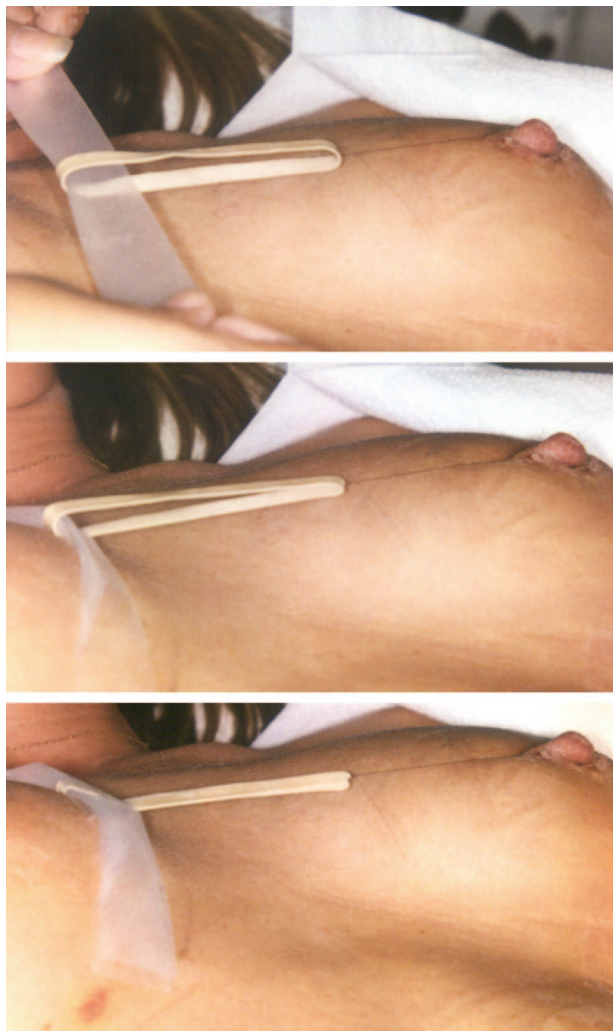


FIG. 2. (Above) One-inch plastic tape is placed through the rubber band and (center) taped to the skin. (Below) A second piece of tape is placed over the entire rubber band and taped to the skin. More than one piece of tape may be required.

I have been using these techniques for more than 30 years and have been able to remove even a 10-inch subcuticular suture without a problem.

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#### USE OF AEROSOLIZED FIBRIN GLUE FIXATION AFTER LIPOSUCTION OF THE ARMS

Sir:

Localized lipodystrophy of the arms can be managed with suction-assisted lipectomy, but inconsistent results are common, mostly because of the remaining skin that does not

retract as expected. In cases such as this, we use fibrin glue to help with the adherence of this special type of skin after lipoplasty, based on the evidence of other publications.<sup>(1-5)</sup>

Middle-age women who ask for this procedure are very interested in outdoor activities and will not accept scars in the medial part of the arm. They are usually slim patients, with a genetic inheritance from the mother or grandmother of this localized lipodystrophy of the arms and an important laxity of the skin of other parts of the body. They first will ask for a tummy tuck, then correction of a localized trochanteric lipodystrophy, a breast lift, and finally an arm lift, because they know about the scars that will show when they wear a T-shirt.

We have used a combination of procedures to deal with this particular deformation of the arms. We start with mild liposuction of the inferior and inner parts of the arms (usually 40 to 60 cc). The axilla is our point of incision. We then use a Toledo cannula with a flat bifid cutting tip to undermine all of the skin of the inferomedial part of the arm. After confirming that we have no major bleeding, we prepare the aerosolized fibrin glue (Beriplast P Combi set of 3 cc; Aventis-Behring Laboratories). This is a combination of fibrin and thrombin with coagulation factor XIII, bovine aprotinin, and calcium chloride. We infuse 3 cc per side (both the left and right arms) with a double-syringe system, replacing the short needle that comes with the kit with a long, 22-gauge spinal anesthesia needle. The infusion is performed from the distal arm to the proximal axilla, with the glue infused when the needle is retired. We finish by applying a compressive garment to hold the undermined skin and restrain it against the subcutaneous tissue. The garment is worn for 3 weeks. Figures 1 and 2 show two cases; the longest follow-up was 4 months.

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#### REFERENCES

1. Marchac, D., Ascherman, J., and Arnaud, E. Fibrin glue fixation in forehead endoscopy: Evaluation of our experience with 206 cases. *Plast. Reconstr. Surg.* 100: 704, 1997.
2. Rohrich, R. J., and Beran, S. J. Fibrin glue fixation in forehead endoscopy: Evaluation of our experience with 206 cases (Discussion). *Plast. Reconstr. Surg.* 100: 713, 1997.
3. Fezza, J. P., Cartwright, M., Mack, W., and Flaharty, P. The use of aerosolized fibrin glue in face lift surgery. *Plast. Reconstr. Surg.* 110: 658, 2002.
4. Marchac, D. The use of aerosolized fibrin glue in face lift surgery (Discussion). *Plast. Reconstr. Surg.* 110: 665, 2002.
5. Tercan, M., Balat, O., Bekercioglu, M., and Atik, B. The use of fibrin glue in the McIndoe technique of vaginoplasty. *Plast. Reconstr. Surg.* 109: 706, 2002.



FIG. 1. (Above, left and right) Preoperative anterior views of the left and right arms. (Below, left and right) Four-month postoperative views.

