LETTERS AND VIEWPOINTS

GUIDELINES

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Letters

An Anatomical Comparison of Transpalpebral, Endoscopic, and Coronal Approaches to Demonstrate Exposure and Extent of Brow Depressor Muscle Resection

Sir:

When I read the article by Walden, Brown, Klapper, Chia, and Aston entitled "An Anatomical Comparison of Transpalpebral, Endoscopic, and Coronal Approaches to Demonstrate Exposure and Extent of Brow Depressor Muscle Resection" (*Plast. Reconstr. Surg.* 116: 1479, 2005), I did not respond with this letter to the Editor, because I felt that it would be obvious to any thoughtful reader familiar with the traditional transpalpebral approach to the glabellar muscles that these authors inexplicably misjudged that technique. However, I now find this article referenced by other authors who obviously accepted the conclusions stated in the article without critically examining the study. My concern is that a surgeon who reads only the abstract of this article or who is in the learning phase of his or her plastic surgical career will be misled by the authors' conclusions, and I feel compelled to address the inaccuracies contained in the article.

These authors used a transpalpebral approach to resect the muscles that act on glabellar skin in 12 cadaver heads, and then they examined the operative sites with an endoscope passed from scalp incisions. They concluded that adequate resection of the transverse head of the corrugator supercilii muscle cannot be done consistently with the transpalpebral muscle resection technique. They reported that the "transpalpebral corrugator resection consistently failed to remove up to one-third of the lateral transverse head of the corrugator muscle. . .." If the reader did not examine the article beyond the abstract, their clear message was that the transpalpebral approach was not an effective method to treat the glabellar muscle group. Only in the Methods section of the text do we learn that they did not study the traditional transpalpebral muscle resection technique. Instead, they used a modified form of the transpalpebral technique "described by Jelks" for their study. Jelks has never published a description of his modification, to my knowledge, and their only reference to Jelks's modification is a paper he gave at a meeting in New York in 2003.

We were provided with neither a proper description of the modified transpalpebral corrugator technique that they critiqued nor a discussion of how their technique was different from the traditional transpalpebral corrugator resection technique.[1] We were only told that an upper blepharoplasty incision was used and that their approach to the glabellar area was as follows: ". . .superomedial dissection to expose the oblique head of the corrugator, medial orbicularis oculi and depressor supercilii in a manner similar to that described by Jelks. Resection of exposed muscle with care to preserve the supratrochlear and supraorbital neurovascular bundles was performed. Lateral dissection along the orbital rim further exposed the transverse head of the corrugator supercilii, which was resected as well."

Remarkably, they did not tell us how they addressed the resection of the transverse head of the corrugator supercilii muscle, yet their main criticism of the transpalpebral approach was that this technique produced inadequate resection of the lateral end of this muscle. Given the above brief description, we do know that the primary focus of the authors' technique was on resect-

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ing the medial eyebrow depressor muscle group rather than on resecting the transverse head. Interestingly, in the Discussion section, they acknowledge that, "Admittedly, early endeavors with transpalpebral corrugator resection were more limited laterally along the rim because of the fear of injuring the supraorbital nerve, thus resulting in remnant muscle at this location." Clearly, the authors were *electing* to incompletely excise the lateral end of the transverse head of the corrugator supercilii muscle, because they wanted to avoid the supraorbital nerve. The invited discussant of this article (B. Guyuron, *Plast. Reconstr. Surg.* 116: 1488, 2005) made this comment: "The fact that they [the authors] all followed the technique of one mentor [Jelks] leads the reader to wonder whether the primary educator is a conservative surgeon and deliberately leaves the fibers of the lateral transverse head intact to preserve the supraorbital nerve fibers." Since the supraorbital nerve passes under the transverse head of the corrugator supercilii muscle near its middle third, limiting resection of this head of the corrugator muscle to this level will necessarily leave a lateral remnant. In any case, their concern for nerve injury is unfounded, because the supraorbital nerve courses safely deep to the transverse head of the corrugator muscle when the technique described in the original article[1] for protecting this nerve is followed.

The authors knowingly left the lateral end of the transverse head behind, and, incredibly, they criticized the transpalpebral approach for leaving behind a residual lateral remnant of the transverse head. What kind of logic is that?

The traditional transpalpebral technique specifically addresses the lateral-most end of the corrugator supercilii muscle as the *first* step of the muscle resection sequence. The original article[1] describes retraction of the upper edge of the blepharoplasty incision to put the transverse head of the corrugator supercilii muscle on stretch to facilitate transection of the lateral end of the transverse head just as it enters the plane of the orbicularis oculi/frontalis muscles. This transection level is easily visible under direct vision (Fig. 1). The released transverse head is *then* traced medially to treat the medial eyebrow depressor muscle group. Thus, the first and primary emphasis of the traditional technique is directed at complete excision of the transverse head. The authors' modified technique *reversed* the muscle resection sequence and thereby introduced a critical technical error. Because the authors first resected the medial eyebrow depressor muscles, they necessarily resected the medial end of the transverse head of the corrugator supercilii muscle. As a result of this release, the rest of the transverse head retracted laterally. In this flaccid state, the remaining transverse head would be difficult to transect accurately just as it enters the plane of the orbicularis oculi/frontalis muscles, and the authors surely would have left a remnant of the lateral end of the transverse head of the corrugator supercilii muscle using their modified technique even if they had attempted to completely resect it.

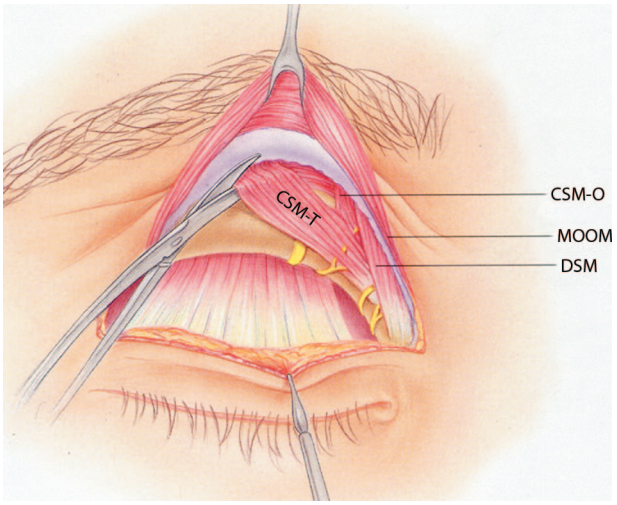

Fig. 1. Transection of the lateral end of the transverse head of the corrugator supercilii muscle with the traditional transpalpebral approach. The lateral end of the transverse head of the corrugator supercilii muscle (*CSM-T*) is transected just as it enters the plane of the orbicularis oculi and frontalis muscles. Also labeled are the oblique head of the corrugator supercilii muscle (*CSM-O*); the medial head of the orbicularis oculi muscle (*MOOM*); and the depressor supercilii muscle (*DSM*). Modified from Knize, D. M. Limited incision foreheadplasty. In D. M. Knize (Ed.), *The Forehead and Temporal Fossa: Anatomy and Technique*. Philadelphia: Lippincott Williams & Wilkins, 2001. P. 120.

It is unreasonable that these authors criticized the general concept of the transpalpebral approach for glabellar muscle resection because they found residual lateral remnants of the transverse head in the cadavers after doing their modified transpalpebral procedure. Their conclusions have relevance only to the modified technique they used, and to generalize their conclusions in the article to the traditional transpalpebral technique is just not credible.

The article contains several other points with which I disagree, but I will only comment on two of them. The authors said they carried out their study because they often observed that patients could still move their eyebrows medially when they used their modified transpalpebral technique clinically. Of course, persistent motion of this type may occur if the corrugator supercilii muscle is incompletely resected, leaving some of the transverse head muscle fibers intact from origin to insertion, and for that reason, I have always advocated complete corrugator muscle resection. However, leaving behind a fragment of the lateral end of the transverse head of the muscle, as the authors described, would produce a horn-like deformity in the mid-eyebrow rather than producing medially directed eyebrow movement when a patient attempted to frown. In fact, the medial ends of the eyebrows will move medially and produce glabellar skin creases in some postoperative patients even after complete resection of the transverse

head of the corrugator supercilii (Fig. 2). In that event, this motion is produced by the untreated or inadequately treated fibers of the medial head of the orbicularis oculi muscle. I learned this lesson years ago, and I have since strongly advised in all of my publications and courses on this subject to always weaken the medial head of the orbicularis oculi muscle with a 1 × 1-cm myotomy (Fig. 3). We are not told if the authors treated the medial fibers of the orbicularis oculi muscle or not, but I suspect that untreated fibers of the medial head of the orbicularis oculi muscle most likely produced the problem of residual medial eyebrow motion they described. Again, if the authors had followed the technical steps described for the traditional transpalpebral technique, they would not have encountered this postoperative problem.

I must address one other statement made by these authors, and that is their advocating resection of the procerus muscle. The procerus muscle is the most powerful depressor of the medial end of the eyebrow through its antagonistic action on frontalis muscle. The medial eyebrow will be elevated by unopposed frontalis muscle tone when the procerus muscle is resected. Transection of the procerus muscle rather than resection of it sufficiently weakens this muscle, and transection avoids excessive medial eyebrow elevation in my experience. The authors recommended "complete" resection of the procerus muscle with the use of the senior author's endoscopically assisted foreheadplasty technique, which they endorsed as the preferred brow resuspension technique. However, the transpalpebral technique is almost always used in conjunction with a temporal incision brow lift to produce a nice aesthetic brow resuspension, and these combined techniques are called the limited incision foreheadplasty.[2] Both the limited incision foreheadplasty and the endoscopically assisted technique can produce comparable results; however, the clinical result of an endoscopically assisted brow lift (authors' Fig. 11) presented in their article is not a good example for the result that can be produced by either technique. The postoperative medial eyebrow level in that patient is excessively elevated, in my opinion. I suspect that the excessive elevation of the medial eyebrow segment is the result of overresection of the procerus muscle in this patient.

This *Journal* has earned its stellar reputation by publishing articles based on good science. Unfortunately, this article fails to meet the standard of good science, in my opinion. The authors modified procedure A to become procedure B. They found that procedure B failed to perform adequately. Then, in disregard for logical thinking, they attributed the fault to procedure A. That is, they inappropriately applied their findings following their modified transpalpebral technique to

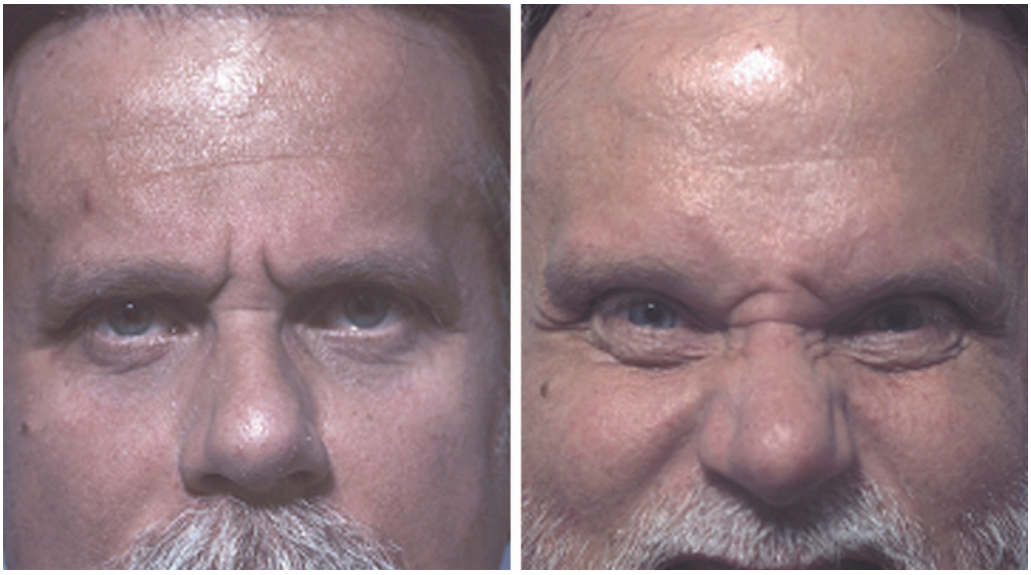

Fig. 2. Patient who had transpalpebral resection of the muscles that act on glabellar skin without also having a myotomy of the medial head of the orbicularis oculi muscle. (*Left*) Preoperative frowning view. Note the vertical glabellar skin lines produced by the transverse head of the corrugator supercilii muscle and the oblique glabellar skin lines produced by the combined effect of the medial head of the orbicularis oculi muscle, the oblique head of the corrugator supercilii muscle, and the depressor supercilii muscle. (*Right*) Five-year postoperative view of the patient frowning. Note that the vertical glabellar skin lines are now absent, because the transverse head of the corrugator supercilii muscle was resected. There are still some oblique glabellar lines present with residual medial movement of the medial ends of the eyebrows. This residual motion was eliminated by subsequent myotomy of the medial head of the orbicularis oculi muscles.

