Correspondence and Brief Communications

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DOES ESTROGEN-BASED THERAPY ADD TO THE RISK OF AESTHETIC SURGERY?

Sir:

This correspondence is in response to the letter submitted by Melvin A. Shiffman, M.D., J.D., entitled "Estrogen and Thromboembolic Problems" (*Plast. Reconstr. Surg.* 110: 713, 2002). In his letter, Dr. Shiffman attempts to make a case that there are significant surgical risks of thromboembolism associated with the use of oral contraceptives and hormone replacement therapy, and that these risks are unrecognized by cosmetic surgeons who are, ultimately, legally liable for these postsurgical complications. On the basis of our review of the literature cited by Dr. Shiffman, we take strong exception to the opinions expressed in his letter.

Dr. Shiffman cites the 1998 *Physician's Desk Reference* Wyeth-Ayerst Laboratories product information for Lo/Ovral:

> "Blood clots and blockage of blood vessels are the most serious side effects of taking oral contraceptives and can be fatal. In particular, a clot in the legs can cause thrombophlebitis, and a clot that travels to the lungs can cause a sudden blockage of the vessel carrying blood to the lungs . . .. If you take oral contraceptives and need elective surgery, need to stay in bed for a prolonged illness . . . you may be at risk of developing blood clots. You should consult your doctor about stopping oral contraceptives 3 to 4 weeks before surgery and not taking oral contraceptives for 2 weeks after surgery or during bed rest."[1]

Dr. Shiffman opines, "despite this warning (*Physician's Desk Reference*), many cosmetic surgeons continue to ignore the *requirement* (italics ours) that oral contraceptives and postmenopausal hormones be stopped for weeks before and after elective cosmetic surgery." We know of no such "requirement" that is recognized as part of the current standard of care in plastic surgery, and we object to the use of the *Physician's Desk Reference* as an authoritative source for medical treatment. We can only presume that Dr. Shiffman's requirement for stopping birth control pills and postmenopausal hormones is contrived to establish a new standard of care for aesthetic surgery.

Using the same *Physician's Desk Reference* Wyeth-Ayerst product information piece, Dr. Shiffman neglected to inform us about the age-related risks of other methods of birth control compared with oral contraceptives or compared with the use of no contraception. In all women ages 15 to 34, there is a higher risk of dying using no fertility control than using oral contraceptives. In the 35- to 39-year-old "oral contraceptive, nonsmokers" group, there is still a higher risk of death with no fertility control than with the use of oral contraceptives. Only smokers over age 35 and nonsmokers over age 40 have a higher risk when taking oral contraceptives than women who use no fertility control.[1] Would Dr. Shiffman suggest that the plastic surgeon warn the 15- to 34-year-old patients that they should avoid using no fertility control to prevent risking their lives? Periodic abstinence also contributes to a higher risk of death than oral contraceptive use in women ages 15 to 29.[1] Should the plastic surgeon warn these patients to avoid abstinence?

Dr. Shiffman then expands his opinions: "If thrombophlebitis or pulmonary embolus occurs after any cosmetic surgery in a patient who has not been forewarned to cease the hormones, then the surgeon exposes himself to medical malpractice litigation. If the failure to *require* (italics ours) the patient to stop the hormones was more-likely-than-not (probable, more than 50 percent) to have caused the complication, then the physician may be held liable for negligence. This may be true even if the surgeon warned the patient about the possibility of thrombophlebitis, pulmonary embolus, and death and took precautions to prevent thrombophlebitis from occurring." He later notes: "If a decision is made to perform the (elective) surgery despite the patient's refusal to stop hormones, there may be a serious question brought up at litigation as to why the surgery was performed at all given that the patient did not have a *medical need* (italics ours) for the surgery. Of course, the *mercenary aspects* (italics ours) of performing elective surgery may be insinuated (in court)."

In his letter, Dr. Shiffman references the above opinions only with his own review article in the *American Journal of Cosmetic Surgery*, which makes no mention of any of these remarkable new concepts.[2]

If we can take the liberty of summarizing Dr. Shiffman's opinions, the cosmetic surgeon may be held legally liable if a thromboembolic event occurs, and:

1. The patient has not been forewarned about the risks involved, including death.
2. The patient was warned but not required to stop the

hormones, and the probable cause of the embolus was the hormones.
3. The surgeon warned the patient *and* took precautions to prevent the possibility of embolism.
4. The patient did not have a medical need for the surgery.
5. There were mercenary aspects to the elective surgery.

It is a novel concept that the surgeon may be held liable when the patient has given informed consent and the surgeon took adequate preventative measures, the elective cosmetic procedure was not medically necessary, or there were mercenary aspects to the surgery. It seems that there is no existing standard of care that would satisfy Dr. Shiffman, because all cosmetic surgery is the patient's choice and the surgeon is compensated to some extent.

The scientific justifications that are used by Dr. Shiffman are just as disturbing. He notes, "Oral contraceptive pills are well known to cause an increased risk for venous thromboembolism; this increased risk is both attributable to the estrogen and dose-related." With the exception of the *Physician's Desk Reference*, only one of Dr. Shiffman's references addresses specific risks in surgical patients: "the incidence of postoperative thromboembolism in those using oral contraceptives during the month before surgery was almost twice as high (0.5 percent versus 0.96 percent) as that in those not doing so," but "the difference was not significant."[3] Dr. Shiffman has failed to show any evidence of a significant risk in surgical patients who are taking oral contraceptives or hormone replacement therapy in the literature he cites.

Dr. Shiffman made several notable omissions in his assessment of these references in regard to cause and effect:

1. Any apparent increased risk associated with hormone replacement therapy is no longer in effect after the first year of use.[4–6]
2. Several studies relate a significant bias in reporting because of common sense associations: "Clinicians may be more apt to suspect [venous thromboembolism] in [oral contraceptive] users than in nonusers. Thus, women who complain of leg pain, for example, are perhaps more likely to be hospitalized and receive a diagnosis of [venous thromboembolism] if they have been using [oral contraceptives], thereby artificially increasing the risk estimate."[7] "Women using hormone replacement therapy, like women using oral contraceptives, might be subject to referral or diagnostic bias, which would overestimate the risk of venous thromboembolism."[4]
3. Two reports did not demonstrate any cause-and-effect relationship between these drugs and thromboembolism: "These studies do not provide evidence for a cause-and-effect relationship between [oral contraceptives] containing desogestrel and gestodene, and [venous thromboembolism]."[7] Another study on hormone replacement therapy found that "this case-control study of older women, unselected for other thrombotic risk factors, does not support the commonly held assumption that replacement estrogen increases the risk of venous thrombosis."[8]

Dr. Shiffman fails to mention the adverse consequences of stopping estrogen-based hormones before elective surgery. Women of childbearing age who are forced to stop taking oral contraceptives run the risk of an unwanted pregnancy, which would be a direct result of Dr. Shiffman's "requirement." Those patients taking postmenopausal hormone therapy may encounter severe withdrawal symptoms if the therapy is discontinued. It is our opinion that it is unreasonable to require surgeons to assume the responsibility of birth control and hormone replacement therapies. These medical treatments extend beyond the expertise of plastic surgeons, and in fact, it is meddlesome for us to interfere with existing doctor-patient relationships.

In our opinion, Dr. Shiffman's letter offers no scientific proof that plastic surgeons put patients at significant risk by allowing them to undergo surgery and continue their estrogen-based therapy. His case for a new medical, and hence legal, "requirement" fails.

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IMMEDIATE RUPTURE OF BREAST IMPLANT FOLLOWING TRAUMA

Sir:

I have two concerns about the article entitled "Immediate Rupture of Breast Implant after Trauma" by Mason and

Hobby (*Plast. Reconstr. Surg.* 111: 2432, 2003), and I hope the authors will accept a voice of polite dissent and provide additional information. Some aspects of the article could be misleading to residents, practitioners, patients, litigators, and juries.

First, in the article as published, I do not find any information to substantiate the authors' contention that the implant had been intact just before the trauma. As the authors themselves point out, most ruptures occur without trauma and are symptomless for more than a year; such silent ruptures are fairly common. I think it is safe to say that most experienced plastic surgeons have encountered silent, undiagnosed, complete ruptures. There was no mention in the article of any pretrauma studies such as ultrasound, magnetic resonance imaging, or endoscopy demonstrating that the implants had not already failed before the trauma. It would appear from the report that had there not been a hematoma to force an operation, the rupture might have remained undetected. This distinction may seem of little importance, and perhaps in the more rational medicolegal climate in the United Kingdom that might be true. However, given the medicolegal situation prevailing in our courts, it is extremely important that the concept of preexisting silent failure be well understood, along with the fact that without documentation of pretraumatic implant integrity, it cannot be said with any degree of medical certainty that the trauma caused the rupture. Any additional information the authors could provide here to clarify would be worthwhile and welcome.

The second comment is a correction. The wording of the article implies that "gel bleed" is a form of implant failure, which it is not. By way of clarification, it should be noted that all intact gel implants "bleed" microscopic quantities of low-molecular-weight silicone through the shell, both in vivo and in vitro. It should also be noted that *within a patient*, the gel that has "bled" does not remain detectable on the surface of an intact implant, probably passing on into or through the capsule. If even a very thin layer of gel is detectable on the implant surface in vivo, then, with very few exceptions, that implant has failed and has a tiny focal failure. This important point should be made clearer.