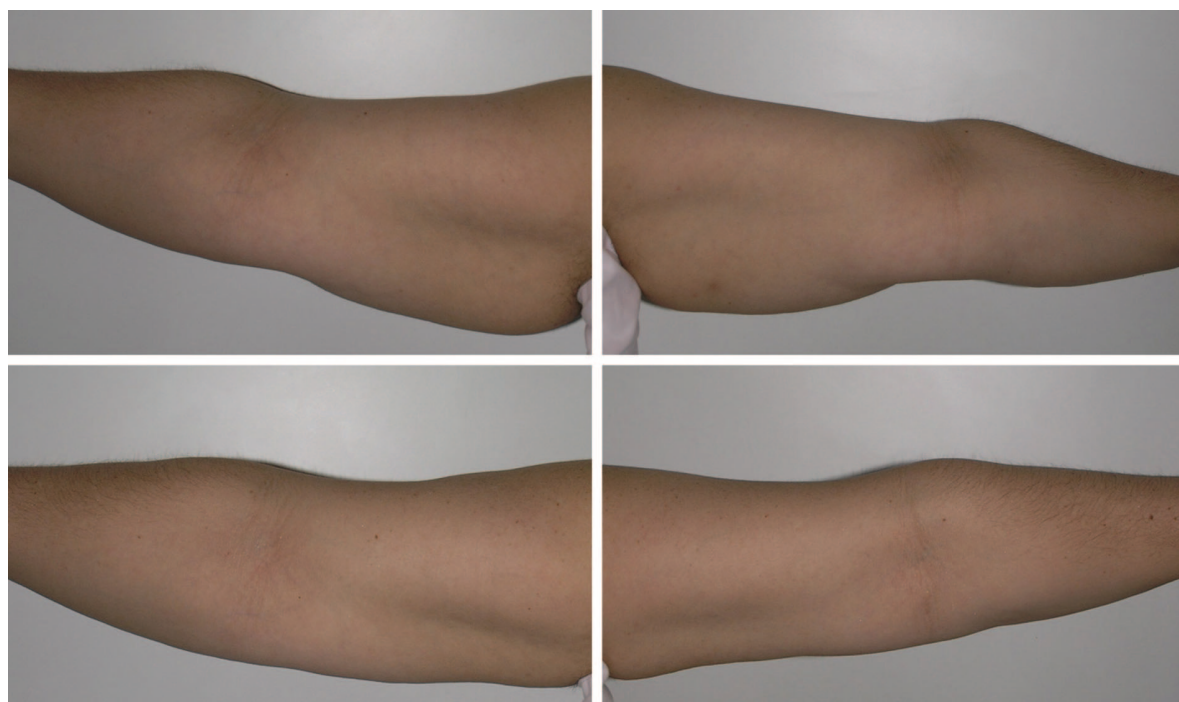


FIG. 2. (Above, left and right) Preoperative frontal views of the left and right arms. (Below, left and right) Four-month postoperative views.



## CROSS-DIGITAL VEIN GRAFT IN ARTERIAL REPAIR

Sir:

The degree of tissue injury alters the indication for replantation. On the other hand, the indication for replantation has been refined with improvements in microsurgery techniques. One improvement is the use of vein grafts.<sup>1</sup> Crush amputations with arterial gaps can be also replanted using interpositional vein grafts.

A 21-year-old man presented with a severe crush injury to the index and long fingers of his left hand. All structures, except for one slip of the superficial flexor tendon in the long finger and the dorsal skin and veins in the index finger, were amputated at the level of the distal part of the midphalanx. There was no perfusion in the stumps. The stumps were irrigated with saline solution and debris was removed. The proximal bones were minimally débrided, and small, loose bony fragments were removed. Bony fixation was performed using single axial Kirschner wires. The extensor tendons were repaired with a horizontal mattress suture technique using 4-0 nylon suture; the flexor tendons were repaired with a modified Kessler suture technique using 4-0 nylon suture. All microsurgical repairs were performed with 10-0 nylon sutures under magnification with a surgical microscope. Primary nerve repairs were performed on the radial and ulnar digital nerves in both fingers and two vein anastomoses were performed in the long finger. Since there were intact veins in the index finger, we did not perform vein anastomoses. Radial and ulnar digital arterial anastomoses were performed in the long finger. Since the proximal part of the radial digital artery and the distal part of the ulnar digital artery of the index finger were severely injured, the classic end-to-end arterial anastomoses could not be performed. We used a vein graft, taken from the volar site of the elbow, between the intact proximal ulnar digital artery and the distal radial digital artery in an antidromic position (Fig. 1). While skin grafting was used over the vein graft and arterial anastomoses, primary closure was preferred at the other sites. Four weeks postoperatively, the Kirschner wires were removed and passive physiotherapy was started. Six weeks postoperatively, the patient began active

range-of-motion exercises. Objective testing showed a satisfactory range of active distal interphalangeal joint motion (50 degrees in the long finger and 55 degrees in the index finger) at 5 months postoperatively. The average two-point discrimination of the pulp was 12 mm in the long finger and 11 mm in the index finger. No nail deformity, cold intolerance, or pulp atrophy was seen.

Tissues are severely injured in crush traumas, and arterial gaps might be seen. When the proximal part of one side of the digital artery and the distal part of the other side of the digital artery in a digit are injured severely, some authors suggest shifting the digital artery and performing primary end-to-end arterial anastomoses.<sup>2,3</sup> Dissection of the digital arteries proximally and distally may not be possible in crush injuries. Injuring the digital arteries during a dissection is not negligible; besides, the dissection should be minimal to avoid early postoperative complications such as hematoma, partial necrosis, and excess swelling and late complications such as tendon adhesion. Using cross-digital vein grafting between the radial and ulnar digital arteries, the arterial gap can be compensated without more dissection. In conclusion, if the proximal part of the one side digital artery and the distal part of the other side digital artery are severely traumatized, using an interpositional vein graft is a logical alternative to maintain arterial flow in replantation.

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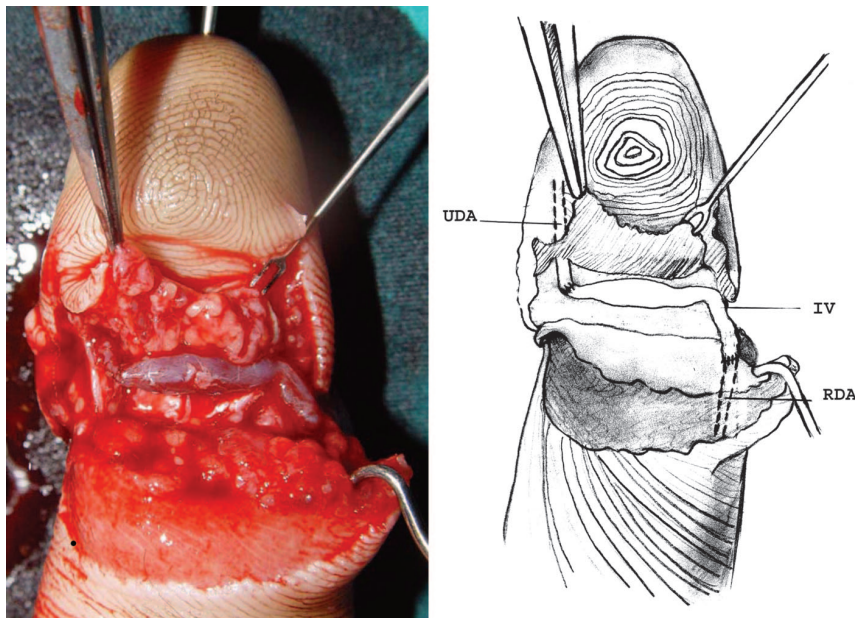


FIG. 1. (Left) The interposition vein graft between the radial and ulnar digital arteries of a digit. (Right) Schematic illustration of the interposition vein graft. UDA, ulnar digital artery; RDA, radial digital artery; IV, interpositional vein.

## REFERENCES

1. Cooney, W. P., III. Revascularization and replantation after upper extremity trauma: Experience with interposition artery and vein grafts. *Clin. Orthop.* 137: 227, 1978.
2. Lendvay, P. G. Replacement of the amputated digit. *Br. J. Plast. Surg.* 26: 398, 1973.
3. Urbaniak, J. R. Replantation of amputated hands and digits. *Instr. Course Lect.* 27: 15, 1978.