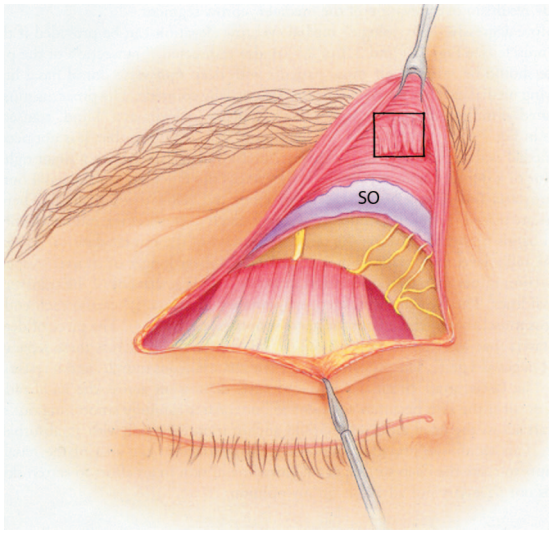

Fig. 3. Orbicularis oculi myotomy. Removal of a 1.0 × 1.0-cm section of the medial head of the orbicularis oculi muscle just behind the medial end of the eyebrow will weaken that muscle's action to produce glabellar lines and move the eyebrow medially. This myotomy also serves to remove the insertion remnants of the oblique head of the corrugator supercilii and depressor supercilii muscles that pass through the orbicularis oculi at this level to act as depressors of the medial end of the eyebrow in conjunction with the medial head of the orbicularis oculi muscle. These three muscles produce the oblique glabellar skin lines. The septum orbitale (*SO*) is labeled. Modified from Knize, D. M. Limited incision foreheadplasty. In D. M. Knize (Ed.), *The Forehead and Temporal Fossa: Anatomy and Technique*. Philadelphia: Lippincott Williams & Wilkins, 2001. P. 121.

the traditional transpalpebral corrugator resection technique. When a surgeon can see the entire length of the muscle to be treated, as shown in the authors' Figures 2 and 12 and my Figure 1, it is the surgeon rather than the technique that determines how much muscle is resected. One cannot deprecate a procedure when one does not properly execute the technical steps of that procedure. I pointed this out to the first author before this article was submitted for publication,[3] and I made the same comments later from the floor of a meeting in New York[4] after the first author presented this study when the senior author was the moderator. I find it difficult to understand how in good conscience these authors still proposed their conclusions in the name of good science. They have unjustifiably confused many readers about an excellent procedure that has a sound anatomic basis and produces consistently good results when performed as it was described.

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Reply

Sir:

As senior author, it is my duty to respond to Dr. David Knize's rather passionate letter in response to the article "An Anatomical Comparison of Transpalpebral, Endoscopic, and Coronal Approaches to Demonstrate Exposure and Extent of Brow Depressor Muscle Resection."[1] First, I would like to restate why we did a study to compare various approaches for decreasing the activity of the brow depressor and the glabellar furrowing muscles. I have seen partial function of the brow depressor and glabellar furrowing muscles in some of my patients and those of colleagues where the intended and stated procedures (transpalpebral muscle resection, endoscopic muscle resection, and coronal incision) did not give the maximum desired result. I know that I gave my best effort at decreasing brow depressor muscle and glabellar furrowing functions, and I suspect my colleagues did as well in their cases. Therefore, the purpose of this anatomic study in cadavers was, as stated in the article, "to compare the capacity for visualization and quantify the amount of brow depressor muscle resection with each technique." Just that. Our friend and colleague Dr. David Knize appears to have taken our project personally. His letter indicates that he feels it is an attack on his well-described procedure, as he states, "it is unreasonable that these authors criticized the general concept of the transpalpebral approach for glabellar muscle resection because they found residual lateral remnants of the transverse head in the cadavers after doing their modified transpalpebral procedure." Such is not the case. The article does not criticize the general concept of the transpalpebral approach for glabellar muscle resection. In fact, we agree with Dr. Knize and reiterate in our article that "[t]ranspalpebral corrugator resection remains the method of choice for ablation of muscles in the patient who does not desire or need a brow lift, such as one with well-positioned lateral brows, relatively smooth forehead skin, or a high anterior hairline."[1] The article is not an evaluation of brow-lifting techniques. Dr. Knize was credited and referenced for his excellent work in this area, and we are indebted to him for his very focused publications.

Dr. Knize states, "They concluded that adequate resection of the transverse head of the corrugator supercilii muscle cannot be done consistently with the trans-

palpebral muscle resection technique." This is not what our article said. Our article stated that the transverse head was resected (as it could be visualized using the blepharoplasty incision and then the muscle was observed using the endoscopic approach). The endoscopic approach gave a different exposure to the transverse head as it blended into the frontalis muscle and a few millimeters of the transverse muscle remained (up to one-third of its measured length). Likewise, in some specimens a portion of the superior aspect of the oblique head remained and it was removed using the endoscope.

Dr. Knize mistakenly assumes that our study was mainly concerned with the medial eyebrow depressor group, as he states, "Given the above brief description, we do know that the primary focus of the authors' technique was on resecting the medial eyebrow depressor muscle group, rather than on resecting the transverse head." That is not the case, as we stated in our article that we were evaluating the extent of removal of all the depressor muscles and brow-furrowing muscles by the various approaches (endoscopic, coronal, and transpalpebral). Dr. Knize then misinterprets a statement that was made in our Discussion section: "Admittedly, early endeavors with transpalpebral corrugator resection were more limited laterally along the rim because of the fear of injuring the supraorbital nerve thus resulting in remnant muscle at this location." This was referring to our early clinical practice with transpalpebral corrugator muscle resection, not the study.

Dr. Knize found fault with the fact that the oblique head of the corrugator supercilii muscle, the depressor septi muscle, and the medial head of the orbicularis oculi were resected before the resection of the transverse corrugator supercilii muscle. As he stated, this is not his technique or sequence of muscle resection. However, the reader can see in Figures 1 and 2 of our article that significant exposure of the transverse corrugator muscle was obtained before transverse corrugator muscle resection. Dr. Knize states, "Because the authors first resected the medial eyebrow depressor muscles, they necessarily resected the medial end of the transverse head of the corrugator supercilii muscle. As a result of this release, the rest of the transverse head retracted laterally." I question whether there was any retraction of the muscle whatsoever in these *cadavers* when the muscle was cut across.

We certainly agree with Dr. Knize that leaving behind a fragment of the lateral end of the transverse head of the corrugator supercilii muscle would produce a horn-like deformity in the mid-eyebrow rather than producing medially directed eyebrow movement when the patient attempts to frown. We also agree with Dr. Knize that failing to treat the medial head of the orbicularis oculi muscle can result in the medial ends of the eyebrows moving medially and produce glabellar wrinkles even after complete excision of the transverse head of the corrugator muscle.

Likewise, we agree with Dr. Knize that complete resection of the procerus muscle may result in excessive medial brow elevation. However, the reader must keep in mind that this study was an evaluation of the ability to alter the procerus (and other muscles) with the various procedures. No clinical evaluation of the amount of brow elevation was attempted on the cadavers. In patients with very low brows and a roll of excess

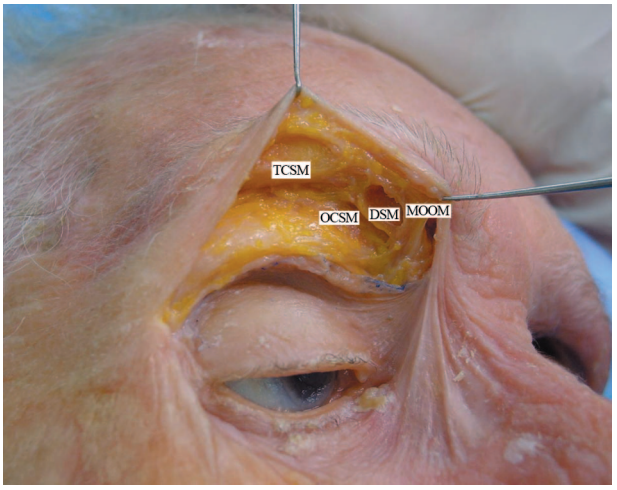

Fig. 1. Transpalpebral exposure of brow depressor musculature. *MOOM*, medial orbicularis oculi muscle; *DSM*, depressor supercilii muscle; *OCSM*, oblique head of the corrugator supercilii muscle; *TCSM*, transverse head of the corrugator supercilii muscle. Reprinted from Walden, J. L., Brown, C. C., Klapper, A. J., Chia, C. T., and Aston, S. J. An anatomical comparison of transpalpebral, endoscopic, and coronal approaches to demonstrate exposure and extent of brow depressor muscle resection. *Plast. Reconstr. Surg.* 116: 1479, 2005.

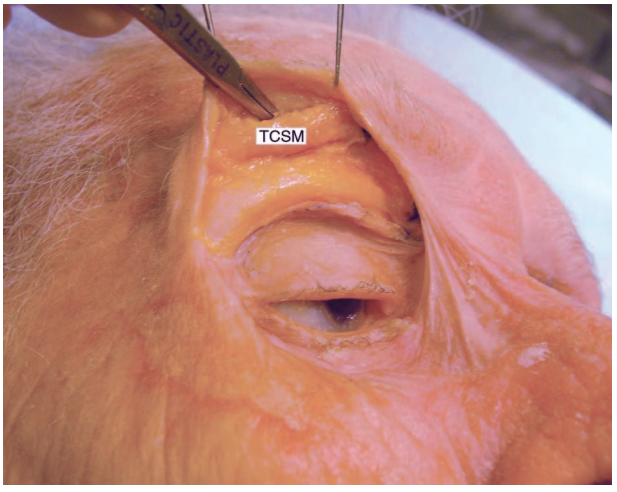

Fig. 2. Exposure of the transverse head of the corrugator supercilii muscle (*TCSM*). Reprinted from Walden, J. L., Brown, C. C., Klapper, A. J., Chia, C. T., and Aston, S. J. An anatomical comparison of transpalpebral, endoscopic, and coronal approaches to demonstrate exposure and extent of brow depressor muscle resection. *Plast. Reconstr. Surg.* 116: 1479, 2005.

tissue across the nasal root, significant medial brow elevation is needed to get an adequate result with some longevity. In some of these patients, it is my opinion that the procerus will need to be removed as completely as possible.