These points aside, I think the authors have done a service to the plastic surgery community in providing this case report. I look forward to reading their comments.

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REPLY

Sir:

I am very pleased to have read Dr. Dowden's comments and would like to reply. In almost 30 years' experience in performing breast implant surgery, I agree that silent rupture is the norm; we have all seen cases that fit into this category.

In this particular case, it had been 7 years since the patient's operation, and she had experienced no prior clinical problems. The diagnosis was made based on the acute history of less than 24 hours and on the clinical findings, which suggests to me a high degree of probability of acute implant rupture before the operation, as supported by ultrasound findings. I had our hospital photographer ready to take the pictures presented in the article. To my mind, the pictures support acute rupture because we encountered hematoma, free silicone, and an anatomically shaped implant with a large tear at the upper pole, which is the site on the prosthesis where maximum pressure would be exerted on compression. We did not have any pretrauma investigations, but on the grounds of probabilities, I believe that acute rupture occurred in this case.

There is then the question of reliability of ultrasound and magnetic resonance imaging investigations. An open operation is the only procedure to provide an indisputable result.

I generally advise that ultrasound is 75 percent accurate in diagnosing rupture and that magnetic resonance imaging is 98 percent accurate. I have operated on magnetic resonance imaging–diagnosed rupture to find an intact prosthesis at the operation. With these investigations, one can only advise on the probabilities. Maybe this reply will stimulate further questioning.

I entirely agree that gel bleed should not be equated with rupture and am happy for this to be clarified.

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THE SUN FLAP CLOSURE

Sir:

I read with interest the article by Brian A. Toth and Stephen P. Daane entitled "Purse-String Mastectomy with Immediate Prosthetic Reconstruction: An Improved Skin-Sparing Technique for Small Breasts" (*Plast. Reconstr. Surg.* 111: 2333, 2003). I would like to comment that although the purse-string closure is adequate in a skin-sparing mastectomy, it does take a considerable amount of time before the crusting falls off, usually more than a month. The sun flap closure, which was described in 1999 by Rahban, Wilde, and Chasan,[1] describes a multiple triangular flap closure of the skin-sparing mastectomy site. This allows for a much cleaner-appearing incision, and the scar heals considerably faster (Fig. 1).

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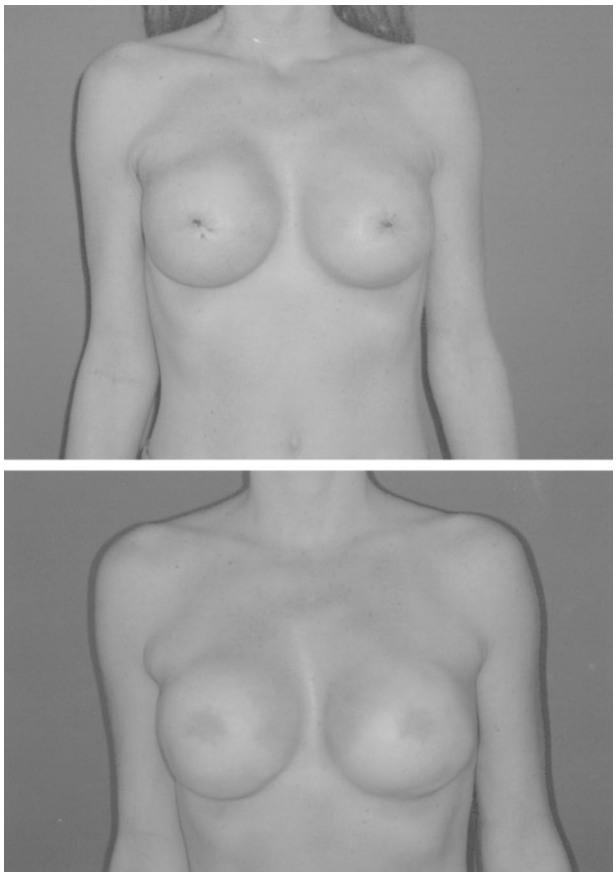

FIG. 1. Sun flap closure at 1 week (*above*) and 6 weeks (*below*).

REPLY

Sir:

I applaud Dr. Chasan and his colleagues for their excellent contribution and for pursuing skin-sparing alternatives. The sun flap closure described by them in 1999 is an excellent technique. We continue to use it on many occasions. It is of particular interest to us when a serial excision of congenital nevus on the face would leave a disfiguring linear scar. With regard to the breast, we believe that there is little difference in the ultimate appearance of the areola 6 weeks postoperatively, whether the sun flap or the purse-string method is used. Our concern with the breast is the potential for ischemia and necrosis at the tips of the sun flaps, and for this reason we have used the purse-string technique. In both instances, the scar left behind can be nicely concealed by either a full-thickness skin graft or by areolar tattooing, which results in the ultimate appearance of a "mastectomy without a scar." As with our technique, it is best used in the small-breasted patient in whom reconstruction is being performed using alloplastic material.

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BIFID MEDIAN NERVE REVISITED: IMAGING AND CLINICAL ASPECTS

Sir:

Anatomic variations of the median nerve are not uncommon. They are usually detected incidentally at the time of an operation or during imaging studies, and several types of variations have been reported in the literature.[1–6] In this report, in addition to presenting a case of bifid median nerve, we also touch on some clinical aspects pertaining to this variation.

During ultrasonographic measurements for median nerve evaluation in a control group of asymptomatic patients [for comparison with carpal tunnel syndrome patients (unpublished data)], we incidentally observed a bifid median nerve in a 45-year-old woman (Fig. 1). The measurements were carried out both in longitudinal and in axial sections, starting from the distal forearm down to the distal portion of the carpal tunnel. The bifid median nerve in her right upper extremity was observed starting 7 cm proximal to the carpal tunnel.

Lanz[7] had proposed a detailed anatomical classification of the course of the median nerve in the carpal tunnel in four groups: variations of the thenar branch, accessory branches of the median nerve at the distal carpal tunnel, high division of the median nerve (bifid median nerve), and accessory branches proximal to the carpal tunnel. The incidence of bifid median nerve cases in the normal population can hardly be estimated because the pertinent literature mainly comprises studies of patients with carpal tunnel syndrome.[4,7] Accompanying anomalies have been reported in individuals with bifid median nerves and include a double compartment in the carpal tunnel,[8] agenesis of the thenar eminence and bony malformation of the radial column of the wrist,[3] and a median nerve that passes through a hole in the flexor digitorum superficialis tendon of the middle finger.[9] Concomitant vascular anomalies, especially persistent median arteries, have also been reported.[1,10,11]

Ultrasonography and magnetic resonance imaging are quite effective in disclosing anatomic variations in the median nerve.[12,13] Propeck et al.[13] suggested that these techniques are

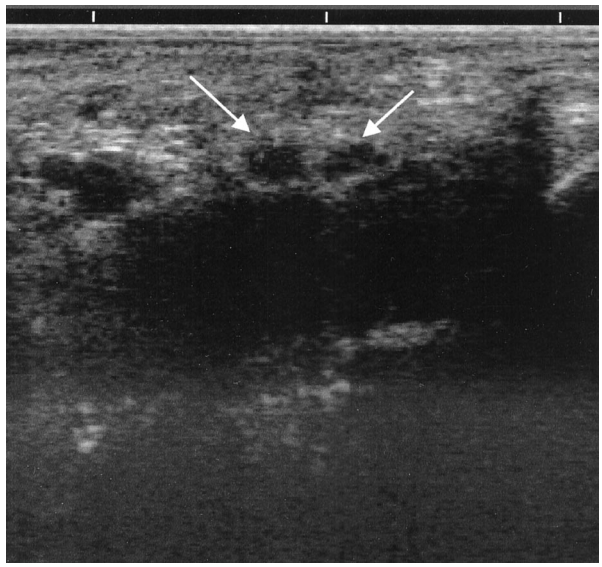

FIG. 1. In this ultrasonographic image of the patient (axial section), the *arrows* point to the bifid median nerve.

also useful in diagnosing the bifid median nerve preoperatively to avoid nerve injury during carpal tunnel release or other wrist operations. High-resolution[2] and color Doppler ultrasonography for the preoperative diagnosis of a persistent median artery, especially in patients with carpal tunnel syndrome, is, again, indisputably important because the artery has a superficial course very close to the transverse carpal ligament.[14]

Overall, in presenting our fortuitous observation of a bifid median nerve, we have drawn attention to the possibility of such a variation in asymptomatic individuals. Besides underscoring the convenient role of ultrasonography in delineating such cases, we have also highlighted its necessity preoperatively in patients with carpal tunnel syndrome, for better anatomic orientation of the surgeons. Physicians must exercise vigilance during imaging in order not to misinterpret such variations as pathologic features.

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QUANTITATIVE ASSESSMENT OF BROW POSITION: A NEW MEASUREMENT SYSTEM

Sir:

The assessment of results obtained by brow-lifting procedures is usually subjective, with the use of side-by-side preoperative and postoperative photographs. We describe a brow position measurement system that allows the objective measurement of changes associated with brow-lifting procedures. This method was developed for a clinical trial testing the effect of the ThermaCool TC radiofrequency device (Thermage, Inc., Hayward, Calif.) on changes in brow position.