### THE FISH-SKINNING MACHINE: AN UNUSUAL SOURCE OF HAND TRAUMA

Sir:

Fishery work is internationally recognized as one of the highest-risk occupations for industrial accidents.<sup>1</sup> In the United Kingdom, food manufacture has the highest occupational injury rate of any industry (except mining and quarrying), almost twice that of the manufacturing and construction industries.<sup>2</sup> Hand injuries account for a significant proportion of fishery-related accidents<sup>1</sup> and may often be preventable by relatively simple measures.

A 31-year-old male, right-handed, fish-processing worker presented to our department after an injury to his dominant hand. While processing fish through a skinning machine, his right hand became caught on the rotating drum of the appliance. He was not wearing protective gloves. The skin of the dorsum of his right hand was excised from the level of the wrist to the metacarpophalangeal joints, extending down to, but not through, the deep fascia (Fig. 1).

The wound was minimally debrided and a split-thickness skin graft was applied to the defect. There were no long-term graft problems, and the patient returned to a manual occupation, although not in a wet environment as before.

Although the management of this unusual injury is not in itself remarkable, the mechanism of injury is interesting, and to our knowledge, no case with a similar mechanism of injury has been reported. Fish-skinning machines are designed to remove skin and scales from fish while leaving the underlying flesh intact (Fig. 2). They have an adjustable blade to allow for variability in skin thickness.

In the fish-processing sector, on average, 2175 injuries occur per 100,000 workers per year.<sup>2</sup> Some 11 percent of these injuries are caused by machinery.<sup>2</sup> Norwegian studies have shown that hand injuries account for 12 percent of occupational injuries in fishery workers.<sup>1</sup> Young men traditionally have the highest rate of occupational hand injuries, but in the fish-processing industry, women have a higher



FIG. 1. Skin defect created by a fish-skinning machine.



FIG. 2. A fish-skinning machine in action. Reproduced with the permission of Cretel NV, Gentsesteenweg, Belgium. Photograph kindly provided by Jerome Cretel of Cretel NV.

injury rate.<sup>3</sup> This may simply reflect workforce demographics in this sector. Fish-processing work is monotonous, and this might be expected to predispose to hand injury, particularly from knives or machinery, as concentration is lost. However, studies in other line-manufacturing industries have shown an inverse relationship between the degree of job routinization and the incidence of hand injuries.<sup>4</sup>

Employers in the United Kingdom are bound by the requirements of the Personal Protective Equipment at Work regulations (1992)<sup>5</sup> to supply protective equipment for use in hazardous situations, and have a duty to supervise its use. In the reported case, no gloves were worn during use of a machine designed to remove skin. There is no record of whether or not protective gloves were provided. However, it is clear that the simple measure of wearing adequate protective gloves may have prevented this injury altogether. Employees must also take some responsibility for injury prevention, by correctly using personal protective equipment where provided.

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## REFERENCES

1. Bull, N., Riise, T., and Moen, B. E. Occupational injuries to fisheries workers in Norway reported to insurance companies from 1991 to 1996. *Occup. Med.* 51: 299, 2001.



- Health and Safety Executive. Health and Safety in Food and Drink Manufacture. Available at <http://www.hse.gov.uk/food/index.htm>. Accessed October 2004.
- Palsson, B., Stromberg, U., Ohlsson, K., and Skerfving, S. Absence attributed to incapacity and occupational disease/accidents among female and male workers in the fish-processing industry. *Occup. Med.* 48: 289, 1998.
- Bell, J. L., and MacDonald, L. A. Hand lacerations and job design characteristics in line-paced assembly. *J. Occup. Environ. Med.* 45: 848, 2003.
- Health and Safety Executive. A short guide to the personal protective equipment at work regulations 1992. Health and Safety Executive 1996. ISBN 0 7176 0889 1.

### DOES VACUUM PRESSURE EXTRACTION OF FAT AFFECT THE INFRANATANT CELLULARITY OF LIPOSUCTION SPECIMENS?

Sir:

There are many ways to recruit fat after liposuction<sup>1,2</sup> and different variables can affect the fat cellularity of the infranant portion of the liposuction specimens after pressure is exerted for its extraction.<sup>3-5</sup> We devised a study to determine whether vacuum pressure applied to subcutaneous tissues using different extraction systems could affect the adipocyte; we correlated this with cytologic studies of different samples taken under different pressures.

We divided a 60-cc syringe in half and produced vacuum pressure at 30 cc and 60 cc by fixing the embolus at that negative pressure with a towel clamp, which exerted pressures of 10 and 20 cm/Hg respectively. The fat collected with both pressures was fixed with formalin and studied at 20 times amplification under the microscope. We also measured the lipocrits of the samples. The clock used to measure pressure in the liposuction machine (in cm/Hg) was divided into four quadrants, as was operating room wall suction (Fig. 1). The liposuction samples from the four quadrants of the suction machine (first quadrant, 10 cm/Hg; second quadrant, 30 and 40 cm/Hg; third quadrant, 50 and 60 cm/Hg; and fourth quadrant, 65 cm/Hg) were sent for cytologic study along with only three quadrant specimens from the operating room wall suction (35, 50, and 65 cm/Hg), because no vacuum was accomplished in the first quadrant.

Nineteen samples were selected for the cytologic study under formalin fixation, all under different vacuum pressures (Table I).

The pathologist was blinded to the study and informed the samples with photographs of the 20× amplifications and graded the findings in Figure 2.

In group I, there were five samples. Adipocytes showed no deformation, and there was normal architecture in more than 95 percent of the sample, intact nuclear membranes, and normal, small blood vessels. All samples were obtained with vacuum pressures of 10 to 20 cm/Hg.

In group II, there were four samples. Adipocytes showed 50 to 60 percent deformation and looked embossed. There was partial loss of architecture, intact nuclear membranes, and normal capillaries. All samples were obtained with 35 to 50 cm/Hg of vacuum pressure.

The four samples taken for group III were identical to those in group II, but had intense cytoplasmic edema of the



FIG. 1. Suction machine clock divided into four quadrants: *below, left*, quadrant 1; *above, left*, quadrant 2; *above, right*, quadrant 3; *below, right*, quadrant 4.

fibers of the striated muscles, with 30 to 65 cm/Hg of vacuum pressure.

In group IV, there were six samples. The samples showed disruption of the adipocytes, with broken nuclear membranes and total loss of their architecture with 40, 50, and 65 cm/Hg of vacuum pressure.

Lipocrit levels were elevated in direct proportion to the ascending vacuum pressure (Table I).

This study showed that higher vacuum pressures affect the cytology of the adipocytes and that at more than 450 to 500 mm/Hg the cell is severely disrupted, with more than 95 percent of the nuclear membranes broken. We have to prove whether fat with different grades of architecture loss after the application of increasing vacuum pressures could have lower rates of survival when re-injected into other tissues.

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### REFERENCES

- Cardenas-Camarena, L., Lacouture, A. M., and Tobar-Losada, A. Combined gluteoplasty: Liposuction and lipoinjection. *Plast. Reconstr. Surg.* 104: 1524, 1999.