We appreciate Dr. Knize's careful dissection of our article. This study was not intended to deprecate his well-described techniques for decreasing brow depressor and glabellar furrowing muscle function and, by extension, his limited incision forehead lift technique. Again, it was aimed at explaining postoperative clinical findings in patients who had been treated with the various surgical techniques, as stated. We described what we did and presented and published the data as collected. It is my opinion that that stands the test of good science. I think the questions we sought to answer have been obtained by our study, by close attention to Dr. Knize's work,[2] by Dr. Guyuron's published work on corrugator resection,[3] by Dr. Guyuron's discussion of our article at the time of its original publication, [4] and by all of our colleagues who have shared information with us either verbally or in published reports.

We continue to believe, as stated in our Conclusions section, that the endoscopic approach provides an effective resection of the brow depressor complex and that transpalpebral corrugator resection is a useful method for ablation of muscles in the patient who does not desire or need a brow lift, such as one with well-positioned lateral brows, relatively smooth forehead skin, or a high anterior hairline. As well, Dr. Knize has demonstrated excellent results using the transpalpebral approach as part of his limited incision forehead lift procedure. As we stated before, "A more refined understanding of the anatomy of this region aids in dissection and more complete resection of the brow depressors regardless of the surgical approach used. As with any aesthetic procedure, a surgeon's preferred approach for rejuvenation is most effective, appropriate, and predictable with a detailed working knowledge of the surgical anatomy of the region."[1]

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Antibiotic Breast Irrigation in Breast Implant Surgery

Sir:

Dr. Adams and colleagues recently made some important observations regarding breast surgery complications.[1] Focusing on capsular contractions, they found that the incidence after implant surgery could be diminished by the use of a triple-antibiotic solution. The study was a well-conducted, long-term prospective analysis and confirmed, in our opinion, the "subclinical infectious" theory by which capsular contractures derive from infections not immediately manifesting themselves (due to a low bacterial load) but chronically stimulating the pericapsular tissue, thereby producing a retractile fibrosis.[2]

In this context, we would like to stimulate discussion as follows. Recently, Handel and colleagues published an article regarding their experience with breast implants and found that ". . .contracture is a progressive phenomenon, and the longer any group of patients is followed, the greater the cumulative risk of developing contracture. This contradicts the widely held belief that if patients remain contracture-free for a year or two they probably will not develop significant contracture."[3] Furthermore, we recently reviewed our institutional database of the Crown House Hospital in Oldburi, Birmingham, United Kingdom. We focused only on aesthetic breast augmentations using silicone implants in order to obtain a homogeneous group of patients for analysis. All patients were followed for at least 2 years after their last operation. We recorded 14 capsular contractions of Baker grade 3 to 4 out of 3002 patients (0.5 percent). In our series, all of the contractures appeared after 5 postoperative years, with a cumulative progressive risk, as described by Handel et al. (Fig. 1). For these reasons, capsular contractures are emerging as a long-term, progressive complication, discouraging the theory that they would likely develop within the first 2 postoperative years.[4] The study by Adams et al. was conducted with a mean postoperative follow-up of 14 months, an interval of time that is insufficient to detect most cases of contracture and, for this reason, unable to verify the effectiveness of the experimental treatment. Furthermore, although this was the first in vivo study on this matter, the authors describe the incidence of capsular contracture without a control group to detect the treatment's effectiveness.

The theoretical speculation on the cause of capsular contracture is far from over. The idea that antibiotic washing could lower the rate of capsular contracture is probably correct, but it needs to be investigated with a longer follow-up period and in prospective randomized trials.

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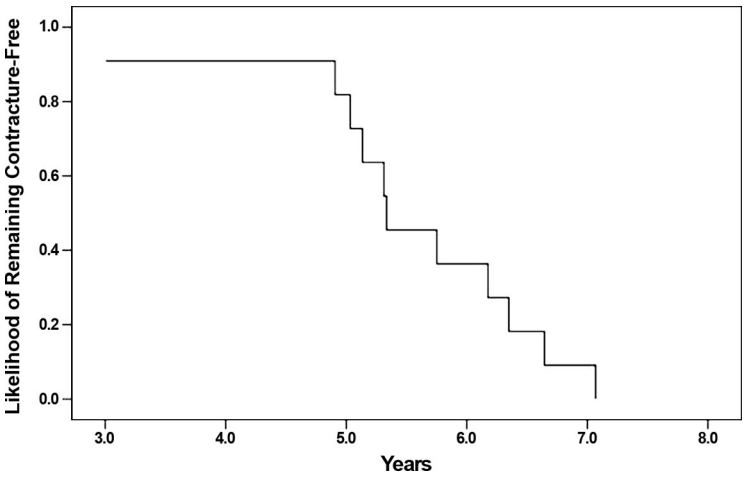

Fig. 1. Kaplan-Meier curve of the occurrence of capsular contracture in our patients (likelihood of remaining contracture-free over time).

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Reply

Sir:

I appreciate the opportunity to respond to Dr. Gravante et al.'s letter, and welcome their comments and support of our study. I believe the following comments are cogent to this discussion:

1. I concur that long-term follow-up of our study group will be interesting and important. Nevertheless, given time to publication and so on, this series of patients is now at a mean follow-up of 3 to 4 years and the capsular contracture rates are no different (in fact, there have been no further contractures in the primary augmentation group).

2. Do capsular contracture rates really progressively increase over time? Dr. Gravante and colleagues cite work by Handel et al. as well as their own series in support of this notion; however, I would caution the reader that without true data, this is a flawed conclusion. The Handel series was a retrospective review of patients who received implants over a 25-year period. The study introduced a plethora of uncontrolled variables (implant, technique, patient, follow-up, and chart review), making conclusions about capsular contracture rates speculative at best. Unfortunately, as with many of the studies on capsular contracture, the methodology/study design does not allow for generation of good data. Thus many conclusions take on more of an anecdotal rather than scientific nature.

3. The infectious theory for capsular contracture is well established. Our work in this area was influenced by the surgeon's lack of logic when using antibiotic irrigating solutions in aesthetic and reconstructive breast implant procedures. Many solutions have been used that do not provide broad-spectrum coverage of the bacteria that have been implicated in the formation of capsular contracture. We have published recommended solutions, and in the last publication we provided clinical outcomes using these solutions in a prospective study that was as controlled as possible. It has been our experience (to date), as well as that of other authors, that the vast majority of capsular contractures occur within the first year after surgery.[1–6] Our data indicate that with appropriate surgical techniques, including broad-spectrum antibiotic irrigation, the contracture rates are minimal. It is possible that other factors related to infection/systemic bacteremias may mitigate the development of late contracture; however, this has not been clearly proven.

4. Dr. Gravante and colleagues end with a call for a randomized controlled trial with regard to this subject. As stated in our most recent publication, given past and current data, we strongly believe this design would be

unethical and result in known significant morbidity to patients. Although the accepted standard for science is this design, there exist situations where this is not feasible. It is well accepted that appendectomy is the treatment of choice for acute appendicitis, but there has never been a randomized controlled trial comparing appendectomy to conservative therapy.

I look forward to updating longer follow-up data in the future as the current study group ages. Again, I appreciate Gravante et al.'s support and important comments.

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Unusually Successive Deflation of Textured-Surface Implants

Sir:

The unusually successive deflation description of two pairs of textured implants deflating spontaneously after a year or three (Kim, H. S., and Minn, K. W. Unusually Successive Deflation of Textured-Surface Implants. *Plast. Reconstr. Surg.* 117: 1361, 2006) references my seminal work with Vasquez-Salisbury in 1997 on the textured silicone surface.[1] However, the surface that my coauthor and I described was not the Mentor surface. Our surface was a series of caves created by the lost salt technique, which enables fibroblast to grow down into the caves and create a firm, host-prosthesis-interface junction (patent no. 4,955,909; September 11, 1990), first described at the Aesthetic Association's annual meeting in San Francisco, California, in October of 1987.[2,3] That method was originally used by Bioplasty in the Misti device (molecular impact surface textured implant), the only implant with a theme song. It was later used for Misti Gold,[4,5] the polyvinyl pyrrolidine bio-oncotic gel filling material, and Nova Gold by NovaMed; it is currently being used by McGhan Medical, now Inamed.

The Mentor method is quite different. Instead of affecting the surface to create a Velcro-like attachment with the capsule, Mentor rolls a polyurethane foam over the surface of the silicone before vulcanization to impart a wave-like surface irregularity. The wave method never has tissue ingrown.

Kim and Minn mention that they inspected the implants and could not see any leak. There is an easy way to test for that. You simply blow them up with a liter or two of water, and see how the water gets out.

The explanation for these devices initially being intact and then later developing leaks is probably in the fold flaw fracture phenomenon, wherein the surface of the implant is subject to wrinkling and, therefore, the surface rubs against itself. Because Mentor's wave configuration does not allow actual tissue ingrowth, this rough surface is then more abrasive than a smooth surface, so that the outside folds can rub against each other with more friction. The inside folds are unaffected by the texturing.

One factor that may lead to an increased rate of deflation is a slightly underfilled prosthesis. The volume described by the manufacturers is the volume of the mandrel upon which the implant is cast. They underfill these a bit so that they will feel soft to the observer. You can usually test this hypothesis by taking a 300-cc saline implant and putting exactly 300 cc in the prosthesis. You will notice that there is sagging or a dimple on the top. This, of course, creates a guaranteed wrinkle, since by definition fluids take the shape of that which contains them, and once that bag of saline is placed inside a surgical pocket, the dimensions of that surgical pocket dictate the shape of the implant. Thus, it is customary to add about 10 percent additional fluid so that the dome of the implant, when sitting on a table, is filled without that dimple or depression. In that way, the volume of the fluid equals the volume of the mandrel, and a wrinkle is less likely. Overfilling (20 or 30 percent) produces scalloping or wrinkling around the largest diameter edge, because the mandrel is essentially an oval and when the implant is forced into a spherical shape by overfilling, a scalloping of the edges occurs. This, of course, is easily demonstrated by a bench test.

Another possibility must be considered, and that is a Munchausen syndrome. We have had a case here in Austin, Texas, of a patient who attempted to remove her own implants because she was alerted by her lawyers that they constituted a time bomb in her chest. I have heard of patients taking a pin and piercing their implants to deflate them themselves; that, of course, is always a possibility, though remote.

The case described by Kim and Minn, essentially four deflations in a few years and timed such that they were actually bilateral, occurring at nearly the same time,

does raise a serious question of cause in addition to the usual mechanical factors. I compliment the authors on sharing this unusual, perplexing case with us.
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DISCLOSURE

The author has no financial interest in any of the products, devices, or drugs mentioned in this communication.

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Viewpoints

One-Stage Reconstruction of Large Scalp Defect Assisted with Endoscopic Forehead Lifting and Miniscrew External Fixation Techniques

Sir:

The management of full-thickness large scalp defects with bone exposure can be achieved by using rotational, transposition flaps[1,2] or free flaps,[3] which have been demonstrated by many authors. Skin grafting may also be needed when direct closure of the flap donor site is impossible. Bald areas with poor cosmesis have resulted in many methods. Scalp reconstructions via tissue expansion can provide better cosmetic results, but they require more time and multiple operations, and tissue expanders have not been applied properly for acute open wounds.[4]

A 55-year-old man injured in a vehicle accident sustained a huge, dirty, satellite-shaped avulsion wound (about 15 × 15 cm) over the scalp. After primary management, a 6 × 6-cm scalp defect with bone exposure resulted (Fig. 1). Considering the posttraumatic condition of the scalp and the location and size of the defect, a method combining the endoscopic subperiosteal forehead lift technique with scalp flap advancement was used (Fig. 2). To release the tension of the suture line, a technique of percutaneous external fixation with miniscrews, which were affixed to the outer table of the skull bone, was used. The operative time was short and the amount of blood loss was about 50 cc. After the operation, the wound healed well and the patient's recovery was uneventful. The miniscrews were removed 2 weeks later and the stitches were removed 1 week after that (Fig. 3).