There have been some reports in the literature on the use of objective measurement techniques to assess the results of surgical and nonsurgical brow lift procedures.[1–4] In these studies, a midpupil to upper eyebrow measurement was used to determine the extent of posttreatment changes. Troilius[1] added measurements of vertical height from the medial and lateral canthi to the top of the brow. In our process, we have used the medial canthus as a reference point because it is an invariant facial feature[5] and would not be expected to shift as a result of standard brow lift procedures. The difficulty in using the center of the pupil is twofold. First, defining the

FIG. 1. Subject being photographed with chin in rest to maintain reproducible head position.

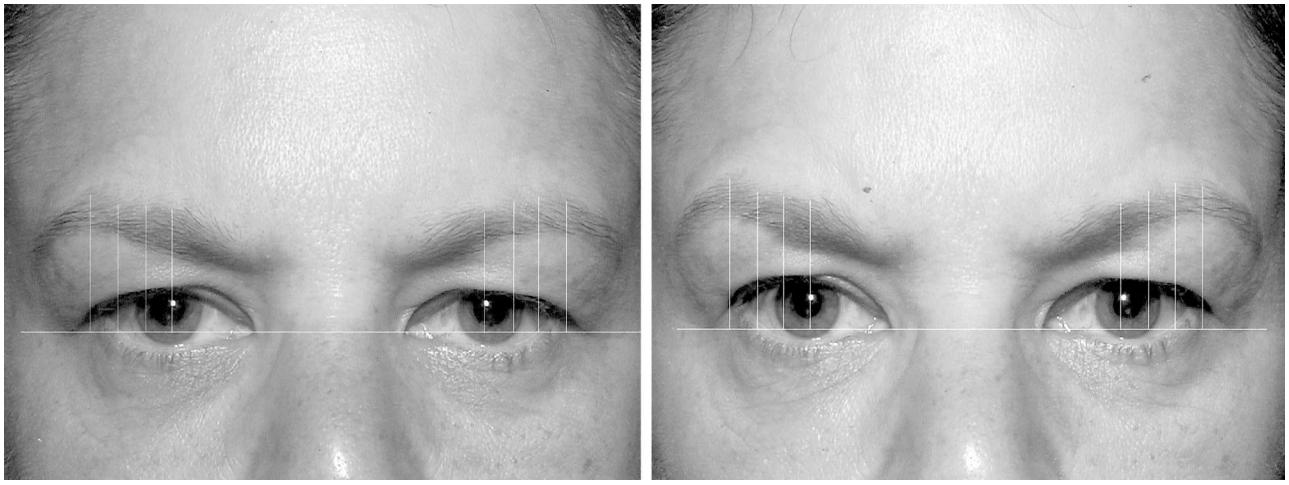

FIG. 2. Patient shown before treatment and 6 months after ThermaCool brow treatments. The right eyebrow has been elevated an average height of 2.56 mm, and the left eyebrow has been elevated an average height of 2.15 mm.

center of the pupil is difficult, and second, small changes in head position will affect the measurements. Using the center of the pupil also requires that the subject look at exactly the same spot each time.

The patient is photographed using a digital camera in a full-face orientation. The distance between the camera and the subject is held constant with a head jig consisting of a camera mount, lights, and chin rest (Fig. 1). The height of the camera, position of the lights, and distance between all units are fixed in the jig for consistent photographic lighting, focus, and resolution. The subject places his or her chin on the rest and faces the camera. The difference in the anterior/posterior tilt of the head between the preprocedure and postprocedure photographs must be less than 10 degrees or significant measurement errors will be introduced. Preprocedure digital photographs are used to position the subject for the postprocedure photographs.

The photographs are analyzed using Adobe Photoshop software (Adobe, San Jose, Calif.). A line is drawn between the medial canthi and extends in a straight line across the periorbital area, using the apex of the canthus as a reference point. Points at 1.5, 2.0, 2.5, and 3.0 mm lateral to the medial canthus are marked on this line. From each of these points, a vertical line is drawn perpendicularly to the top of the eyebrow. The length of each these four lines is measured in the preprocedure and postprocedure photographs for each side. The differences between the preprocedure and postprocedure images are calculated, and a mean value is computed (Fig. 2). The measurement error for a preprocedure to postprocedure tilt of less than 5 degrees, pixel size, and measurement variation is ± 0.5 mm.

For the most part, the assessment of brow-lifting results has been subjective, based on purely visual criteria. Subjective criteria, however, make it difficult to assess the outcome of different techniques and procedures. Such procedures may be performed at different times by different surgeons and rated by different individuals. Quantitative measures are beneficial when there is a desire to compare and contrast the results of different techniques. The measurement system we have described tends to focus on changes in the middle to lateral portion of the eyebrow, yet we believe that this is the region that is more aesthetically targeted than the medial eyebrow.

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NASAL RECONSTRUCTION WITH IRRADIATED HOMOGRAFT COSTAL CARTILAGE

Sir:

I read the recent article "Reconstruction with Irradiated Homograft Costal Cartilage" (*Plast. Reconstr. Surg.* 111: 2405, 2003) with interest and some dismay. The authors (B. Strauch and S. G. Wallach) have not performed a comprehensive

review of the literature. They failed to refer to my article "Irradiated Homologous Costal Cartilage for Augmentation Rhinoplasty" (*Ann. Plast. Surg.* 25: 317, 1990), which presents one of the largest series of irradiated costal cartilage grafts to the nasal dorsum, involving 27 grafts in 24 patients.

I find interesting contrasts between the two series. Strauch and Wallach report no infection, whereas I had two recurrent infections in the same patient 12 and 14 days postoperatively, which is consistent with other authors. It is interesting that the only infection in my series occurred in a secondary rhinoplasty where there was obvious scar tissue and which may have compromised the vascular bed. It would be interesting to know the breakdown of primary versus secondary rhinoplasties in Strauch and Wallach's series.

Strauch and Wallach report no warping or bending of the cartilage, whereas most authors include this as a complication.[1] In my series, it accounted for a 14.8 percent incidence, and the irradiation dose used was 2.5 million rad. This was lower than the 3 to 4 million rad that Strauch and Wallach use but higher than that reported by Adams et al.[2] This increased radiation dose may indeed hold the key to preventing warping, rendering Gibson's principle of balanced cross-sections obsolete.

Strauch and Wallach report one late partial resorption over 12 years. My series resulted in no resorption, although the follow-up of up to 27 months was much shorter. Interestingly, Alechniewicz et al.[3] showed that resorption already occurs within 3 to 4 weeks after implantation, which may preclude the need for prolonged follow-up. In any case, as Strauch and Wallach suggest, even if resorption occurs, "it is believed that the volume deficit is replaced by fibrous tissue."

I concur with Strauch and Wallach that irradiated homologous costal cartilage has the qualities of an ideal implant and suggest its usage be considered in augmentation rhinoplasty when septal cartilage is insufficient.

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REPLY

Sir:

We apologize for not referencing Dr. Lefkovits's article, "Irradiated Homologous Costal Cartilage for Augmentation Rhinoplasty" (*Ann. Plast. Surg.* 25: 317, 1990).

We are pleased that he agrees with the conclusions in our article. Dr. Lefkovits reviewed his experience in 24 patients who underwent closed rhinoplasty using irradiated homograft costal cartilage for nasal dorsal augmentation. None of the grafts were secured to the underlying nasal or cartilaginous framework; however, some were secured using a Prolene suture brought out through the skin using a tie-over Xeroform bolster dressing. The average follow-up of his patients was 6 months; the majority were followed for 3 months or less, and the longest follow-up was 27 months.

We originally delayed reporting our experience until a longer follow-up of our patients was obtained. Our longest follow-up to date is almost 12 years. Unlike Dr. Lefkovits's experience, the majority of grafts in our series were used as columella struts (32 percent), followed by dorsal onlay grafts (22 percent) and spreader grafts (22 percent). For the first three patients, we did not secure the grafts in place, but for all the other patients in our series, the grafts were secured. Two grafts that were not secured became displaced.

We thank Dr. Lefkovits for pointing out that his article was not referenced, and we encourage him to publish his long-term experience so that our conclusions can be supported by his work as well.

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HISTORY REGURGITATED

Sir:

I read with interest the recollections of Dr. John Rosdeutscher in the June of 2003 issue of the *Journal*.[1] His summation of the complex relationships between otolaryngology and plastic surgery over the past half-century are largely accurate. At some points, I must confess, it was difficult to read without raising an eyebrow. I know because I was there. In all candor, had I been the narrator from the plastic and reconstructive viewpoint, with the memory of all the unseemly and endless discord from both sides, I would doubtless have also been guilty of some bias myself.

My principal reason for writing is to correct a reference to me by the author, which is also a frequently held misconception among my colleagues. I was *not* Neal Owens's resident. When I went to New Orleans in 1958, it was ostensibly to be his junior associate. I arrived fully trained by Ferris Smith and Steffensen in Michigan and ready for my "boards." I was immediately assigned to improve the badly neglected plastic surgery service on the Tulane side of Charity Hospital. To my dismay, I quickly learned how the system worked in the bad old days when our specialty was controlled with an iron fist by a handful of unique men. Neal Owens was certainly one of them.