TABLE I  
Cytologic Analysis

Modality/Fixed	CM/HG	Cytology Group	Median Lipocrit	No. of Samples Studied ( $n = 19$ )
Vacuum 60-cc syringe				
30 cc	10	I	4	1
60 cc	20	I	9	1
Machine vacuum				
Quadrant 1	10	I	11	1
Quadrant 2	20	I	12	2
Quadrant 2	30	III	14	2
Quadrant 3	40	IV	16	2
Quadrant 3	50	IV	18	2
Quadrant 4	65	IV	22	2
Operating room wall suction	0		0	0
Quadrant 1				
Quadrant 2	35	II	12	2
Quadrant 3	50	II	13	2
Quadrant 4	65	III	18	2

2. Mladick, R. A. Combined gluteoplasty: Liposuction and lipoinjection (Discussion). *Plast. Reconstr. Surg.* 104: 1532, 1999.
3. Guerrerosantos, J. Simultaneous rhytidoplasty and lipoinjection: A comprehensive aesthetic surgical strategy. *Plast. Reconstr. Surg.* 102: 191, 1998.
4. Rohrich, R. J., Morales, D. E., Krueger, J. E., et al. Comparative lipoplasty analysis of in vivotreated adipose tissue. *Plast. Reconstr. Surg.* 105: 2152, 2000.
5. Fodor, P. B., and Hedrick, M. H. Comparative lipoplasty analysis of in vivo-treated adipose tissue (Discussion). *Plast. Reconstr. Surg.* 105: 2159, 2000.

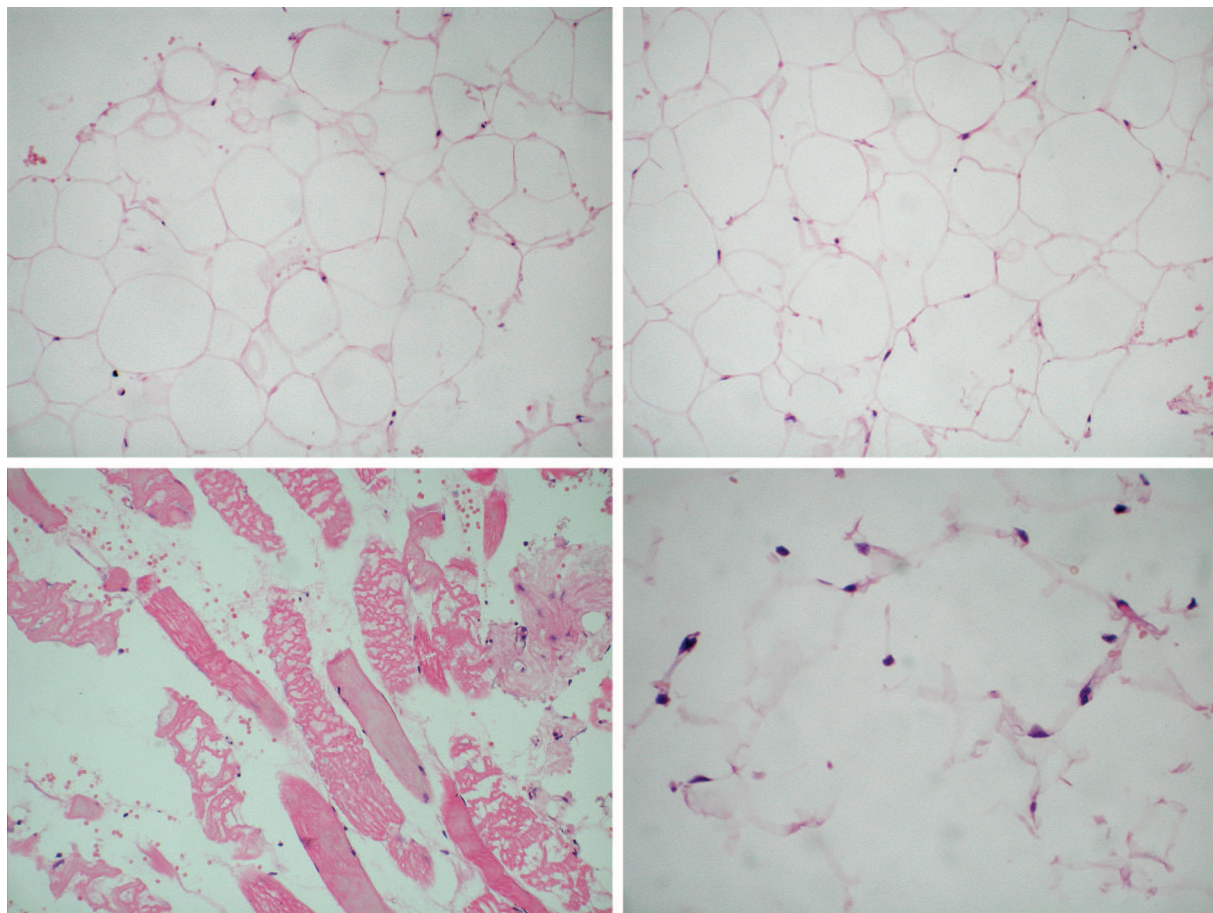


FIG. 2. Cytologic study samples: (above, left) group I, (above, right) group II, (below, left) group III, and (below, right) group IV.



# AN UNUSUAL PRESSURE SORE SITE IN A MORBIDLY OBESE PATIENT: INFRAPANNICULAR FOLD

Sir:

The most frequent sites for pressure ulcers are areas of skin overlying bony prominences.<sup>1</sup> Here we report an unusual location of a pressure sore in a morbidly obese patient with a body mass index of 43.

A 57-year-old man with previous stent placement for coronary artery disease was admitted to the plastic surgery clinic for treatment of infected wounds in the lower abdominal region. Physical examination revealed multiple skin ulcerations with purulent leak in the fold areas of the patient's large abdominal panniculus (Fig. 1). His past medical history revealed that 5 months before the admission he had been operated on for discal hernia of L4-5, and since the operation he had been continuously using an abdominal binder. Microbiological examination showed *Pseudomonas aeruginosa* colonization in the wounds. The patient was managed with topical wound care and pressure relief with custom-made abdominal binders. Pressure sores in this location have not previously been reported in the literature. Complicating factors were the large abdominal panniculus consequent to morbid obesity, associated medical problems, such as coronary artery disease, and the use of an abdominal binder for the discal hernia. The other critical factors contributing to this ulcer were shearing forces, friction, and moisture. Complete healing was achieved with pressure relief and wound care.

Prevention of pressure sores is reported to be one of the special needs of the morbidly obese patient.<sup>2</sup> Our case represents an unusual example of pressure sore location. Users of abdominal binders must be aware of the potential development of this kind of pressure sore, if they have a large abdominal panniculus.

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FIG. 1. Pressure sores in the fold of the abdominal panniculus.

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## REFERENCES

1. Dudek, N. L., Buenger, U. R., and Trudel, G. Bilateral anterior superior iliac spine pressure ulcers: A case report. *Arch. Phys. Med. Rehabil.* 83: 1459, 2002.
2. Davidson, J. E., and Callery, C. Care of the obesity surgery patient requiring immediate-level care or intensive care. *Obes. Surg.* 11: 93, 2001.