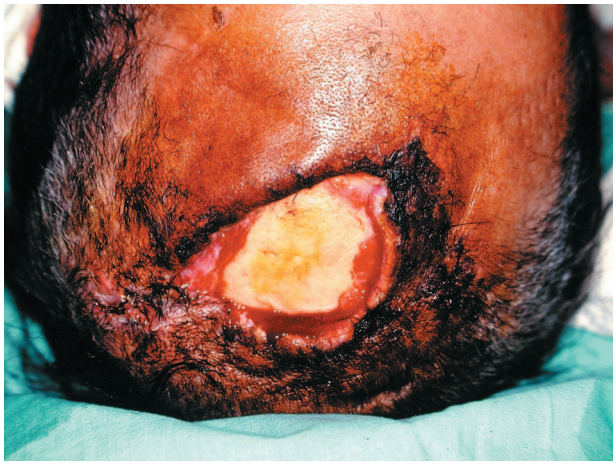

Fig. 1. Preoperative view of a 6 × 6-cm, full-thickness scalp defect with bone exposure.

For reconstruction of acute scalp defects, the local flap method of primary closure had the advantage of utilizing hair-bearing tissue, which resulted in better cosmetic results. However, the tension at the suture line was great and marginal flap necrosis was not uncommon.[1] Percutaneous external fixation using miniscrews affixed to, but not penetrating, the outer table of the skull bone holds the scalp flaps and releases the tension of the suture line. The forehead lift technique is used to treat the brow ptosis, and redundant scalp (more than 5 cm in older patients) is pushed backward. For our patient's large, triangular, full-thickness scalp defect, we undermined and scored the scalp bilaterally and posteriorly. Then, using the techniques of forehead lifting and external fixation with miniscrews, we closed the scalp defect in one operation. The wound healed well and no morbidity occurred. The cosmetic result was satisfactory, giving the patient both a smaller bald area on the scalp and a younger-looking face.
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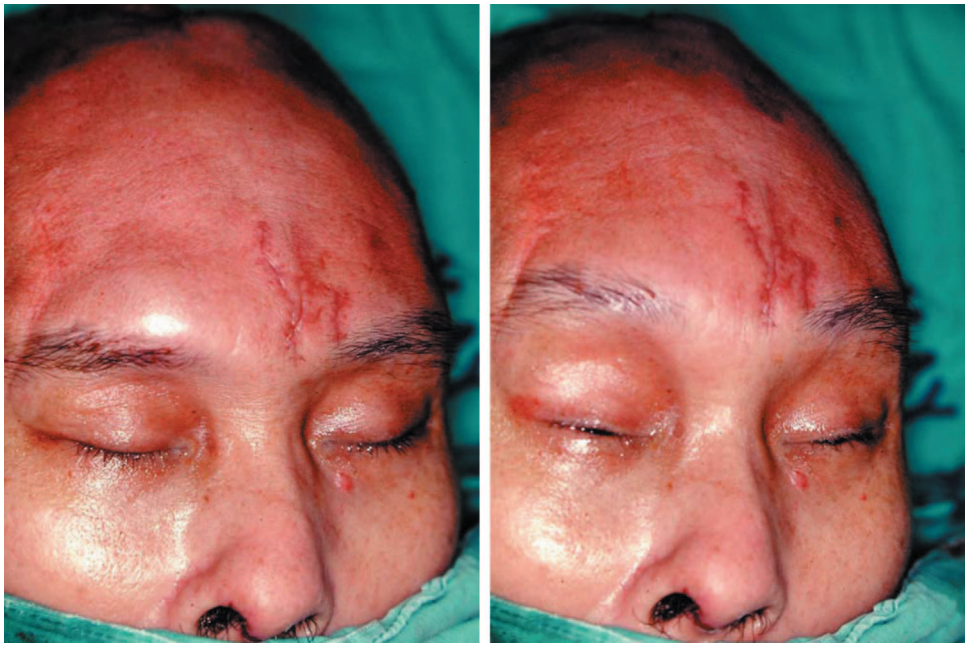

Fig. 2. Views of the patient before (*left*) and after (*right*) endoscopic forehead lift. About 5 cm of advancement of the forehead flap was gained after the forehead lift procedure.

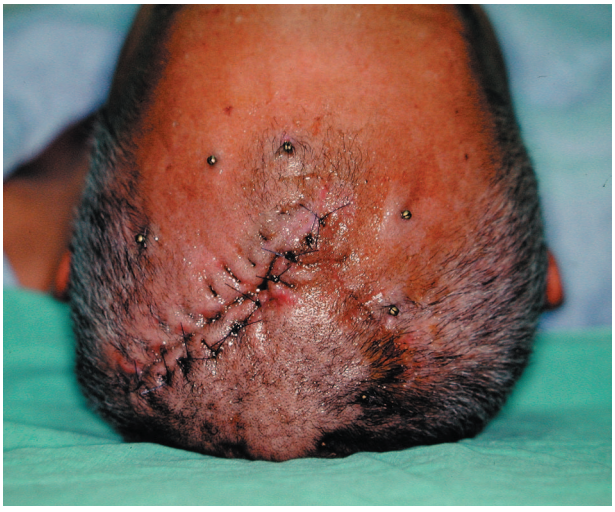

Fig. 3. Two-week postoperative view. The percutaneous external fixation using miniscrews holds the scalp well. The wound healed uneventfully.

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Open Rhinoplasty Technique for Columella Defect

Sir:

We describe a method to resurface a columellar defect using a skin advancement flap from the dorsum and tip of the nose.

A 77-year-old man was admitted for a basal cell carcinoma in the columellar region clinically affixed to the cartilage. Surgery was performed under local anesthesia using lidocaine with adrenaline 1:100,000. The tumor was resected with a 3-mm margin, including a small strip of the underlying alar cartilages. A skin flap was planned from the dorsum and nasal tip, with excision of two Burow triangles lateral to the nasal dome (Fig. 1). Dissection was carried up to the nasal bones to allow advancement of the flap. The flap was moved to cover the defect down to the base of the columella, similar to an open rhinoplasty procedure (Fig. 2). Monocryl 5-0 and Ethilon 6-0 sutures were used for insetting. Histologic analysis confirmed the clinical diagnosis of basal cell carcinoma; the carcinoma was completely excised. In the early postoperative period, the tip appeared somehow flattened, but projection was satisfactory at the 9-month follow-up visit (Fig. 3).

The columella can be considered an independent subunit of the tip of the nose. Various flaps have been described for reconstruction of the columella, such as the alar rim flap,[1] the bifid nasolabial flap,[2] bilateral cheek and perialar advancement flaps,[3] and the axial nasodorsum island flap.[4] More recently, a microsurgical, retroauricular, prefabricated chondrofasciocutaneous flap has been described.[5] This flap provided good cosmetic results but left residual scars at the donor site.

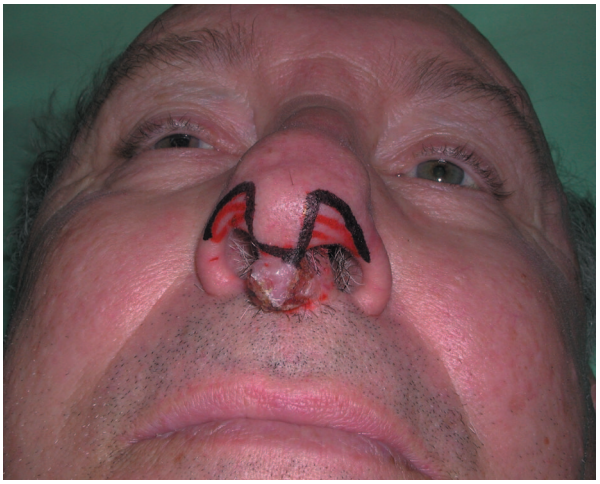

Fig. 1. Flap design with two Burow triangles located lateral to the nasal dome.

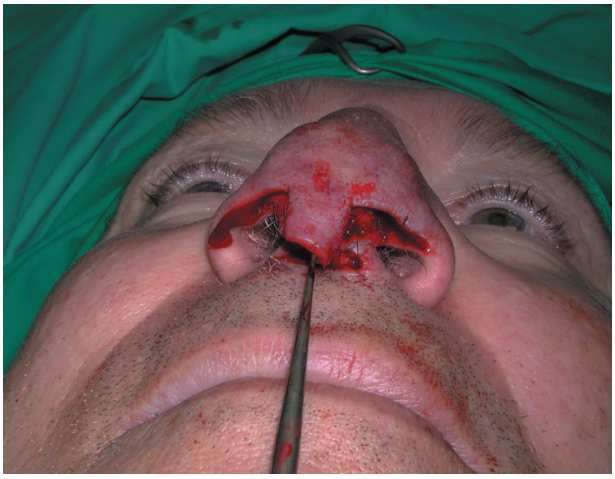

Fig. 2. The flap is advanced downward to close the residual defect.

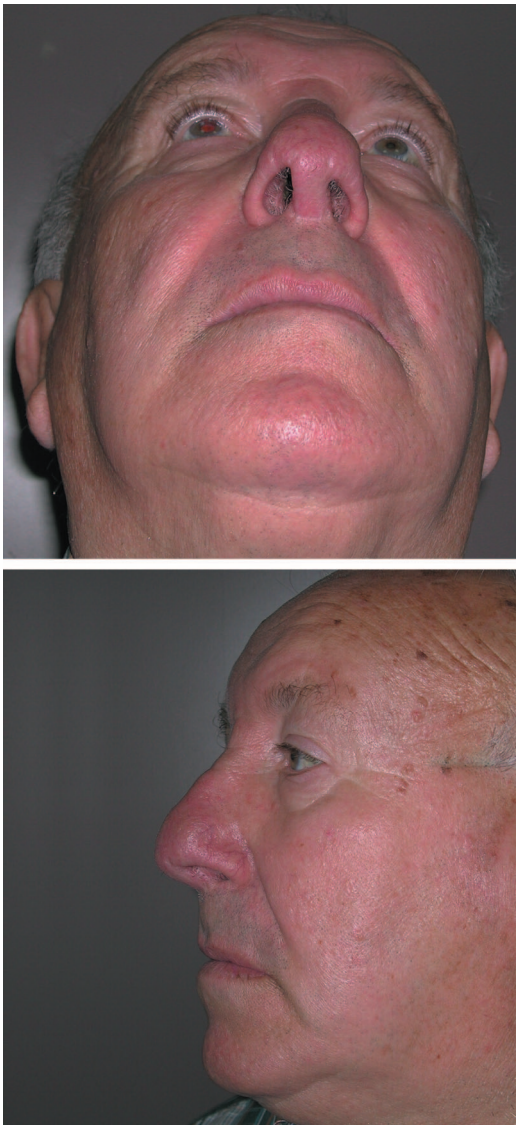

Fig. 3. (*Above*) Good quality scarring on frontal view at 9-month follow-up. (*Below*) Good tip projection on lateral view at 9-month follow-up.

Our method for columellar resurfacing uses skin from the dorsum and tip of the nose. The Burow triangles are carefully planned to hide donor-site scars behind the alar rim line. The length of the flap should be planned according to the size of the defect. Tip projection is not a problem if dome cartilage is preserved.