Dr. Rosdeutscher's narration of the incident when I was caught learning rhinoplasty from Dr. Anderson, an otolaryngologist who was not only an excellent surgeon but also a kind and patient teacher, is accurate. Where else was I going to learn this, the most difficult of all aesthetic operations? Certainly not from the plastic and reconstructive side in that particular setting! The threat by Neal Owens of seeing to it that I flunked my "boards" if he ever caught me at it again is also accurate. Sadly, it is reflective of how things worked in those days. Ironically, it is a curious fact that this incident

occurred, of all places, in the Ear, Nose, and Throat Infirmary of New Orleans. It can also be said that this regrettable ongoing discord led directly to the eventual intervention of the Federal Trade Commission against our specialty when I had grown into the American Society of Plastic and Reconstructive Surgeons leadership in the late 1970s and early 1980s. Talk about a full circle!

As fate would have it, I lasted about a year and half, pretty much par for the course in the long line of previous would-be associates of Dr. Owens. I then moved West to work with another "name"—but that is a whole other story.

For me and my contemporaries, the far sound of trumpets dims and the shadows grow longer each year. For our current generation, I imagine this might as well be an account of the Battle of Gettysburg. I suspect if we were to ask one of our young members if he or she bothered to read all of this, and if so, what were his or her impressions, they might respond in the same fashion as Rhett Butler did to Scarlett O'Hara: "Frankly, my dear, I don't give a damn!"

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REPLY

Sir:

I thank Dr. Gorney for his response to my article.[1] I wish I had taken the opportunity to talk with him personally during my research on this article. As a young plastic surgeon myself, out of training for just over 5 years, I hope that other young members are not as apathetic to this topic as Dr. Gorney may suspect.

I admit I am probably not the foremost expert on this topic, although I do have a sincere interest. As a surgeon who is board-certified in both otolaryngology and plastic surgery and as former chief of both otolaryngology and plastic surgery at Meharry Medical College (and the only one of each) for the last 3 years, I did feel that it was worthwhile to get down on paper a largely oral history. I did not mean this to be a definitive history but at least a starting point for many others to build upon.

Again, I greatly appreciate Dr. Gorney's correction and interest. I look forward to talking to him personally on this subject in the near future.

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IPSILATERAL MICROTIA IN MONOZYGOTIC TWINS: AN UNUSUAL CONCORDANT PHENOTYPE

Sir:

Craniofacial anomalies occur more frequently in twins (more likely monozygotic twins) and are usually nonconcordant.[1] Numerous isolated structural defects, including malformations and malformation complexes in twin and multiple births, have been described in the literature, but a concordant phenotype for ipsilateral microtia with confirmed monozygosity has not been reported previously. We report one such case of monozygotic twins with ipsilateral microtia. The issue of laterality in monozygotic twins, concordant for ipsilateral malformations, has been highlighted.

The patients, apparently identical male twins, were born following a 35-week gestation to a gravida 1, 35-year-old woman with no family history of multiple pregnancies or ear deformities, as well as no history of maternal illness or drug intake during the pregnancy.

Neonatal examination revealed that both twins had right microtia with an atretic external ear and an absent external auditory canal, but there was no evidence of facial asymmetry or other dysmorphic features, including cleft lip or palate (Fig. 1). There were no other abnormalities, including left pinna. Cytogenetic analysis of both twins showed a normal male karyotype, and DNA testing confirmed monozygosity.

Multiple births are defined as more than one fetus being born of a pregnant woman.[2] The incidence of multiple births has been increasing since 1970. However, the incidence of monozygotic twinning has been relatively constant throughout the world (approximately four per 1000 births), being independent of race, maternal age, and parity.[2,3]

Multifetal pregnancies are considered high risk in view of the increased incidence of fetal malformations resulting in significant obstetric and neonatal complications.

Microtia affects approximately 0.03 percent of newborns,[4] with half the incidences occurring as an isolated malformation; the remainder occur in association with syndromes, particularly hemifacial microsomia. Bennun et al.[5] suggest that microtia, in fact, should be considered a microform of hemifacial microsomia.

Schinzel et al.[6] divided the structural defects occurring in monozygotic twins into three categories. The first group includes defects resulting from poor formation of a tissue, described as early malformation and malformation complexes. These defects are presumably caused by the same agent, giving rise to monozygotic twinning. A few of the reported defects in this category are conjoined twins, amorphous fetus, and sacrococcygeal teratoma.

The second group of structural defects represents vascular disruptions secondary to vascular interconnections within the conjoined placenta, leading to the disruption of previously normal tissues. The variety of problems, which could perhaps have occurred secondary to an unequal vascular exchange, includes acardiac twin, vascular disruptions secondary to the death of a twin in utero, and an asymmetric growth from an unbalanced circulation.

The last group includes structural deformations as a consequence of uterine constraint. During the last few weeks of gestation, the impact of uterine constraint limits the rate of growth and can lead to mechanically induced deformations (e.g., aberrant foot positioning). These abnormalities are more frequent in twins than in single births and may occur in both monozygotic as well as dizygotic twins.

An extensive search of the literature failed to reveal any

FIG. 1. Monozygotic twin pair concordant for ipsilateral right microtia.

specific information regarding laterality of concordant/discordant defects in twins. Therefore, further research is required to elucidate the following issues: (1) If the twins are concordant for a given congenital anomaly, is it likely to be ipsilateral or contralateral? (2) Is this going to be consistent for all or some of the anomalies?

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RECTUS ABDOMINIS MUSCLE FLAP COVERAGE OF AN OPEN MEDIASTINUM IN A 30-DAY-OLD INFANT

Sir:

Infants undergoing operations for congenital heart disease may experience intraoperative changes in the volume of the mediastinal contents from the transplantation of larger donor organs, or edema and dilatation of existing cardiovasculature. Mediastinal closure in this setting causes hemodynamic and respiratory compromise. In these cases, muscle flaps provide durable and compliant mediastinal coverage with less compression than direct sternal closure.[1] Muscle

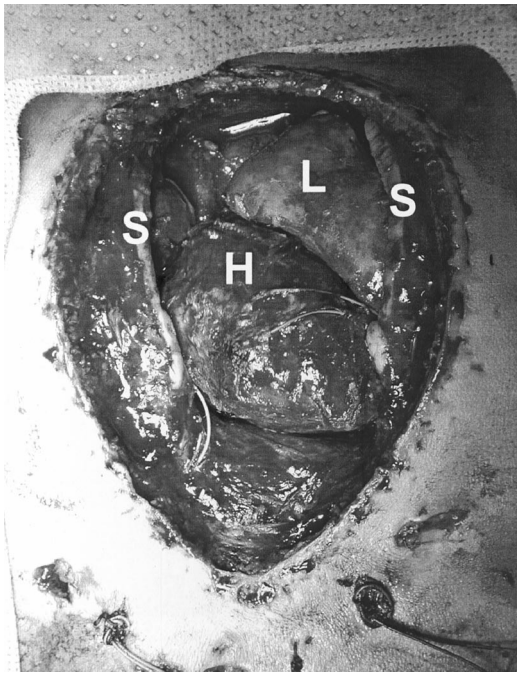

FIG. 1. Preoperative mediastinal wound. The heart (*H*), sternal halves (*S*), costal cartilages, and a portion of the left lung (*L*) are exposed.

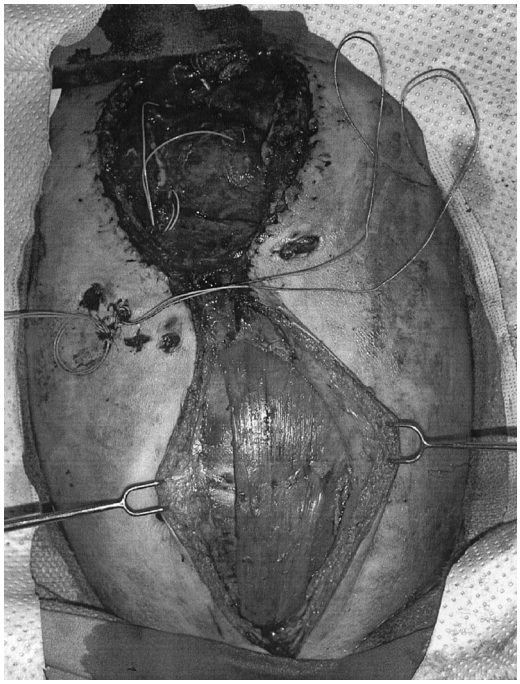

FIG. 2. The left rectus abdominis muscle dissected from the rectus sheath.

flaps also reduce the risk of mediastinal infection and simplify postoperative care.[2]

The rectus abdominis muscle in infants, though thin, is wide and long. Its use for partial mediastinal closure and mediastinal closure with multiple muscle flaps is well documented.[1] The use of the muscle as an alternative to pectoralis major muscle flaps to prevent breast bud injury has also been proposed for older pediatric patients.[2] However, its use for single-flap coverage of large mediastinal wounds in infants has rarely been reported.[3] We herein report the use of a single rectus abdominis muscle flap for complete mediastinal coverage in a 30-day-old patient, the youngest reported to date.