## TWO SCROTAL CALCINOSIS CASES WITH DIFFERENT CAUSAL MECHANISMS

Sir:

Idiopathic calcinosis of the scrotum is a rare condition characterized by solitary or multiple firm, painless nodules on the scrotal skin. These nodules are asymptomatic and usually appear in the second decade of life and progress with time.<sup>1</sup>

In case 1, a 59-year-old man presented to our clinic with multiple firm nodules on the scrotal skin. Clinical examination showed massive, nontender, yellowish nodular lesions of varying sizes (1 to 15 mm) on the scrotum (Fig. 1). These lesions had been developing for the past 20 years and had gradually increased in size and number. There was no history of systemic disease or trauma. With the patient under spinal anesthesia, the involved area was completely excised and sutured primarily. Histologic examination showed calcific amorphous basophilic masses in the corium, indicating the idiopathic type of scrotal calcinosis. The postoperative cosmetic result was satisfactory, and no new calcified deposits could be detected at the 1-year follow-up.

In case 2, a 17-year-old boy presented with a 2-year history of asymptomatic nodular lesions on the scrotal skin. Examination revealed multiple marble-like papulonodular lesions on the scrotum (Fig. 2). He had no history of systemic disease, and results of all laboratory investigations were normal. All of the lesions were excised with the patient under local anesthesia. The histological diagnosis was scrotal calcinosis secondary to calcific degeneration of epidermoid cyst. Healing was satisfactory and no new lesion was seen at the 6-month follow-up.



FIG. 1. Preoperative appearance of the patient in case 1.



FIG. 2. Preoperative view of the patient in case 2.

Clinically, calcinosis cutis can be classified as metastatic, dystrophic, or idiopathic. Idiopathic calcinosis cutis occurs in the absence of known tissue injury or systemic metabolic defect. In metastatic calcification, generally hypercalcemia and/or hyperphosphatemia is seen in the blood chemistry analysis. In dystrophic calcification, the serum calcium and phosphate levels are normal but there is an alteration in dermal collagen through trauma, inflammation, or collagen vascular disease that predisposes the patient to calcium deposition.<sup>2</sup>

Approximately 123 cases of scrotal calcinosis have been described.<sup>3</sup> Saladi et al. classified scrotal calcinosis according to the proposed causal mechanisms: 1, calcific degeneration of epidermoid cysts (34 cases); 2, dystrophic calcification of dartoic muscle (three cases); 3, calcification of eccrine sweat ducts (four cases); and 4, idiopathic/undetermined (82 cases).

According to this classification, our first case was of the idiopathic type and our second case was calcific degeneration of epidermal cyst. In our second case, there was only a 2-year history, and if the patient had not been operated on, perhaps 8 to 10 years later we would not have found any etiologic factor and his diagnosis would have been scrotal calcinosis of the idiopathic type.

Because in most cases scrotal calcinosis is asymptomatic, patients usually seek medical advice for cosmetic reasons, as our patients did.<sup>4</sup>

In conclusion, despite the painless nature and negligible symptoms of these nodules, the diagnosis should be confirmed by histopathologic examination. Excision of involved scrotum and immediate reconstruction of the remaining intact skin is the only method of treatment.

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## REFERENCES

1. Vandeweyer, E., and Peltier, A. Massive scrotal calcinosis. *Eur. J. Plast. Surg.* 24: 98, 2001.
2. Bernardo, B. D., Huettner, P. C., Merritt, D. F., and Ratts, V. S. Idiopathic calcinosis cutis presenting as labial lesions in children: Report of two cases with literature review. *J. Pediatr. Adolesc. Gynecol.* 12: 157, 1999.
3. Saladi, R. N., Persaud, A. N., Phelps, R. G., and Cohen, S. R. Scrotal calcinosis: Is the cause still unknown? *J. Am. Acad. Dermatol.* 51: 97, 2004.
4. Hosnuter, M., Kargi, E., Babutcu, O., Babutcu, B., and Isikdemir, A. Polypoid formation of cysts in scrotal calcinosis: An uncommon case. *Plast. Reconstr. Surg.* 111: 2117, 2003.

## A SIMPLE BOLSTERING METHOD FOR OPTIMIZING SKIN GRAFT TAKE ON THE SHAFT OF THE PENIS

Sir:

Among the factors key to the survival of a skin graft are immobilization of the graft and adequate fixation.<sup>1</sup> This may prove challenging when grafting the penis. Uniform support to the penis,<sup>2</sup> maintenance of penile length,<sup>3</sup> elevation of the penis to reduce edema and pressure,<sup>4</sup> catheter management, and patient tolerability<sup>5</sup> are considerations when dressing the penile graft.

After the skin graft is affixed to the penis, a nonstick dressing, such as Xeroform, is applied to the graft. Eight 4-0 silk sutures are placed equidistantly at the junction of the corona and shaft; the tails are left long. The number of sutures used will vary with penis diameter. Another set of 4-0 silk sutures is tied to the base of the penile shaft.

A plastic container is used to create an external rigid support. We use sterilized containers to complete the dressing in an uncontaminated field. For pediatric cases, a specimen cup serves as the rigid support. In adult cases, we use a saline bottle cut in a rectangular fashion (the dimensions of which are determined by the height and the circumference of the shaft). The container or plastic cutout should have a wide horizontal base and be at least twice the diameter of the penis at the container's narrowest diameter. Enough sterile gauze is wrapped around the shaft of the penis so as to fill the newly created plastic cylinder when it is slid or wrapped into place. If the plastic cutout is being used, adhesive strips may be used to hold the plastic cutout in a cylindrical shape once it is wrapped around the shaft and its dressings. When a plastic specimen cup is used, the bottom is cut out at a level that will accommodate penile length when it is held in an erect position. The gauze should thus be supported by an external rigid wall in such a manner as to apply adequate pressure to



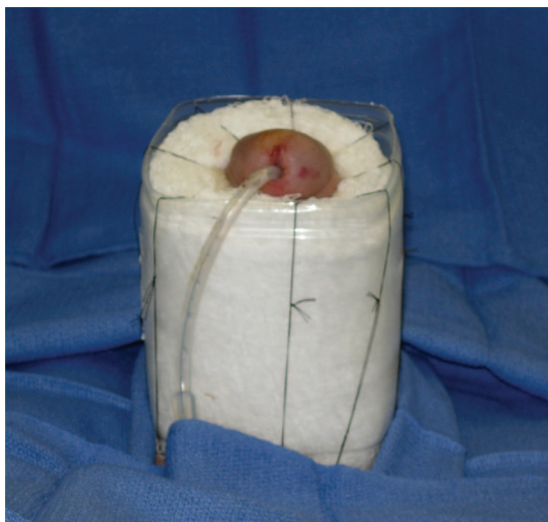


FIG. 1. Tie-over bolster dressing with rigid, clear, external splint.

the graft, maintaining immobilization of and ample contact between the graft dermis and the recipient bed.