In conclusion, our flap has a reliable vascular supply, appropriate color and texture match, and scars that are not visible, as with those in open tip rhinoplasty; moreover, it is a one-stage procedure and very easy to perform.

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Bilateral Free DIEP Breast Reconstruction Using Contralateral Internal Mammary and Ipsilateral Thoracodorsal Vessels

Sir:

Free flap surgery requires adequate recipient vessels for anastomosis, and these are generally limited to the internal thoracic and thoracodorsal vessels in breast reconstruction. Surgical scarring and radiotherapy can render the thoracodorsal vessels unusable for reconstruction.[1] In such circumstances, some surgeons advocate the use of the internal mammary vessels, as they are not in the radiotherapy or the mastectomy surgical field.[2,3] In rare cases, these vessels may also be unusable for anastomosis.

A 63-year-old woman was referred to our unit for consideration of bilateral breast reconstruction. She had undergone right-sided mastectomy, axillary clearance, and postoperative chemotherapy and radiotherapy for carcinoma of the breast 17 years earlier. Initial reconstruction was with a subpectoral tissue expander, but the patient developed capsular contracture 3 years later that required revision. Free transverse rectus abdominis musculocutaneous (TRAM) reconstruction was planned, but at the time of the operation both the internal mammary and the thoracodorsal vessels were unsuitable; a pedicled latissimus dorsi flap with a silicone implant was used instead.

At age 63, ductal carcinoma in situ was detected in the contralateral breast and the patient underwent a mastectomy. At this point, she was referred to our unit for reconstruction on the left side and revision of the right side (Fig. 1).

At operation, bilateral deep inferior epigastric perforator (DIEP) flaps were raised, each based on two perforating vessels. For the right-sided reconstruction, the inferior epigastric vessels were anastomosed to the internal mammary vessels on the left. The flap on the left side was anastomosed to the thoracodorsal vessels on the left.

At outpatient review, both flaps were viable, although the position of the left breast was felt to be too lateral and a medialization procedure was planned.

Radiotherapy following mastectomy is associated with volume loss, fat necrosis, and deformity of free flap reconstructions.[4] For these reasons, delayed reconstruction has gained favor recently. The detrimental effects on the microvascular system that result from radiotherapy are well documented,[1] and these effects, in addition to surgical scarring, can make the recipient vessels unsuitable for free flap anastomosis. Some studies suggest unusability rates of up to 20 percent for the internal mammary vessels and 26 percent for the thoracodorsal vessels following radiotherapy.[5] In these circumstances, many surgeons advocate conversion to a pedicled flap reconstruction.

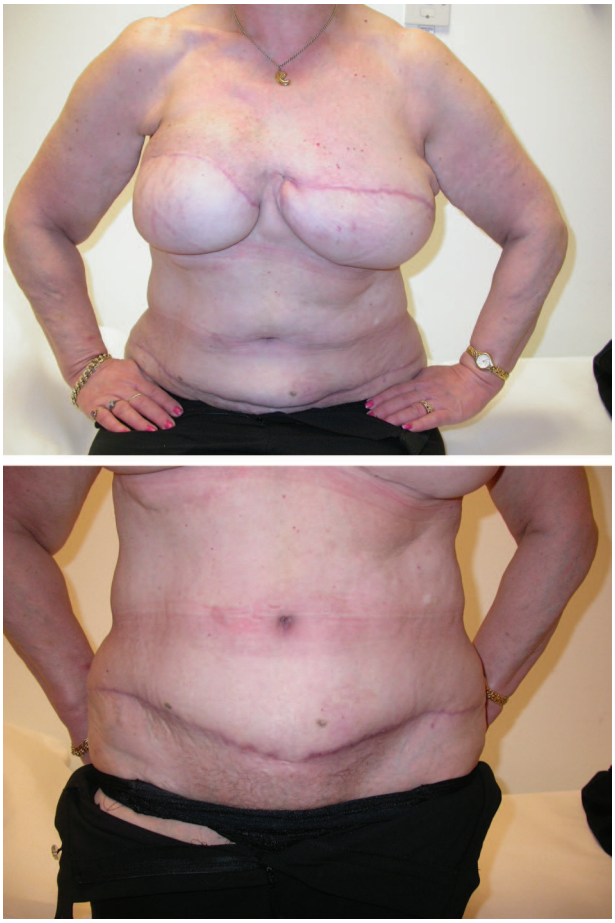

Fig. 1. Postoperative views after deep inferior epigastric perforator reconstruction.

TRAM and DIEP flaps can be raised with a long pedicle, and we found this to be adequate to reach the contralateral internal mammary vessels in this case. The contralateral side was unaffected by radiotherapy or surgery in the axilla, so the thoracodorsal vessels were suitable for use in the ipsilateral reconstruction. The main disadvantage of this technique is that the flap anastomosed to the thoracodorsal vessels may lie too laterally if the pedicle is short.

This case illustrates that the contralateral internal mammary vessels may be used for free flap reconstruction in cases where otherwise a pedicled reconstruction may be the only option. This need not compromise future reconstructive options on the contralateral side if the thoracodorsal vessels are intact.

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A Novel Tension-Reducing Suture to Protect the T-Junction after Reduction Mammaplasty

Sir:

Descriptions of reduction mammaplasties can be seen as early as Paulus of Aegina (625 to 690 AD). The late nineteenth century saw emphasis placed on correcting ptosis of the breast. Schwarzmann (1937) first described the use of periareolar deepithelialization to preserve the neurovascular supply of the nipple-areola complex. Technical elements of breast reduction mammaplasty continue to evolve.

T-junction breakdown is a relatively common complication encountered following reduction mammaplasty. Several studies have shown significant wound dehiscence rates (most commonly at the T-junction), especially in those patients with a high body mass index.[1–3] Dehiscence at the T-junction results in patient morbidity caused by the prolonged requirement for regular wound-dressing changes and ultimately poor resulting scar formation.

The T-junction is formed by approximating three units, two breast flaps superiorly and the center of the inframammary fold inferiorly. The two superior units are apical skin flaps and as such have a comparatively weak blood supply. This relative tissue ischemia is potentiated by tension applied to the flaps. Both of these factors contribute to creating a poor environment for wound healing; as a consequence, the T-junction is prone to breakdown, irrespective of adverse patient factors (poor nutritional status, steroids, diabetes, smoking, and so on). By reducing the amount of tension on the wound, one can minimize one of the two factors contributing to T-junction breakdown.

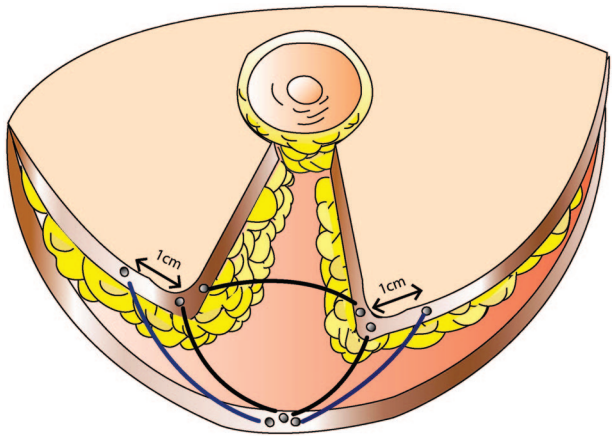

Fig. 1. To redistribute the tension away from the delicate T-junction, two carefully positioned diagonal dermal sutures are placed on either side of the T-junction.

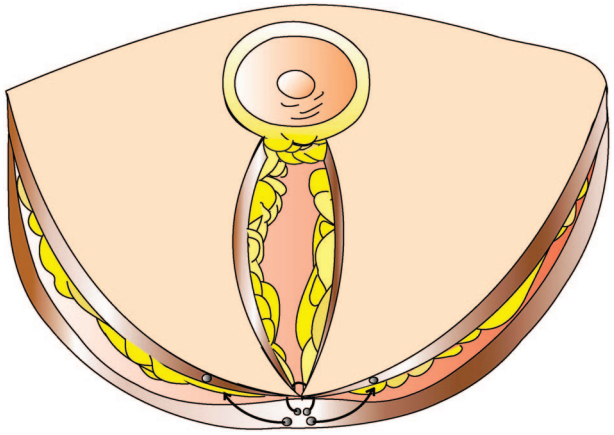

Fig. 2. After the central triangular suture is placed, the tension reducing sutures are inserted.

We would like to suggest a simple technique that aims to redistribute the tension away from the delicate T-junction by means of two carefully positioned diagonal dermal sutures on either side of the T-junction (Fig. 1). After placement of the central triangular suture, the tension-reducing sutures are inserted (Fig. 2). The superior suture bite is placed 1 cm laterally to the junction on the associated flap and approximated to just lateral to the midpoint of the inframammary fold inferiorly. This distributes the tension away from the T-junction apices to areas of skin with a more robust blood supply that is not involved in healing of the T-junction. The senior author has incorporated this technique into his routine practice and has since significantly reduced the incidence of T-junction breakdown. We welcome other suggestions to combat this troublesome complication.

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Transareolar and H-Incisions for the Surgical Treatment of Gynecomastia

Sir:

Gynecomastia is defined as benign enlargement of the male breast and is the most common breast problem in men. There are many classifications of gynecomastia. The classification described by Simon et al.[1] is commonly used and is based on the size of the breast and the amount of redundant skin (Table 1).

Several approaches to the surgical treatment of gynecomastia have been described in the literature. The first reported surgical treatment was described by Paulus Aegineta (625 to 690 AD).[2] Surgical excision of excess tissue was carried out through a single submammary lunate incision. This extra-areolar incision produced unsightly scars, but this incision, and variations of it, continued to be used until Webster described a semicircular intra-areolar incision in 1946.[2] It has become the standard incision used in operations for excision of gynecomastia and remains the most commonly used intra-areolar method.

Table 1. Simon et al.'s Classification of Gynecomastia

Grade	Description
I	Minor breast enlargement without skin excess
IIa	Moderate breast enlargement without skin excess
IIb	Moderate breast enlargement with minor skin excess
III	Gross breast enlargement with skin excess that simulates a pendulous female breast

We present our modification of intra-areolar incisions for grade I to IIb gynecomastia, which includes the transareolar incision but skirts the nipple. This incision can be extended into the H-incision for greater access.

The transareolar (nipple-skirting) incision is made transversely across the areola, but skirts the nipple. An advantage over the conventional periareolar incision is that the scar heals very well, while maintaining very good access. This access is central to the nipple.

The H-incision is a natural progression from the transareolar incision and is useful when treatment needs to be extended to perform a limited subcutaneous mastectomy. We have used this for excision of up to 210 g of breast tissue. It is ideal for the treatment of grade IIa/mild IIb gynecomastia, but we have also used the incision, with success, in severe IIb/III gynecomastia. This case required liposuction of 400 ml, combined with excision of 80 g of parenchyma using the H-incision.

Both incisions become more problematic if the nipple is very small. In such cases, we use a complete periareolar incision with a superior dermal pedicle for the nipple (Figs. 1 and 2).

Areolar skin heals very well, so scars are better confined to areolar skin. The Webster incision is a good incision. The traditional transareolar incision is made across the nipple.[3] We believe skirting the nipple improves the scar without compromising access, but the main advantage is the ability to convert to the H-incision, allowing more flexibility in extending the scar. The techniques described are for mild to moderate gynecomastia. Other techniques are required for larger excisions, where significant skin reduction is required.