A full-term, 4.1-kg male infant underwent an arterial switch procedure on the seventh day of life for transposition of the great vessels. Upon discontinuation of cardiopulmonary bypass, the left ventricle became massively dilated (Fig. 1). Because mediastinal closure resulted in hemodynamic deterioration, the mediastinum was closed with Gore-Tex mesh as a temporizing measure. Postoperative multisystem organ failure required treatment with extracorporal membrane oxygenation, dialysis, ventilation, vasopressin, and steroid infusions. Three subsequent attempts to close the mediastinum were also unsuccessful. When, on the 30th day of life, attempted closure with advancement of fasciocutaneous flaps from the chest resulted in hemodynamic deterioration, a rectus abdominis muscle flap was used for closure. Based on the deep superior epigastric pedicle, the flap was elevated through a paramedian incision under loupe magnification (Fig. 2). The rectus sheath, although extremely thin, was dissected from the muscle and preserved for abdominal closure. After elevation to the level of the costal margin, the muscle was rotated and secured over the mediastinum (Fig. 3). The muscle was wide and long enough to provide coverage to the entire mediastinum and also an area of the left lung exposed in the superolateral portion of the wound (Fig. 4) without adversely affecting hemodynamic indices. Due to the

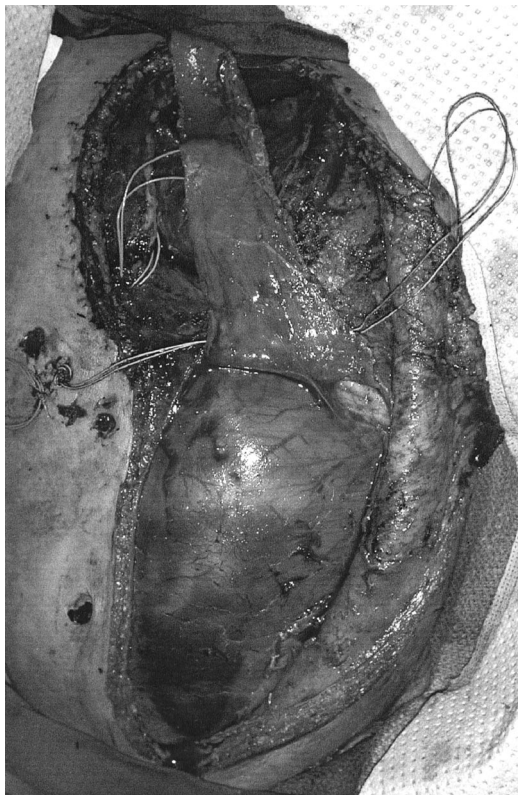

FIG. 3. After dissection, the left rectus abdominis muscle is rotated to cover the mediastinal defect. Loops of bowel and abundant ascites are visible through the thin rectus sheath.

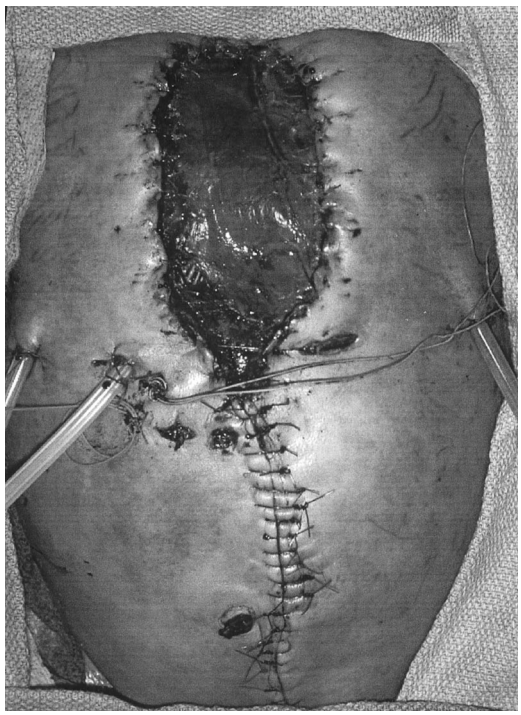

FIG. 4. Flap inset with complete mediastinum coverage and closure of the donor site.

patient's overall clinical instability, skin graft coverage was deferred at this operation, and the flap was dressed with Xeroform gauze and an occlusive dressing.

The postoperative course was complicated by continued multisystem organ failure. Because of a poor prognosis for ultimate recovery, support was withdrawn on the 67th day of life, 37 days after rectus flap coverage of the mediastinum. Despite a lack of skin coverage, the flap exhibited excellent viability, and there was no evidence of mediastinal infection in the postoperative period.

The use of muscle flaps has substantially improved the management of pediatric open mediastinal wounds.[2,4] In cases of expanded volume of mediastinal contents, the use of chest wall fasciocutaneous flaps, pectoralis major muscle flaps, or myocutaneous flaps may produce mediastinal compression because their use requires advancement in the direction of tension of the wound. Because the rectus abdominis muscle is rotated into the mediastinal wound and because of its width and length, this flap allows for complete mediastinal coverage without significant compression and limits potential developmental disturbances from flap harvest to a single donor site. We believe that these properties make the rectus abdominis muscle flap a good choice for mediastinal closure in infants. Though studies have shown limited long-term functional deficits in adult patients with transverse rectus abdominis musculocutaneous flaps,[5,6] the long-term effects of rectus flap harvest on the growth and development of children are unknown and deserve study.
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LOWER LIP RECONSTRUCTION: RUDKIN TECHNIQUE AND BERNARD-WEBSTER TECHNIQUE

Sir:

We read with great interest the article by Rudkin et al.,[1] which describes their experience with lower lip reconstruction using inferiorly based nasolabial flaps. A point of special interest for us was the excellent anterior projection at the reconstructed vermilion obtainable with such a technique. This is exemplified in the profile photograph of the first case shown in their article on page 811 of the February of 2003 issue of the *Journal*. In this particular case, the defect was laterally extensive, involving most of the vermilion, but it was not vertically extensive. Indeed, we think that the technique described by Rudkin and colleagues is most suitable for such horizontal defects because the entire volume of the flaps can be used to restore vermilion volume and projection.

Other techniques may be considered in the reconstruction of vertically extensive defects, and the lateral advancement flaps described by Bernard and modified by Webster[2] may represent a better option. As opposed to Rudkin et al., we think that this classic technique provides good aesthetic and functional results. In our opinion, the major drawback of the Bernard-Webster technique is the reduced volume at the reconstructed vermilion; in most postsurgical patients, we observe a poor anterior projection at the vermilion, even when the midline is free of tension.

Interestingly, the major advantage of Rudkin et al.'s technique is the major drawback of the Bernard-Webster technique and vice versa. Would it be possible to combine the advantages of both techniques? An interesting idea for a modification of the Bernard-Webster technique would be to preserve the nasolabial skin and subcutaneous tissue and rotate it as additional flaps to increase the vermilion volume. The excellent results shown by Rudkin et al. in the first figure of their article inspire us to search for technical improvements.
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*LIE*POSUCTION

Sir:

We submit an unusual case of suction-assisted lipectomy. A healthy 45-year-old woman presented for a second opinion regarding her abdomen. Six months earlier she had under-

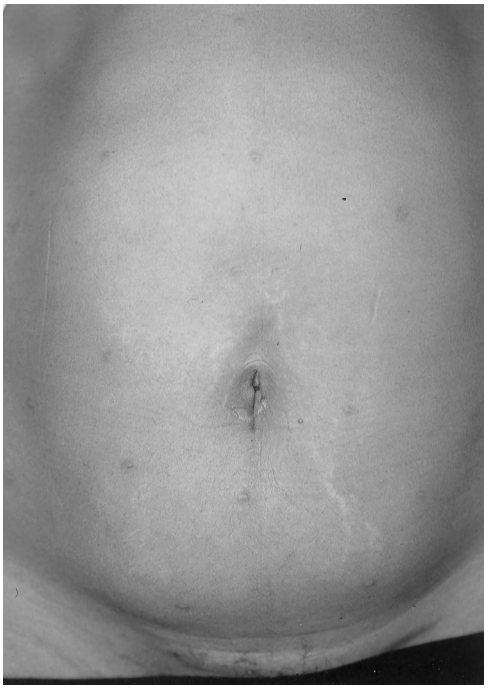

FIG. 1. Frontal view of patient's abdomen shows the healed incisions.

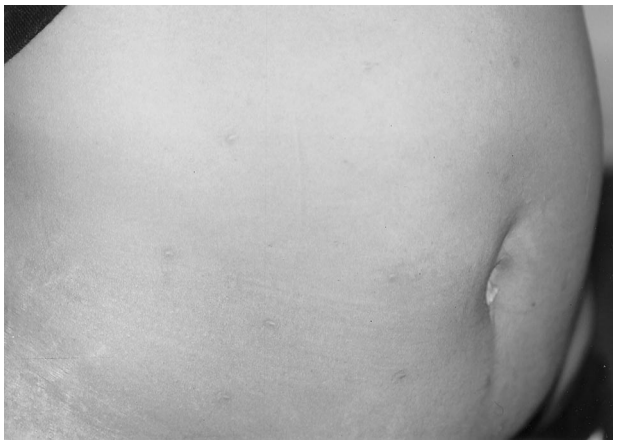

FIG. 2. Lateral view of the same patient.

gone liposuction by her gynecologist. She stated that the procedure was performed using local anesthesia and that multiple incisions were created for the suction instrument. She was disappointed with her results and wondered if further surgery could be performed to improve her appearance.