The silk sutures at the base of the corona are brought out over the distal end of the cylinder. The silk sutures at the base of the penis shaft are brought out from the proximal end of the cylinder and tied to their counterparts from the base of the corona (Fig. 1).

The sterile plastic container provides an external rigid support, allowing the dressing to bolster the skin graft to its recipient bed. The process of bringing the distal and proximal silk sutures over the top and under the base of the plastic cylinder, respectively, and tying them to each other maintains penile length and immobilization is enhanced. With the penis held in an erect position, the exposed glans may be monitored for vascular compromise or accessed for any necessary catheter care. Elevation of the penis may reduce swelling. An added benefit to using a clear plastic container is that the dressing itself can be inspected for bleeding or drainage. The dressing is practical, economical, and well-tolerated by patients.

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#### REFERENCES

1. Flowers, R. Unexpected postoperative problems in skin grafting. *Surg. Clin. North Am.* 50: 439, 1970.
2. De Sy, W. A., and Oosterlinck, W. Silicone foam elastomer: A significant improvement in postoperative penile dressing. *J. Urol.* 128: 39, 1982.

3. Netscher, D. T., Marchi, M., and Wigoda, P. A method for optimizing skin graft healing and outcome of wounds of the penile shaft and scrotum. *Ann. Plast. Surg.* 31: 447, 1993.
4. Tan, K. K., and Reid, C. D. A simple penile dressing following hypospadias surgery. *Br. J. Plast. Surg.* 43: 628, 1990.
5. Lippin, Y., Shvoron, A., and Tsur, H. A simple splinting device for skin grafts of the penis. *Ann. Plast. Surg.* 29: 185, 1992.

#### PEDICLED FLAPS FOR FOOT DEFECTS IN ELDERLY PATIENTS: IS DUPLEX ULTRASONOGRAPHY NECESSARY?

Sir:

Dorsal foot defects that include exposure of the extensor tendons require soft-tissue coverage, which can be achieved with local flaps or free tissue transfers. Soft-tissue coverage is particularly important in oncologic patients, who often require chemotherapy and radiation therapy to the operative site. Robust coverage with fast wound healing is necessary to enable these patients to continue their therapy. Locoregional flaps from the foot are based on antegrade blood flow in the majority of cases or retrograde blood flow in some cases.<sup>1,2</sup>

Despite the availability of microsurgical techniques, locoregional flaps are preferred in elderly patients who are at a higher risk for postoperative complications after complex and lengthy surgical procedures. In this population, major microsurgery procedures are often avoided, especially if local flaps are available.

When a local flap is planned in the foot region of an elderly patient or a patient with peripheral vascular disease, good preoperative documentation of distal pulses in the foot by palpation or Doppler ultrasonography seems to reassure the surgical team that the procedure is feasible. Thus, no other imaging of the blood vessels is usually ordered.

We recently encountered a case of an 86-year-old woman with a pleomorphic sarcoma of the dorsal foot who was evaluated for postresection reconstructive options. Palpation findings and Doppler signals indicated good flow in the tibialis anterior, dorsalis pedis, and tibialis posterior arteries. The reconstructive options included pedicled flaps, such as a dorsalis pedis flap and free tissue transfer. Owing to the advanced age of the patient, some members of the reconstructive team advocated a local flap, but a free tissue transfer using an anterior lateral thigh flap was selected. During the operation it was noted under direct vision that the tibialis anterior artery had good flow; this was documented by palpation as well as Doppler ultrasonography. However, after the artery was transected, no antegrade blood flow occurred. Massive irrigation of the artery with heparinized saline, irrigation of the wound with papaverine, and arterial manipulation did not succeed in initiating antegrade blood flow from the tibialis anterior artery. Opening of the dorsalis pedis end of the artery revealed very good backflow, suggesting that the blood flow previously documented in the tibialis anterior artery was in fact retrograde flow originating from the tibialis posterior artery or peroneal artery and supplied through the arterial network between the different systems. Ultimately, the artery of the flap was anastomosed to the dorsalis pedis artery

to provide retrograde flow, and the flap vein was anastomosed to the tibialis anterior vein.

If a pedicled flap had been used in this patient based on tibialis anterior flow, it would definitely have failed, despite preoperative documentation of good blood flow in the tibialis anterior and dorsalis pedis arteries. This case shows that in patients with potential peripheral artery obstruction, such as the elderly, who are candidates for a pedicled flap in the foot, documentation of blood flow of the distal arteries in the lower extremity by physical examination or Doppler ultrasonography alone may not be enough. It is also important to document the direction of the blood flow. This additional information is important because the options available intraoperatively to correct the situation are more limited with pedicled than with free flaps.

In conclusion, we recommend that a duplex study be performed in patients who are elderly or otherwise at high risk for peripheral vascular disease and in whom a local pedicled flap is planned to cover foot defects. Even when a good distal pulse is present in the lower extremity, a duplex study should be performed to determine the direction of the blood flow.

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#### REFERENCES

1. Gould, J. S. The dorsalis pedis island pedicle flap for small defects of the foot and ankle. *Orthopedics* 9: 867, 1986.
2. Smith, A. A., Arons, J. A., Reyes, R., et al. Distal foot coverage with a reverse dorsalis pedis flap. *Ann. Plast. Surg.* 34: 191, 1995.

#### THE CONGENITAL DEFICIT OF PROTEIN S AS A NEW PROGNOSTIC FACTOR IN MICROSURGERY

Sir:

We report the case of a 56-year-old male nonsmoker who was allergic to latex and suffering from a severe postburn scar retraction of the dorsal aspect of the right forefoot. His past medical history included hepatitis C and surgical treatments for right inguinal hernia, left cryptorchidism, left varicocele and right epididymis cyst.

The patient underwent wide excision of the scar and reconstruction with a free groin flap. He received broad-spectrum antibiotic therapy, a single intraoperative dose of steroids, and anticoagulation prophylaxis with 50 U/kg of subcutaneous heparin per day (4000 U/day). A few hours after the operation, sequential thrombosis of the intravenous infusion therapy sites on both forearms occurred. Starting at postoperative hour 35, the heparin dose was reduced from 50 U/kg to 25 U/kg per day, because of conspicuous bleeding from one side of the flap, to prevent any compression of the pedicle. At postoperative hour

55, massive flap thrombosis occurred; the immediate salvage microsurgical anastomosis revision procedure was unsuccessful.