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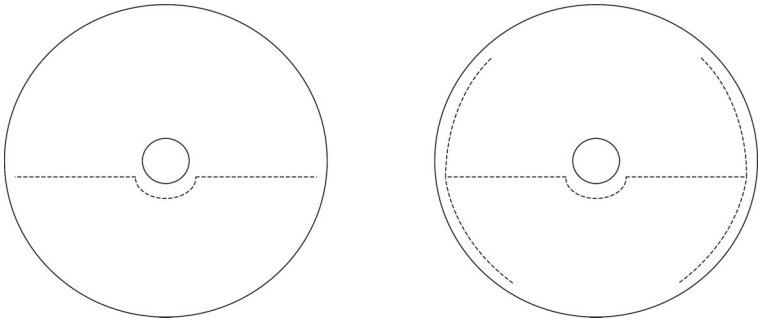

Fig. 1. Diagrams of the transareolar (nipple-skirting) incision (*left*) and the H-incision (*right*).

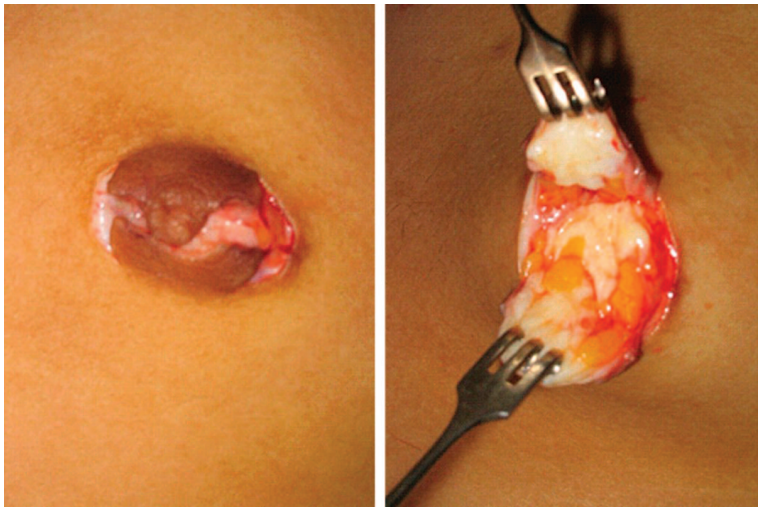

Fig. 2. Intraoperative views of the H-incision.

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Exteriorized Pedicle Technique in Dorsal Reverse Adipofascial Flap for Nail Complex Reconstruction

Sir:

The dorsal reverse adipofascial flap is an easy and useful flap for reconstruction of finger tip amputations, but correct management of the nail complex is still controversial.[1–5] We report a simple method to avoid injury to the germinal nail matrix that preserves the maximum residual nail length: the exteriorized pedicle technique. The adipofascial tissues lying between the derma and paratenon of the middle phalanx are raised, through a "Z" skin incision, in a proximal to distal direction, as far as the distal interphalangeal joint, which represents the flap's pivot point. The flap is turned over the intact skin of distal phalanx and is placed over the raw surface, covering the exposed bone. It is not necessary to cut the skin over the distal phalanx and eponychium to ease the passage of the flap (Figs. 1 and 2).

The flap's pedicle is preserved for at least 3 weeks. It is then cut both proximally and at the nail bed. Skin grafting of the exposed pedicle is not needed because of rapid, spontaneous re-epithelialization. During the following weeks, the nail plate grows over the new bed. At the time of pedicle section or later, it is possible to perform backward plication of the eponychium to lengthen the short injured nail (eponychial flap).

There are three main advantages to elevating the dorsal reverse adipofascial flap with the exteriorized pedicle technique:

1. The operation is simpler, quicker, and safer because it avoids the dissection over the distal phalanx, where the skin adheres tightly to the underlying extensor tendon insertion and bone and where the vascular supply to the flap and the nail matrix could easily be injured.
2. The eponychium is preserved, thereby reducing the synechial adherences of the nail fold roof and the underlying matrix. The potential to enhance the final cosmetic results by raising the eponychial flap is unchanged.
3. The scars on the dorsal aspect of the finger are reduced. Skin graft donor-site morbidity is avoided.

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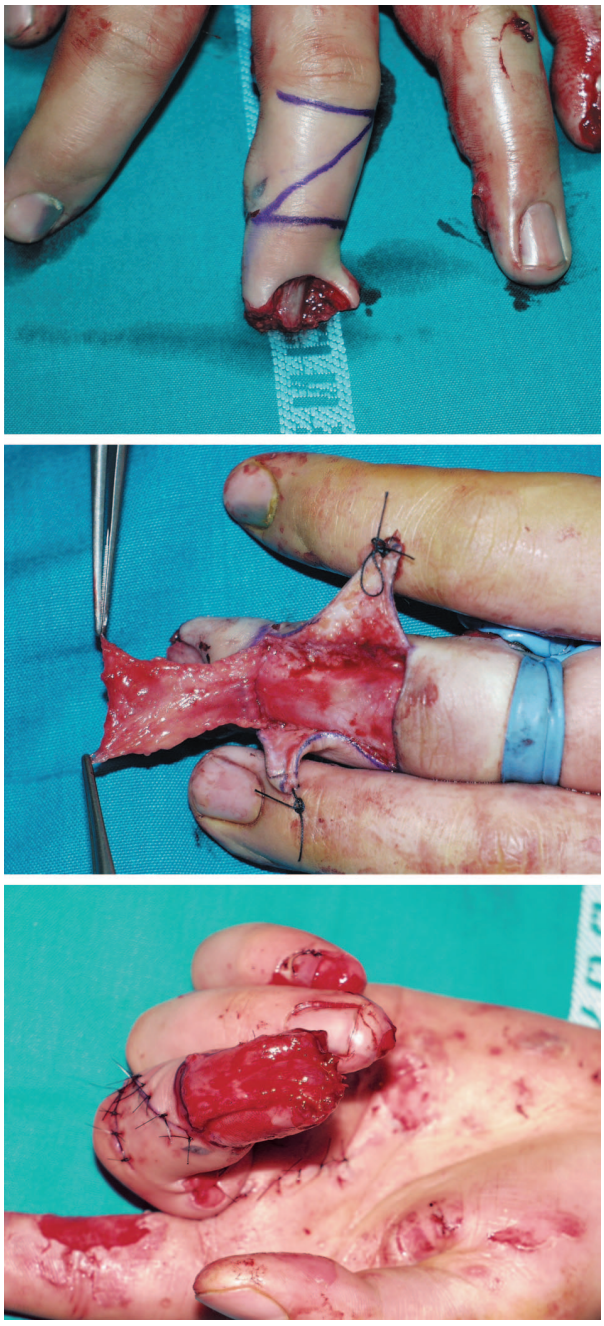

Fig. 1. Crush-avulsion injury of the nail bed in a 14-year-old boy. (*Above*) Design of the skin incisions over the middle phalanx. (*Center*) Dorsal reverse adipofascial flap harvest (the pivot point is over distal interphalangeal joint). (*Below*) Flap inset over the raw surface of the nail bed, with the exteriorized pedicle.

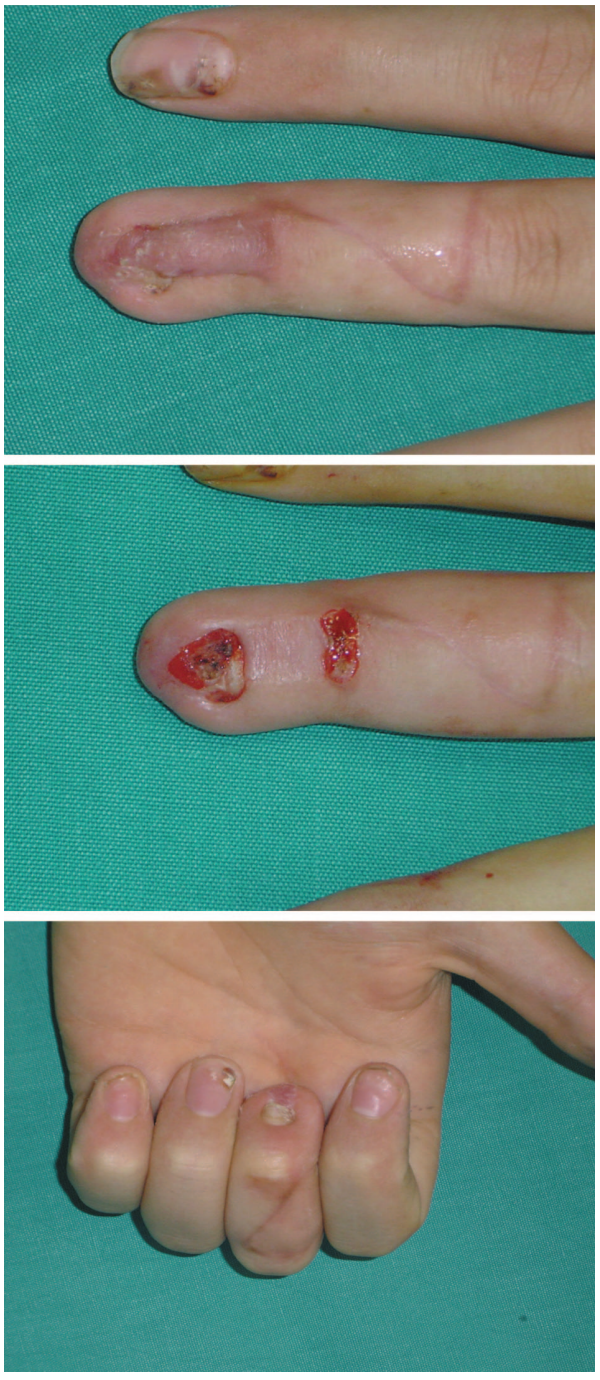

Fig. 2. (*Above*) The flap's pedicle is completely re-epithelialized (4 weeks after harvest). (*Center*) The flap's pedicle is sectioned and the nail bed is refined. (*Below*) Nail plate is shown growing over the healed surface after 4 months. Note that no flexion deficit is present.

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Suction-Curettage as a Surgical Treatment of Focal Axillary Hyperhidrosis: Recommendation for an Aggressive Approach

Sir:

Suction-curettage is an effective and minimally invasive method for the treatment of focal axillary hyperhidrosis.[1,2] The use of different cannulas with a sharp surface (e.g., liposuction cannulas, gynecologic cannulas, sharp spoons, and individually designed cannulas) to remove a sufficient amount of sweat glands for suction and curettage has been described.[3] The choice of a specific cannula for suction-curettage often relies on the personal experience of the surgeon or on advice given in single case reports.[4] As curettage and suction-curettage have become widely used surgical techniques for the treatment of focal axillary hyperhidrosis, evaluation of cannulas becomes more important.

To aid decision making, we gravimetrically compared the efficacy of two frequently used sharp cannulas in 22 patients. Eleven patients were operated on with a more atraumatic cannula with a diameter of 2 mm and nine small openings (Fig. 1, *above*). Eleven patients underwent suction curettage with a more aggressive cannula that had a diameter of 6 mm and three large openings on the tip (Fig. 1, *below*). To compare postoperative results, sweat rate, expressed in milligrams per minute, was measured by gravimetry before and 6 months after surgery.