On physical examination, her abdomen exhibited 15 healed incisions (Figs. 1 and 2). Each measured approximately 0.5 cm, and they were circumferentially placed around the abdomen. They were slightly hyperpigmented, and some were slightly raised. The abdomen was unremarkable in that there was no pain to palpation, no significant subcutaneous scar formation, and no decreased sensation to touch.

This case demonstrates an unconventional surgical technique with questionable results. In addition, it underscores the importance of patients being informed about a physician's education and training. Data suggest that the general public as well as our medical colleagues have a misperception of plastic and reconstructive procedures and those performing them.[1] We encourage members of our plastic surgery specialty to continue to educate those who may have been lied to.

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BASAL CELL CARCINOMA ARISING IN SCARS: LATE PRESENTATION 16 YEARS AFTER A MIDLINE STERNOTOMY

Sir:

Basal cell carcinoma is the most common malignant skin neoplasm. Although these lesions usually arise in sun-exposed skin, there are a few reports in the literature of their association with chronic inflammation and scar tissue formation.[1–4] We describe a patient with a basal cell carcinoma that arose in a previously well-healed sternotomy scar.

A 68-year-old woman presented to the outpatient department with a nonhealing ulcer on her jugular notch. This was the site of a median sternotomy scar sustained following a mitral valve replacement performed 19 years earlier for rheumatic fever. The scar had healed completely after the operation and for the next 16 years did not give rise to any problems. Then it underwent repeated breakdown over the next 3 years.

Her medical history included rheumatoid arthritis, atrial fibrillation, and a total knee arthroplasty. She denied excessive sun exposure and did not have evidence of sun-damaged skin.

The chronic lesion had some features that were clinically suspicious on examination (Fig. 1, *left*) and therefore was widely excised down to fat. The resultant defect was closed directly with Z-plasties, as there was, in addition, an element of preexisting scar contracture.

Histopathologic analysis demonstrated a basal cell carcinoma with ulceration of the central epidermis and islands of basal cell associated with peripheral palisading extending into underlying dermis. The resection margins were clear. After the excision, good cosmetic and functional results were achieved at 1 month postoperatively (Fig. 1, *right*).

Burns and chronic inflammation are well-known circumstances in which malignant transformation occurs in the wound-healing process.[1,2,5] In the first century, Celsus, a Roman physician, noted and recorded the development of can-

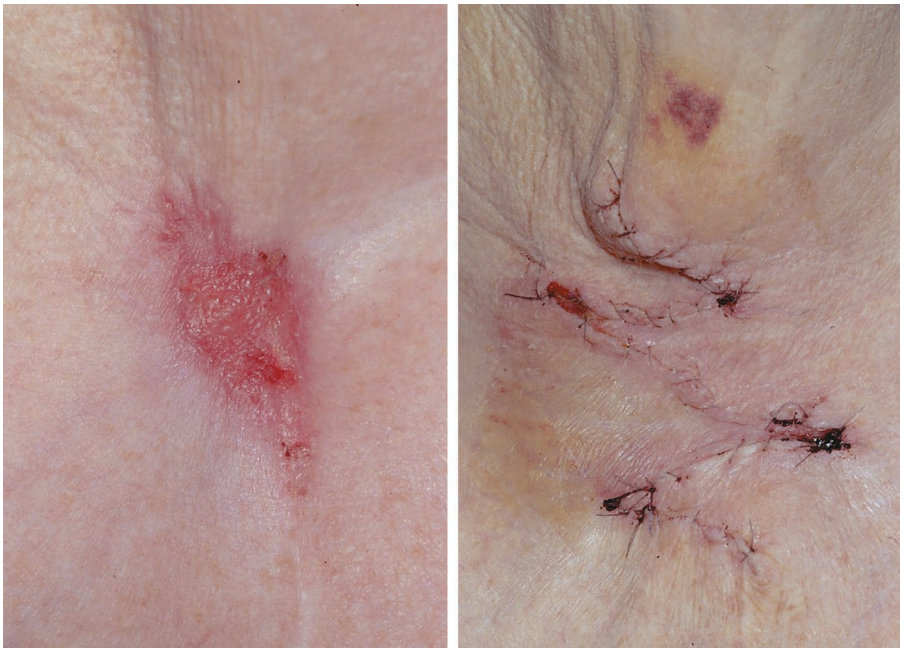

FIG. 1. (*Left*) Postoperative view of chronic lesion. The defect was closed directly with Z-plasties. (*Right*) Good cosmetic and functional results were achieved at 1 month postoperatively.

cer in burn scars. More recent interest in this subject began in 1828 after Jean-Nicolas Marjolin published his classic description of ulcers that originated from degenerating scars in the French medical dictionary *Dictionnaire de Médecine Pratique*.[4] The eponym that bears his name, Marjolin's ulcer, has since been used to describe malignant change in an area of chronic inflammation. The most common cell type is squamous cell carcinoma.

In contrast, basal cell carcinomas arising within surgical scars are uncommon.[6] They have been reported to arise from cleft lip repairs, inguinal herniorrhaphy scars, thyroidectomy scar, previous tracheostomy sites, and bacillus Calmette-Guérin vaccination sites.[6–10] To date, there have only been two reported cases of basal cell carcinoma within sternotomy scars. Dolan et al.[11] described only two cases, despite the title of their article suggesting otherwise. They reported a basal cell carcinoma arising in a median sternotomy scar 5 years after coronary bypass grafting and a basal cell carcinoma in a median sternotomy scar that had never healed after aortic valve replacement. The latter case was seen 9 months postoperatively. Our case is unique in view of the long latency period between the initial operation and malignant transformation.

The pathogenesis of carcinogenesis within scar tissue is not clearly understood. Several theories have been postulated. Scar tissue is poorly vascularized because the dense fibrosis obliterates many blood vessels. This facilitates the development of ulceration. Its thin and delicate epithelium is also more friable to minor trauma.[5] Avascular scar tissue has a tendency to heal slowly and a decreased resistance to infection. Dysplasia is thought to be initiated by repeated repair processes.[2,3] Other factors have also been suggested, including the misplacement of epithelial cells during epithelial regeneration, the release of toxins, especially in relation to burn scars, and foreign bodies within the scar.[5,12] As the majority of basal cell carcinomas occur in areas of the body more often exposed to the sun (i.e., the head and neck region), the site of the scar can be a contributing factor. Carcinogenesis in such cases is clearly a multifactorial process.

We emphasize the importance of excluding malignancy in any nonhealing lesion. With reference to sternotomy scars, clinicians should be wary of attributing all cases of wound breakdown to infection or local ischemia. Education of patients regarding long-term surveillance of all significant scars should also be encouraged.

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BIPEDICLED FREE SUPER-THIN FLAP HARVESTING FROM THE ANTERIOR CHEST

Sir:

We have reconstructed scar contractures with "super-thin" flaps (sometimes called subdermal vascular network flaps, in anatomical terms) since 1994.[1] Super-thin flap is the generic name of a flap that is primarily thinned down to the level where the subdermal vascular network can be seen through the minimal fat layer. They are useful for the reconstruction of contour-sensitive areas such as the face, neck, and hands.[1–4] The original flaps have a narrow skin pedicle, and microvascular augmentation (or supercharging) is useful for very long or large examples of these flaps. Previous studies have demonstrated their safety and efficacy, and recently we have started using bipedicled free super-thin flaps (completely free-type super-thin flaps). These flaps require double microvascular anastomoses, but they are freer to transfer than conventional skin-pedicled super-thin flaps. Many previous reports have dealt with flap harvesting from the chest, but there have been no reports about pectoral flaps resembling our extremely thin ones.

The patient was a 26-year-old man with severe burns to 33 percent of his total body surface area caused by a gas explosion. He had third-degree burns on the face, neck, chest, and upper and lower limbs. After emergency skin grafting, a neck scar contracture developed. Two years after the primary operation, he requested further reconstruction for aesthetic purposes, so we planned reconstruction with a super-thin flap. The donor site was limited to his anterior chest (Fig. 1). After scar resection and contracture releasing, a super-thin flap was harvested from the anterior chest on the major pectoral muscle with two vascular pedicles. The vessels attached to the flap were the internal thoracic perforator and the cutaneous branch of the lateral thoracic vessels (Fig. 2). After primary flap thinning to the layer where the subdermal vascular network could be seen through the minimal fat layer, the bilateral facial vessels were anastomosed with donor vessels under a microscope. The donor site was closed primarily. The flap survived completely, and the aesthetic results were excellent. The flap was extremely thin and matched the surrounding skin (Fig. 3). Donor-site morbidity was acceptable.

For the most part, our patients are extensively burned, and we usually cannot choose donor sites freely. Reconstruction with perforator flaps, which were developed recently, is another choice. However, in postburn reconstruction, there are not a few cases in which the skin in possible donor sites has already been damaged through skin graft harvesting. If the purpose of neck scar reconstruction is simply functional improvement, it is acceptable to use flaps from skin that has been scarred due to such harvesting. However, in the case of aesthetic reconstruction, we

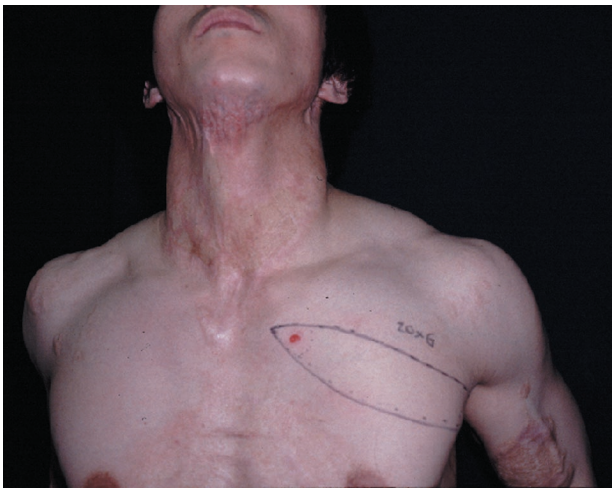

FIG. 1. Preoperative view. A completely free-type bipedicled super-thin flap (internal thoracic perforator, lateral thoracic vessels) was planned to reconstruct a neck scar.