The unusual timing of free flap failure and the premonitory thrombosis of the intravenous infusion therapy sites of both forearms suggested further hematological investigations were needed to ascertain any unrecognized hypercoagulability status. Tests showed low levels of protein S (50 percent; normal range, 64 to 129 percent), a natural anticoagulant protein that acts as a cofactor of protein C, which inhibits factors VIIIa and Va of coagulation.<sup>1</sup> Protein S levels were checked at 3 months and persistent low levels were seen (47 percent), thus confirming a thrombogenic disease caused by a congenital deficit of protein S. This hematological disorder is characterized by recurrent thrombosis of intravenous infusion therapy sites, unusual site juvenile thrombophlebitis, venous thrombosis after use of oral contraceptives, recurrent abortion, juvenile brain ischemic attack, and paraneoplastic and autoimmune thrombosis.<sup>2</sup>

A wide variety of pharmacological agents have been used in microsurgery to counterbalance hypercoagulability. The current literature enumerates a large number of experimental animal studies and very few prospective clinical trials, and to date, pharmacologic therapy in microsurgery remains a non-standardized practice based on purely anecdotal experiences.<sup>3</sup> However, aspirin, heparin, and dextran have the largest consensus for pharmacological treatment in microsurgery.<sup>3,4</sup>

Our experience with a previously unrecognized congenital deficit of protein S suggests an etiopathogenetic connection between a thrombogenic disorder and free flap failure. Occult thrombogenic diseases could therefore account for some of the unexplained failures in microsurgery.

Thrombogenic disease should be always looked for in an extremely accurate past medical history collection before any reconstructive procedure is planned. If the disease is suspected, one should not hesitate to do a complete thrombogenic status screening to demonstrate and characterize any actual unrecognized disorder that may challenge a free flap transfer. Should such a procedure be necessary, prophylactic doses of heparin are recommended until the end of the estimated perioperative inflammatory phase (at least 4 weeks).

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## REFERENCES

1. Handin, R. I. Bleeding and thrombosis. In *Harrison's Principles of Internal Medicine*. 11th Intl. Ed. Hamburg: McGraw-Hill, 1987. Pp. 266-272.
2. Handin, R. I. Inherited thrombotic disorders and antithrombotic therapy. In *Harrison's Principles of Internal Medicine*. 11th Intl. Ed. Hamburg: McGraw-Hill, 1987. Pp. 1480-1483.
3. Conrad, M. H., and Adams, W. P., Jr. Pharmacologic optimization of microsurgery in the new millennium. *Plast. Reconstr. Surg.* 108: 2088, 2001.
4. Johnson, P. C., and Barker, J. H. Thrombosis and antithrombotic therapy in microvascular surgery. *Clin. Plast. Surg.* 19: 799, 1992.

### THE PERFORATOR "PLUS" FLAP: A SIMPLE NOMENCLATURE FOR LOCOREGIONAL PERFORATOR-BASED FLAPS

Sir:

Perforator flap surgery has given a new thrust to plastic surgery. Wei and Celik<sup>1</sup> define perforator vessels as those where the source artery is deep and the branch that carries blood directly to the fasciocutaneous tissues in its course to reach the skin passes through the overhanging muscular tissue without exclusively following the intermuscular septum. The 2001 Gent consensus was further simplified during the Sixth International Course on Perforator Flaps held in Taiwan in 2002.<sup>2,3</sup> The perforator vessels are defined as direct to skin or indirect (musculocutaneous/septocutaneous).

Understanding perforator applied anatomy gives one more freedom in manipulating traditional flaps, which are described basically more on movement attained in a particular axis. Traditional flaps are essentially random-pattern flaps, often require delays, and are limited in mobility. Perforator flaps can be raised anywhere on the body, have a reliable, defined blood supply, and offer greater freedom of movement.

Over the last few years, we have been including and isolating identified perforators in our traditional flaps for locoregional tissue defects. Not only does this give reliability without the need for delay, but the increased mobility also allows for coverage of defects hitherto not possible by traditional means. We raise local flaps in the standard manner and take care to identify known perforators. If a perforator is present, the flap is

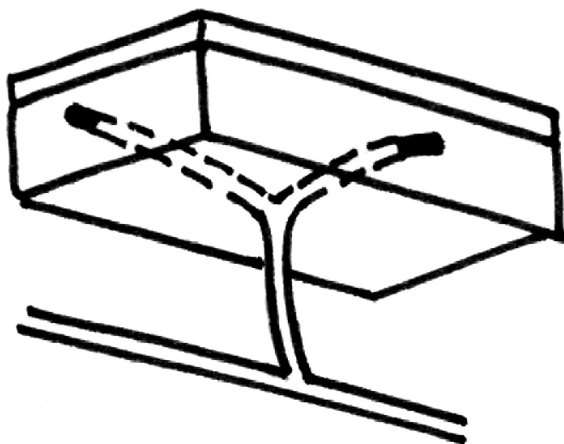


FIG. 1. An islanded flap based solely on an isolated perforator.

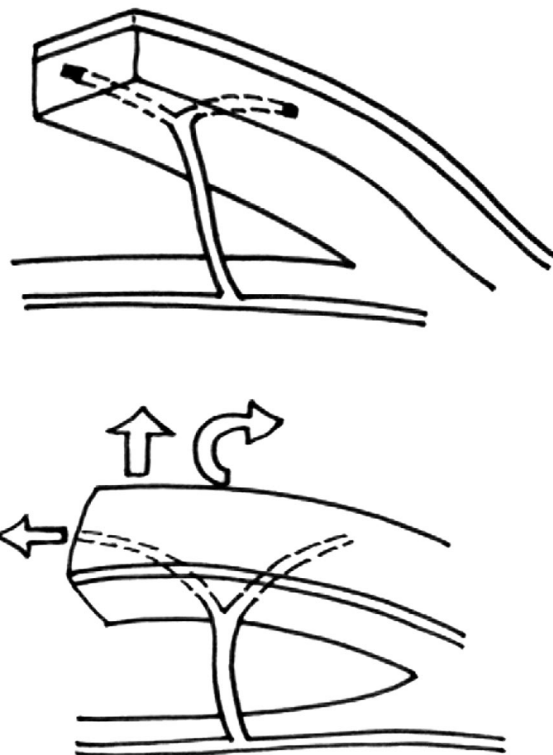


FIG. 2. (Above) Perforator "plus" flap based mainly on a perforator but retaining an additional supply. (Below) Perforator "plus" flap further defined based on movement (i.e., advancement, transposition, and rotation).

planned based on it and raised as an island to cover the defect. It is often possible to cover the defect before the flaps are fully islanded because of the significant movement accorded even with partial elevation. Though undeniably surviving on the perforators, there is an additional source of random supply from the undetached portion. In such situations it is often difficult to name or classify the flaps. In an attempt to simplify the understanding, we propose a terminology for such flaps.

In cases of musculocutaneous perforators, all flaps raised and islanded totally on perforator vessels are named based on the muscle. In cases of septocutaneous perforators, we name the flap based on the first named axial source artery (Fig. 1).

We call flaps that are not fully islanded and that, despite having the dominant supply from the perforators, retain an additional source of blood supply apart from the perforator, perforator "plus" flaps (Fig. 2, above). This happens more by chance than design, since complete coverage of defects is often achieved without raising and islanding the entire flap. Hence, the need to completely detach the flap from all margins becomes superfluous.