The sweat rate of patients operated on with the smaller, atraumatic cannula was significantly reduced from 57.76 ± 5.96 mg/minute to 32.02 ± 4.95 mg/minute ($p < 0.001$), corresponding to a reduction of 44.6 percent. Patients operated on with the robust, aggressive cannula also showed a significantly reduced sweat rate, from 63.07 ± 9.74 mg/minute to 21.38 ± 4.92 mg/minute ($p < 0.001$), corresponding to a reduction of 66.1 percent. In comparisons of both cannulas, a significantly higher percentage reduction in sweat rates was observed for patients operated on with the larger, more aggressive cannula (62.91 ± 5.54 percent versus 44.62 ± 5.61 percent; $p < 0.001$). A higher rate of side effects was seen in the more aggressive cannula group (Table 1), an observation that can be explained by more extensive trauma to the subcutaneous tissue and deep dermis. Side effects were slight and well tolerated by most patients. Slight side effects (e.g., hematoma and erosions) were frequently observed in both groups. In our opinion, the slightly higher complication rate for the aggressive cannula is acceptable, since the observed side effects were not permanent or severe in nature.

Fig. 1. (*Above*) Less traumatic suction cannula with nine sharpened, everted, small openings. (*Below*) Aggressive suction cannula with rasps and three large openings.

Table 1. Side Effects after Axillary Suction-Curettage

Side Effect	Aggressive Cannula	Less Traumatic Cannula
Hematoma	55%	45%
Superficial skin erosion	18%	9%
Bridle formation	27%	18%
Paresthesia	55%	45%
Partial alopecia	27%	18%

Our results show that a more aggressive, larger cannula has a significantly higher efficacy. In our opinion, a more aggressive cannula should be used for axillary suction-curettage in general. Preoperatively, patients should be informed that the higher efficacy and better postoperative results of the larger cannula may be associated with a slightly higher rate of side effects.

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DISCLOSURE

The authors have no commercial associations that might pose or create a conflict of interest with information presented in this communication concerning: suction cannula, small (Laser Point AG, Nordkirchen, Germany); suction cannula, large (Gaedigk GmbH, Bochum, Germany); gravimetry scale (Kern EW 220-3NM; Kern & Sohn GmbH, Balingen, Germany); figure-of-eight compression dressing (NOBA, Wetter, Germany); flexible skin closure strips (Steri-Strips steril; 3M Medica, Neuss, Germany).

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A New Position to Hide the Abdominoplasty Scar

Sir:

Although abdominoplasty has always been a routine operation, demand for it is constantly increasing.[1] In types III and IV abdominoplasty,[2] three fundamental defects of the abdominal wall must always be addressed by the plastic surgeon: redundant skin, excess fat, and musculofascial laxity.[3]

The classic transverse abdominoplasty incision follows the abdominal crease. This crease is evident in the patient with marked skin excess but is not so evident in the patient with mild laxity. In these latter patients, we sometimes need to place the patient in the sitting position to precisely determine where the crease ends (Fig. 1).

Contemporary fashion dictates that up-to-date pants rest below the waistline. This has created a problem for the patient whose incision is made following precisely this crease (Fig. 2). Many of these patients are now returning with a demand that the incision be lowered.

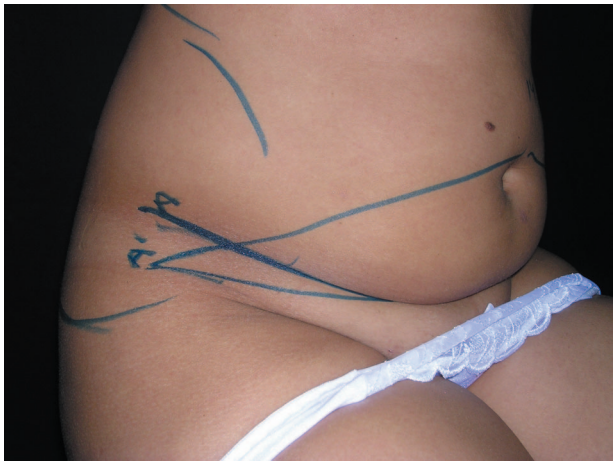

Fig. 1. The *A* line is the actual abdominal crease and *A′* is the planned incision.

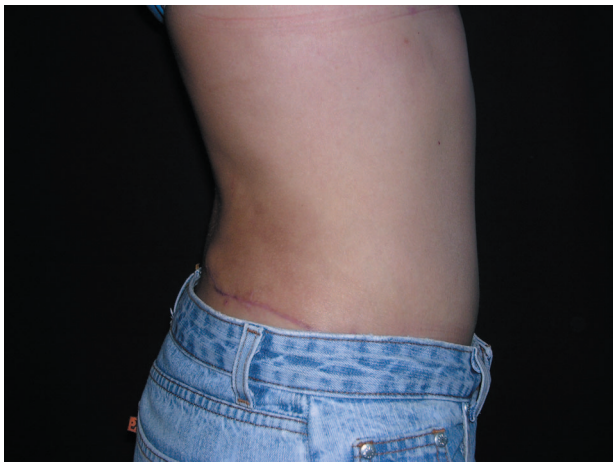

Fig. 2. Abdominoplasty scar cannot be hidden in contemporary fashions.

To avoid the higher ends of the abdominoplasty incision, I propose an alternative marking that symmetrically lowers the outer one-third of the incision (Figs. 1 and 3). This finding is of great importance for patient counseling in preoperative and postoperative settings. Education and preoperative demonstrations can help prevent medicolegal ramifications.[4]

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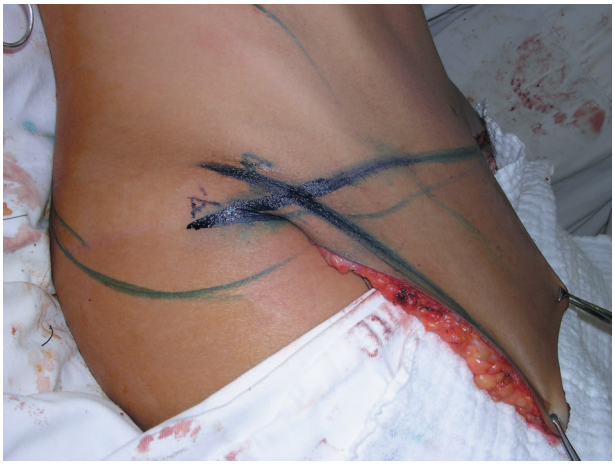

Fig. 3. The alternative marking (*A′*) brings the outer one-third of the incision symmetrically lower.

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Tufted Angioma–Associated Kasabach-Merritt Syndrome Treated with Embolization and Vincristine

Sir:

We report the remission of a tufted angioma (causing life-threatening Kasabach-Merritt syndrome) with a combination of radiological embolization and subsequent intravenous vincristine.

A male African baby was born by spontaneous vaginal delivery at 34 weeks' gestation. A prenatal ultrasound scan at 31 weeks revealed an echo-bright soft-tissue mass arising from the right leg. Doppler assessment of the mass showed arterial flow with reduced venous flow. At birth, the lesion was clinically diagnosed as an angioma on the anterior right shin (Fig. 1). Hematological investigations at birth revealed a platelet count of 61×10^9/liters, a prothrombin time of 18 seconds (normal range, 11.5 to 15 seconds), an activated partial thromboplastin time of 51 seconds (normal range, 23 to 49 seconds), a D-dimer concentration of 1000 ng/liter (normal range, 0 to 500 ng/liter), and a fibrinogen level of 1.51 g/liter (normal range, 2 to 4 g/liter), all consistent with Kasabach-Merritt syndrome. He was transferred to the neonatal intensive care unit, where further worsening of the thrombocytopenia (21×10^9/liter) and coagulopathy (prothrombin time, 25 seconds; activated partial thromboplastin time, 79 seconds) was observed. A wedge biopsy was performed when the neonate was 5 days old, under cover of platelet transfusions and fresh frozen plasma. Histologic

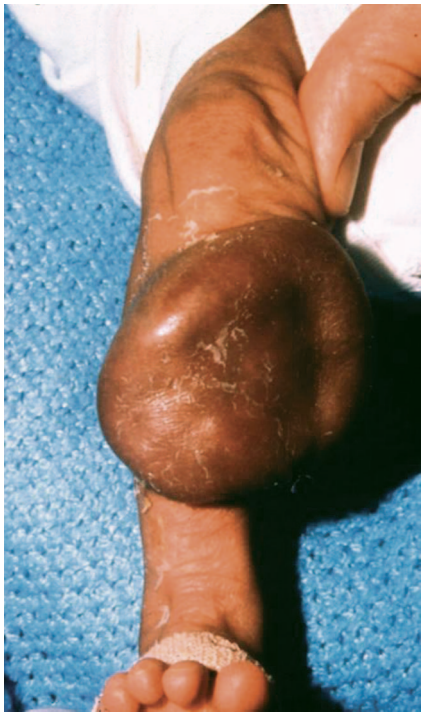

Fig. 1. Right pretibial hemangioma before treatment.

analysis revealed lobules of tightly packed endothelial cells in the middle to deep dermis, immunoreactive with CD34, CD31, factor VIII-related antigen, and *Ulex europaeus* lectin 1. Between the endothelial cells, some cells showed immunoreactivity with vimentin and smooth muscle actin, suggesting a pericytic origin, consistent with a tufted angioma.

With the patient under the same anesthetic as that used for the biopsy, selective embolization of the feeding vessels from the anterior and posterior tibial arteries was performed using a microcatheter (Progreat) and a V18 (0.018) control wire, with 250-μm particles (polyvinyl alcohol) in the anterior tibial feeding branch and 500- to 710- μm polyvinyl alcohol particles in the posterior tibial branch. Within a few hours of the embolization, the coagulation profile showed normalization of the platelet count, prothrombin time, and fibrinogen level.

At age 18 days, vincristine therapy was commenced to prevent further episodes of Kasabach-Merritt syndrome and to shrink the vascular lesion. Vincristine, preferred to oral corticosteroids because a rapid response was desired, was given intravenously via the central line at a dose of 0.05 mg/kg weekly for 10 doses; the dose was then reduced to every 2 weeks for 14 weeks, every 3 weeks for 18 weeks, and finally every 4 weeks for 12 weeks. Even though the vascular lesion resolved completely within 4 to 6 months (Fig. 2), with no recurrence of Kasabach-Merritt syndrome, a total of 12 months of therapy was given, since the optimum duration of treatment for involution of tufted angioma is not known.

Tufted angiomas are histologically benign vascular tumors that usually develop in the first year of life. They

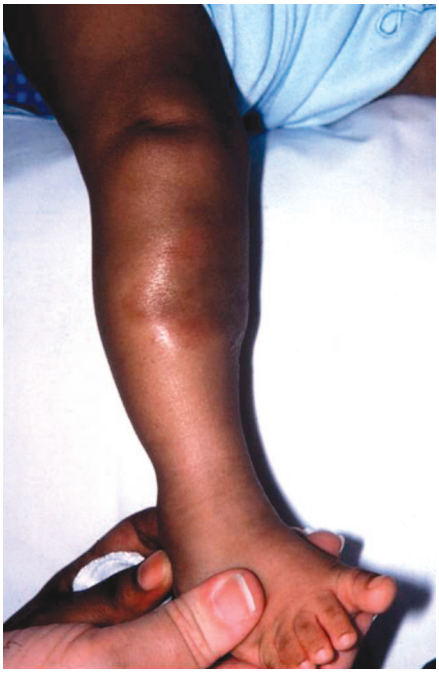

Fig. 2. Complete regression of tufted angioma following vincristine therapy.

appear as a dusky red plaque with a palpable border and central depression, sometimes resembling a doughnut. Local recurrence after surgical excision is not uncommon. A rare clinical variant is the congenital tufted angioma showing preferential localization to the lower limbs. Tufted angioma is also associated with Kasabach-Merritt syndrome.[1,2]

Kasabach-Merritt syndrome is the occurrence of an enlarging vascular lesion, severe thrombocytopenia, microangiopathic hemolytic anemia, and a mild consumptive coagulopathy.[3] It is said to occur due to platelet trapping within the vascular tumor resulting in severe thrombocytopenia, slightly decreased fibrinogen levels, and moderate D-dimer elevation. In 1997, two independent case series showed that the vascular lesions associated with the syndrome are nearly always either tufted angioma or kaposiform hemangioendothelioma.[1,2] A variety of treatments have been used for Kasabach-Merritt syndrome, although no large series or randomized controlled trials have been documented in the literature. Corticosteroids generally remain the mainstay of treatment. Interferon-α has been reported to be useful because of its inhibition of endothelial proliferation. Embolization has also been used to treat hemangiomas complicated by Kasabach-Merritt syndrome.[4] The effects of embolization can be immediate, often with significant normalization of the hematological parameters within a few hours, as in our patient.