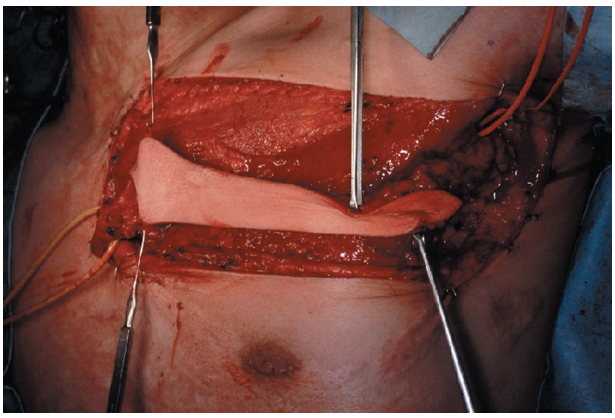

FIG. 2. Intraoperative view. The internal thoracic vessels and a cutaneous branch of the lateral thoracic vessels were attached to the flap. After flap elevation on the fascia of the major pectoral muscle, the flap was thinned to the layer where the subdermal vascular network could be seen with minimal remaining adipose tissue.

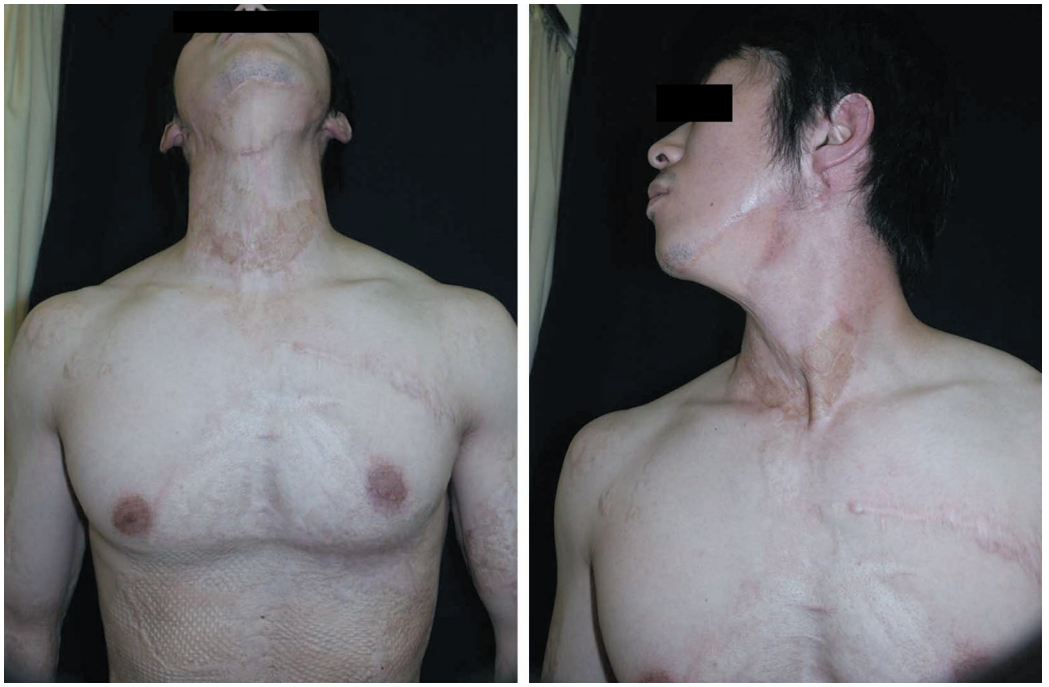

FIG. 3. Postoperative view at 2 years. The flap survived completely, and the aesthetic results were excellent. The flap is extremely thin and matches the surrounding skin.

have to harvest flaps from normal skin. If the anterior chest and back are intact, we select the donor site according to the proposed flap size. In cases where a large flap is needed, we select the back as the donor site and make conventional super-thin flaps as described previously.[1–4] Flap harvesting from the back is very useful for reconstructing large areas at one time, including the lower lip, chin, neck, and anterior chest. However, for reconstruction of small areas, the anterior chest makes a much better donor site than the back; the dermis is thinner, and the aesthetic results are vastly superior. However, the donor wounds tend to be more noticeable than those to the back because of the problem of the position of the nipple changing. In the present case, one nipple was moved higher, but by 2 years after the operation it had returned to an acceptable level.

From the back, we usually use the circumflex scapular vessels, superficial cervical vessels, and intercostal perforator (paraspinal latissimus dorsi perforator), as described in our previous reports on donor vessels.[3] From the chest, on the other hand, we usually use the internal thoracic perforator (pectoral intercostal perforator) and lateral thoracic vessels as donor vessels. Lateral thoracic vessels usually have cutaneous branches,[5] and they can be identified by preoperative color Doppler scanning.

In this correspondence, we introduce a new type of free super-thin flap, which can be considered as a combined perforator flap. However, our technique of primary flap thinning is unusual, and we can classify this flap as a super-thin flap, which we first reported in 1994.[1] It can be considered that excess adipose tissue is not only unnecessary but also obstructive for the survival of a perforator-based flap. This flap is useful for the reconstruction of contour-sensitive areas such as the anterior neck.

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CENTRAL SEGMENT EXPANSION METHOD FOR MANAGEMENT OF POSTBURN CONTRACTURE OF ANKLE

Sir:

Postburn contractures of the ankle are not very common when compared with contractures of other parts of the body. The patient is distressed because of his or her inability to walk properly. The usual method of treatment is release of the contracture and resurfacing with a skin graft. However, many surgeons prefer to use flaps for the resurfacing.

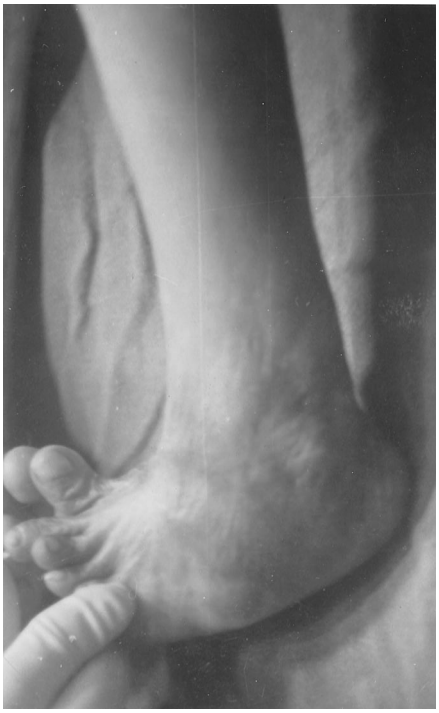

FIG. 1. Postburn ankle contracture.

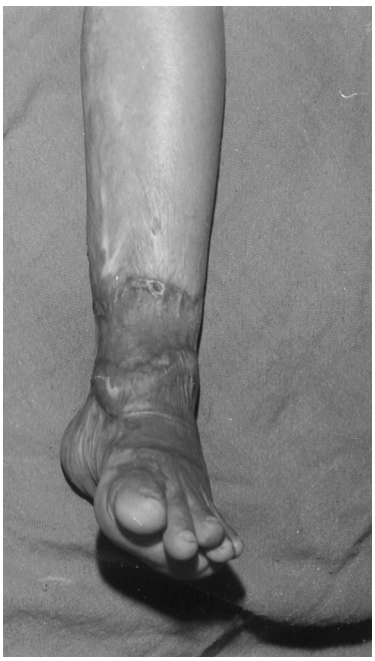

FIG. 2. Postoperative result after the central segment expansion method.

We describe a new concept in the management of postburn contractures in which the contracture is released in a way that a well-settled segment of skin is left behind over the joint, and defects created on either side of the well-settled segment of skin are grafted.[1] The splint is applied for 7 days, and no splint is applied thereafter. The graft contracts and exerts opposite directional pull on the well-settled skin segment, which is stretched.

We have successfully applied the same principle to managing knee, elbow, and finger web space contractures. We have managed three cases of ankle joint contracture using this method. The results of the procedure in three patients were satisfactory (Figs. 1 and 2). The advantages of our procedure are full-thickness, well-settled skin over the ankle, no donor-site deformity, and no need for splinting after the procedure.

We have achieved all of the advantages of the flap without the disadvantages. The procedure is satisfactory for the management of ankle contractures. We are also comparing the results of the flap versus central segment expansion for management of ankle contractures and will present the results soon.

This work was presented at the 37th National Conference of the Association of Plastic Surgeons of India, in Banglore, India, November of 2002.