Further definition of the flap is required to include its movement into the defect, whether by advancement, rotation, or transposition. A flap based on the posterior tibial perforators that is fully islanded and advanced or rotated into a tibial defect will accordingly be called a posterior tibial pedicled perforator-based advancement flap or a posterior tibial pedicled perforator-based rotation flap. A similar flap retaining a portion of the base as an additional supply apart from the dissected perforator will be classified as a posterior tibial perforator plus-based advancement/transposition flap (Fig. 2, below).

Though the perforator flap nomenclature is in a state of flux and will undergo progressive refinements, we believe that

their potential in locoregional tissue replacement is underutilized. Our simple classification may help in clarifying some of the problems that are likely to stem from increased use of these flap techniques.

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#### REFERENCES

1. Wei, F. C., and Celik, N. Perforator flap entity. *Clin. Plast. Surg.* 30: 325, 2003.
2. Blondeel, P. N., Koenraad, V. L., Monstrey, S. J. M., et al. The "Gent" consensus on perforator flap terminology: Preliminary definitions. *Plast. Reconstr. Surg.* 112: 1378, 2003.
3. Blondeel, P. N., Koenraad, V. L., Hamdi, M., and Monstrey, S. J. M. Perforator flap terminology: Update 2002. *Clin. Plast. Surg.* 30: 343, 2003.
4. Gwan-Nulla, D. N., and Casal, R. S. Toxic shock syndrome associated with the use of the vacuum assisted closure device. *Ann. Plast. Surg.* 47: 552, 2001.
5. Weed, T., Ratliff, C., and Drake, D. B. Quantifying bacterial bioburden during negative pressure wound therapy. *Ann. Plast. Surg.* 52: 276, 2004.
6. Jones, S. M., Banwell, P. E., Shakespeare, P. G., and Tiernan, E. Complications of topical negative pressure therapy in small-diameter wounds. *Plast. Reconstr. Surg.* 114: 815, 2004.
7. Song, D. H., Wu, L. C., Lohman, R. F., Gottlieb, L. J., and Franczyk, M. Vacuum assisted closure for the treatment of sternal wounds: The bridge between débridement and definitive closure. *Plast. Reconstr. Surg.* 111: 92, 2003.
8. Stewart, J. K., and Wilson, Y. Suction dressings are no substitute for flap cover in acute open fractures. *Br. J. Plast. Surg.* 54: 652, 2001.

#### TOP TEN REASONS TO HATE THE "V.A.C."

Sir:

10. Requisition forms defy the Reduction of Paperwork Act of 1995.

9. Another act of Congress must be invoked for use as an outpatient.

8. Potential for physiological derangements.<sup>1,2</sup>

7. Enhances bacterial proliferation.<sup>3,4</sup>

6. Can cause pressure sores, even in pressure sores!<sup>5</sup>

5. An appointment with the physical therapy department is required to see the wound (and preferably before 5 p.m.).

4. Obscure and physically impedes daily wound evaluation.

3. Delays definitive wound management.<sup>6</sup>

2. Indiscriminate use by all surgical specialties (and, incredibly, even some medical specialists) as a panacea for any wound.<sup>7</sup>

1. I didn't think of it first.

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#### REFERENCES

1. Barringer, C. B., Gorse, S. J., and Burge, T. S. The VAC dressing: A cautionary tale. *Br. J. Plast. Surg.* 57: 482, 2004.
2. Steenvoorde, P., van Engeland, A., and Oskam, J. Vacuum-assisted closure therapy and oral anticoagulation therapy. *Plast. Reconstr. Surg.* 113: 2220, 2004.

#### WHAT IS THE MEDICOLEGAL IMPLICATION OF A WEB-BASED THREE-DIMENSIONAL INTERACTIVE VIRTUAL REALITY PLASTIC SURGERY PACKAGE?

Sir:

*I hear I forget*

*I see and remember*

*I do and I understand*

*Confucius, Chinese philosopher (551 B.C. to 479 B.C.)*

The profile of plastic surgery is now increasing in popularity partly because of television programs that bring it into mainstream viewing. Increased interest is reflected in the 15,470,000 sites worldwide dedicated to plastic surgery. In the United Kingdom in 2004, the number of cosmetic procedures rose 18 percent since 2003 to 16,367.<sup>1</sup>

Patients want more information and greater involvement in decisions about their treatment. Risks, benefits, and expected outcomes of treatments still need to be communicated better.<sup>2</sup>

In recent years there has been a substantial increase in medicolegal claims against surgeons in the United Kingdom. Last year the bill for medical negligence faced by the National Health Service amounted to £2.6 billion, double the amount in 1997 (National Audit Office statistics). Plastic surgery, traditionally one of the specialties most vulnerable to lawsuits, has been prone to medical negligence claims. Since plastic surgery involves a large proportion of elective procedures, it is vital that patient expectations are realistic and match those of the surgeon.

Conflicts arising between doctors and patients are directly related to the quality of interaction and the attitudes of the surgeon both preoperatively and postoperatively. Other factors that increase the vulnerability of plastic surgeons include the portrayal of the image of plastic surgery through advertisements, publications, and the media.<sup>3</sup>

Only 20 percent of information is retained when words and two-dimensional models are used to explain surgery. Patients recall only a small percentage of information following a consultation. Retention of possible postoperative complications is poor, and although verbal and written information may be understood, it can easily and quickly be forgotten.<sup>4</sup>

Interactive multimedia tools have revolutionized the games, aeronautics, and engineering industries and have



been used successfully in surgical training and assessment. Recent developments in communications networks with international high-speed computer nets and wireless technology have increased the potential of Web-based patient education. Animated three-dimensional multimedia computer games have unleashed a realm of fantasy worlds where you can design your own virtual world and people.

We are developing a three-dimensional hand model using 3D Studio Max and motion capture to recreate real human hand motion in carpal tunnel syndrome. Using a virtual navigation tool, the patient can move through the anatomical layers. With high-quality three-dimensional animation, each step of surgery with relevant anatomy is illustrated and potential complications are discussed. The patient is able to visualize the close relationship of the structures in the wrist and set the pace of information retrieval.

Proper documentation of informed consent is critical. Interactive multimedia plastic surgery packages are not intended to replace the doctor-patient consultation but to enhance the information given. The advantage of interactive plastic surgery multimedia packages is that the patient information retrieval can be electronically recorded.

In medicolegal cases, evidence will rest heavily on the quality of the recorded data. A Web-based three-dimensional interactive multimedia tool that is compatible with most home computers can complement the outpatient consultation to improve patient education and informed consent.

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#### REFERENCES

1. British Association of Aesthetic Plastic Surgeons. UK Cosmetic Surgery Figures 2004. Available at [www.baaps.org.uk](http://www.baaps.org.uk).
2. *State of Healthcare Results*. Healthcare Commission Report 2004.
3. Leape, L. L., Brennan, T. A., Laird, N., et al. The nature of adverse events in hospitalized patients: Results of the Harvard Medical Practice Study II. *N. Engl. J. Med.* 324: 377, 1991.
4. Turner, P., and Williams, C. Informed consent: Patients listen and read, but what information do they retain? *N. Z. Med. J.* 115: U218, 2002.