Kasabach-Merritt syndrome has been treated successfully with cytotoxic agents, including vincristine.[5] Vincristine is a naturally occurring alkaloid whose principal mechanism of cytotoxicity is reversible binding of the α and β subunit proteins of tubulin, which inhibits mitosis. It also has antiangiogenic effects. The recommended dosage is 1 to 1.5 mg/m^2 or 0.05 to 0.065 mg/kg given weekly via central venous access, as it is a tissue vesicant. Treatment is continued until there is a sustained increase in platelet count. Once remission is induced, vincristine can be tapered by increasing the administration interval rather than decreasing the dose; the optimal duration of treatment has not been defined.

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Operative Techniques for the Minimization of Skin Graft Donor-Site Pain in Flap Surgery

Sir:

Donor-site pain following split-thickness skin grafting is frequently problematic and can prove the most distressing symptom to the patient. The partial-thickness injury caused by graft harvesting results in the

stimulation of nociceptive fibers in direct proportion to the size of the donor area. As the area heals, the inflammatory response further contributes to the generation of pain. The resulting pain signals are carried to the central nervous system by afferent fibers in the cutaneous nerves supplying the donor skin.

When a defect is reconstructed through the use of a flap, split-thickness skin grafting may be required for one or more of four reasons: (1) to facilitate the use of a muscle flap by providing skin cover at the recipient site; (2) to cover the donor defect of the flap site; (3) to minimize the defect to be filled by the flap by covering the graftable areas of the defect; or (4) to allow tension-free closure over the flap pedicle. If these requirements are considered when planning the flap, it may be possible to decrease the amount of graft needed by modifying flap selection and harvest. However, when graft harvesting is unavoidable, several strategies for the utilization of skin denervated by flap harvesting may be used to minimize donor-site pain.

First, when a denervated flap containing skin is raised, use of this skin as the split-thickness skin graft donor site may successfully avoid postoperative pain.[1] We have utilized this technique with pedicled myocutaneous and fasciocutaneous flaps and found donor-site pain to be completely eliminated (Fig. 1). The technique is also applicable to any free tissue transfer, including those with sensory innervation, as the donor site would be expected to be completely healed by the time sensation has recovered.

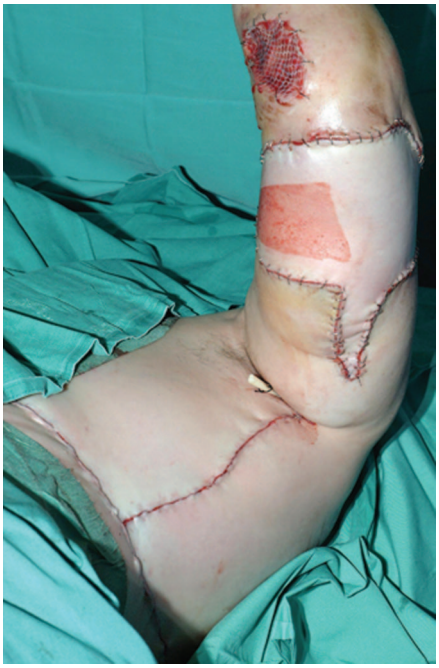

Fig. 1. A pedicled myocutaneous latissimus dorsi flap was used to cover a defect in the arm and as a donor site for split-thickness skin grafting to cover an additional, distal defect. The injury in this case was a dog bite.

Second, the skin supplied by the lateral femoral cutaneous nerve is denervated during the harvest of a standard anterolateral thigh flap. Skin graft donor-site pain may therefore be avoided by carefully siting the donor site within the cutaneous distribution of the nerve. We have utilized this technique in free anterolateral thigh flaps with the successful elimination of donor-site pain.

Third, following the harvest of a muscle flap, there may be excess skin at the flap donor site from which a skin graft may be harvested. Meshing of the harvested skin will increase its surface area above that available through the use of the same skin in a myocutaneous flap. The donor area may then be excised and the defect closed primarily, a technique previously described for the minimization of donor-site scarring.[2]

Finally, when a flap with a cutaneous element is harvested, any redundant skin may be excised from the flap as a deep partial-thickness graft. The area of this graft may be increased with fenestration or meshing.[3]

These techniques have the additional advantage of simplifying the process of dressing selection for the donor site. As pain relief is now of lesser concern, increased emphasis may be placed on selecting the dressing most advantageous to re-epithelialization.

In summary, we find the methods presented to be useful in decreasing skin graft donor-site pain in patients undergoing flap surgery. They may be particularly relevant for those patients for whom pain relief is likely to be of greater importance (e.g., children). However, given the concern about donor-site pain for patients and the increasing emphasis on informed consent, we suggest these methods be considered when planning any procedure that involves both a flap and a skin graft.

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Removal of Large Inclusion Cysts with Minimal Incisional Scars

Sir:

Patients who present with inclusion cysts of more than several centimeters in diameter usually hope for a minimal scar with removal. For those patients who have a noninfected cyst of the facial area that exceeds 2 cm, I have recommended decompression drainage of the cyst and staged excision 6 weeks or more after cyst shrinkage. The alternative, to remove a large cyst through a small incision as a piecemeal resection, has not always been successful for excising the entire cyst wall, and recurrence is often noted. [1,2]

Most surgeons have drained an infected cyst and observed shrinkage of the cyst. Excision of the remnant cyst 6 weeks after the infection has resolved is accomplished easily. With that in mind, I have started to evacuate the sebaceous material form the larger, noninfected cysts. I then allow the remaining cyst wall to shrink. Reduction will occur over a 6-week period. At a later stage, it is possible to remove the cyst through a much smaller surgical incision, with confidence that the entire lining cyst wall will be removed.

During the first visit, I explain this approach to the patient. Most patients are happy to stage the procedure in exchange for a smaller scar. After the skin is prepared with alcohol, I inject lidocaine with epinephrine over the central prominence of the cyst, along the skin and subcutaneous tissue. The injection continues with installation of the local anesthetic into the cyst itself. Some of the softer cysts can be aspirated with a 16-gauge needle and a 10-cc syringe to decompress the cyst to less than one-fourth of its original size.

There are cysts that cannot be aspirated. In those cases, I excise with a 3-mm biopsy punch any draining pore, skin, or subcutaneous tissue and a portion of the superficial cyst wall. Through that access, the sebaceous material can be expressed with gentle compression of the cyst wall. Systemic antibiotics are not required for these patients. The wound is cleaned of crust three times daily with hydrogen peroxide and a cotton-tip applicator for 3 days to maintain any drainage as the site heals. Bacitracin ointment is used until all crusting resolves. These patients are scheduled for cyst excision 6 weeks later.

To date, I have used this staging technique in 16 cases to achieve a 50 to 75 percent reduction in cyst diameter before excision. This allows a minimal incision for easy dissection of the cyst wall from the subcutaneous tissues during the second stage, if the site is matured for 6 weeks after drainage. I have had no cyst recurrences in patients followed for a minimum period of 6 months. An additional benefit to staging excision of a large cyst is less dead space and contour deformity with wound closure.

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The Obsessive Patient by Proxy

Sir:

I once received a call from a 24-hour pharmacy at 3 AM. A patient had taken her last every-6-hours Keflex at 10 PM, and because the wound was a little pink, she went to the pharmacy and demanded a refill. The pharmacist, calling to approve the release of more medications, commented, "I hope I did not wake you." To which I responded, "Oh no! I was just reading the Bible." I was kidding; he wasn't. My wife, who was awakened, was rightfully peeved, but the true nidus of the event was my patient. In that light, I now present my *mock* interview with a similarly compulsive parent who thinks that when I leave my office, my thoughts and worries are only of her and her child.

May 12, 2005, 9 AM. Ten-year-old Ashley comes with an 8-mm benign nevus of the scalp. It is hard to follow because of the thick hair in the posterior occipital region. The mother takes a solid 2 minutes to find the lesion, as it is hidden in the thicket. I tell her that this procedure will take 15 minutes under local anesthetic, and that she can hold her daughter's hand in the operating room. As we get up, she informs me that she has some questions, and I, suspended on one foot, say, "Shoot."

Question: Will you have to shave her head?

Answer: Yes, but just enough to work.

Q: Can't I just hold her hair open for you?

A: No, your fingers would be in the sterile field.

Q: Did you sterilize your shaver?

A: I clean the cutting edge with antiseptic, of course.

Q: You know, I know a lady who got hepatitis at a nail salon. Exactly what solution did you use? Do you put the shaver in the sterilizer?

A: No, it would ruin it.

Q: Will you do a culture of the blades before the surgery?

A: No.

Q: This is my child, Dr. Zide, and I demand that you take all precautions in case of "nosocomial" possibilities. I read the *Times*, you know. Do you mind if I braid the hair on each side of the mole?

A: Yes.

Q: Have you ever had or heard of a death from this local anesthetic you intend to use?

A: No. I do need the adrenalin in it, though, to reduce bleeding.

Q: Adrenalin? My child may be allergic to that. I am. I got palpitations at my dentist's office from adrenalin. He told me I should never have it again.

A: That is because he gave you an arterial injection during the block. No one is allergic to adrenalin. It is a naturally made substance in the body.

Q: What about the preservative or the anesthetic itself? Should I sue my dentist?

A: I doubt it and no.

Q: So you are going to risk my child's life merely on doubt about the cause of my possible adrenalin allergy?

A: This is not about you.

Q: You may be a bit too cavalier for my liking.

A: Believe me, the local anesthetic is safe.

Q: And how will this surgery affect her going to camp this summer with short hair on the back of her head?

A: That is 6 months from now—it will not matter.

Q: Maybe to you, but the hair will be different lengths. That could traumatize my daughter during her brushing. She may have to alter her stroke count. And in the pool, she might get embarrassed.

A: I doubt it.

Q: You really should supply a waterproof scalp cover, gratis, in a serious case like this.

A: This is not major surgery.

Q: Maybe not to you. I had my child in therapy two times a week for 6 weeks in preparation for this invasion of her body.

A: This is a scalp mole.

Q: I bet you believe killing minks for fur is okay, too. Anyway, how close is this to her brain? Will you see it?

A: No, I am at least 5/8 inches away.

Q: Seems close to me. Is this over her motor strip? She may not be able to walk out of here after this.

A: She will.

Q: Okay, how many sutures will there be? I have to tell my mother. She will want them for our family tree DNA scrapbook.

A: Maybe eight.

Q: Will they dissolve by themselves?

A: Some of them; the surface stitches need removal.

Q: Do you have sutures the same color as her hair? If the wind blows her hair in gym, one of the boys might see it and make fun of her.

A: Mrs. Bigley, we do not have red sutures for red hair or brown sutures for brunettes. I cannot take it any longer. You'll have to leave. I cannot do the surgery.

Q: Why not? I trust you. I was just going to check off this box here, where it says I do not need to have this surgery discussed with me beforehand.

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