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THE MIDLINE UMBILICUS

Sir:

I really enjoyed the article by Rohrich et al.[1] on the midline umbilicus. This was just great. It reminds me of an article I did years ago when I was once sued by a woman who claimed that she had too much scleral show after blepharoplasty. In the course of defending myself, it became clear that there were no published studies indicating the normative values for scleral show, so Susan Mackinnon and one of her medical students primarily performed our study that documented the incidence in the normal population and different positions of head gaze.

Once again, I really enjoyed this article.

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REPLY

Sir:

We thank Dr. Dellon for his kind comments regarding our article on the umbilicus. I agree with him that issues like this need to be documented. We should publish more normative data on common issues and problems in plastic surgery. That is one of the reasons I wanted to publish this article in the *Journal.*

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AN UNUSUAL CASE OF ATRAUMATIC COMPARTMENT SYNDROME DUE TO SUBCUTANEOUS INJECTION OF INSECTICIDE FOR SUICIDE ATTEMPT

Sir:

Pyrethroid insecticides are ion channel toxins that prolong neuronal excitation, but they are not directly cytotoxic. They are widely used, but there have been relatively few reports of systemic poisoning. Local effects, such as skin contamination producing paresthesia and ingestion producing gastrointestinal irritation, have also been seen. The slow absorption of pyrethroids across the skin usually prevents systemic poisoning.[1,2]

Intramuscular, intravenous, and subcutaneous injection of organophosphate compounds for suicide has been reported in the literature.[3,4] However, our research of the literature did not reveal any cases of subcutaneus injection of pyrethroid insecticide for suicide.

Local complications at the site of the injection, such as necrosis and abscesses, may be expected findings. The focus for the hand surgeon should be recognition and early débridement. Surgical débridement can be successfully performed in the subacute period under close observation in hemodynamically stable patients.[5]

As mentioned in the reported cases of organophosphate injection, another complication that can develop is acute atraumatic compartment syndrome, which can be potentially life- and limb-threatening. Prompt recognition followed by emergency fasciotomy is required to avoid permanent disability. A better understanding of the different clinical presentations may lead to improved outcomes through more expedient diagnosis and treatment.[6]

We herein present the case of a 30-year-old woman who was admitted to our clinic after having attempted suicide by subcutaneous injection of pyrethroid insecticide in the right arm. She did not have systemic signs of intoxication in either the acute or the subacute period. She had severe swelling of the affected limb, with the presence of edema, pain, and tension, and developed compartment syndrome in hours (Fig. 1). We performed a fasciotomy and superficial muscle débridement, with split-thickness skin grafting for coverage of the open wound (Fig. 2). We did not observe any long-term sequelae of motor loss, sensory disruption, or contracture.

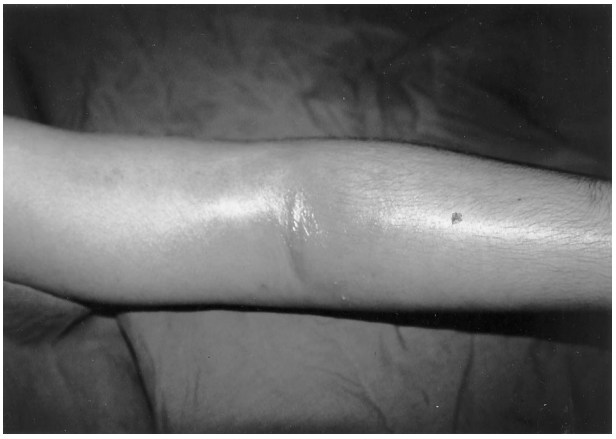

FIG. 1. Injection site of insecticide. Note the swelling of the forearm.

In conclusion, in cases of self-injection of insecticides, one must have a high index of suspicion to promptly recognize and treat acute atraumatic compartment syndrome with its possible systemic toxicity.

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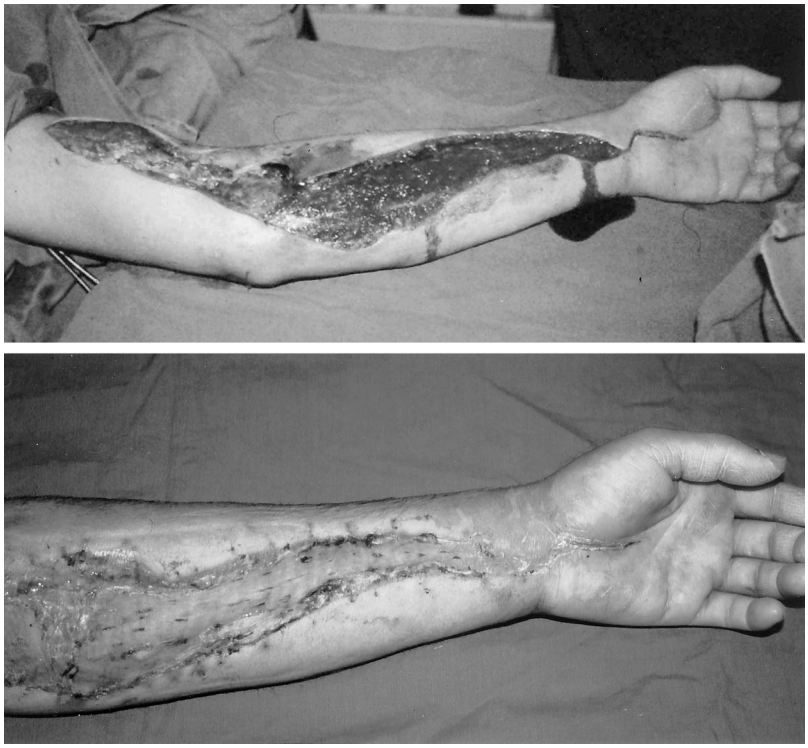

FIG. 2. Intraoperative view of the arm after fasciotomy and superficial muscle débridement. (*Above*) The necrotic area around the injection site is evident. (*Below*) Early postoperative view of the arm after coverage of the skin defect with split-thickness skin graft.

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A TRANSPOSITION OUTER RHOMBOID FLAP OVER AN INNER DEEPITHELIALIZED FLAP FOR COVERING SUBCUTANEOUS DEVICES

Sir:

Port-a-Cath systems are subcutaneous venous access devices similar to expansor injection domes in which the tube goes directly into a central vein (subclavian vein). They are generally positioned in the mammary region and are used predominantly in neoplastic patients to administer chemotherapeutic drugs, antibiotics, total parenteral nutrition, fluid, and blood products.[1]

One of the most frequent complications is the decubitus and partial extrusion of the device, especially in oncologic patients, because of cachexia, steroid treatment, and eventually chest irradiation. The skin over the device can become very thin, atrophic, anelastic, and finally ulcerated, requiring a surgical correction.[2–4]

We present a case in which a 75-year-old woman affected by a histiocytoma and treated with radiotherapy and chemotherapy was sent to our attention because the Port-a-Cath she had in the right mammary region was nearly extruded. The cutis in that region was so thin, anelastic, and radiodermatitic that the device could be visualized across the skin, especially in the superior half over the device (Fig. 1). This rhomboid-shaped area that was localized all around the insertion scar was marked, and a modified Dufourmentel flap was designed on the right inferior border of it. The difference between this flap and the classic Dufourmentel flap is that the inferior

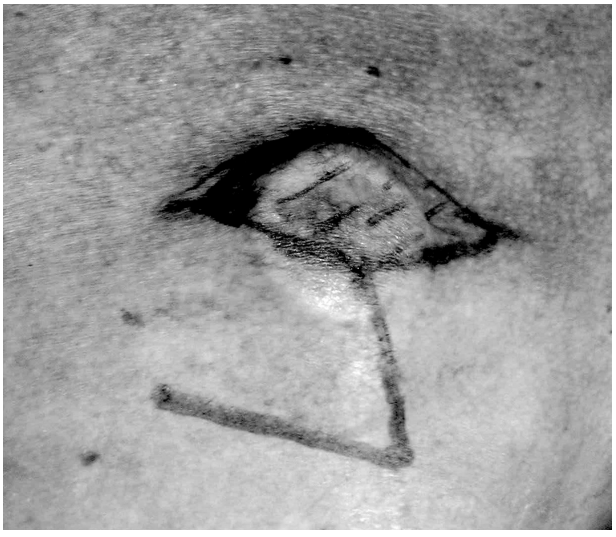

FIG. 1. The Port-a-Cath can be visualized under the thin and atrophic skin. The modified Dufourmentel flap is drawn at the border of the rhomboid area, which was deepithelialized.

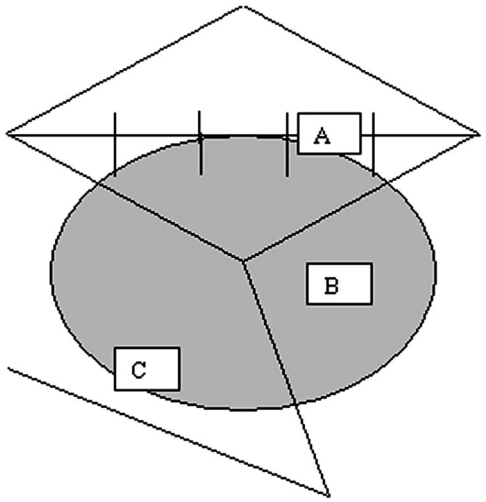

FIG. 2. *A*, Rhomboid area corresponding to the deepithelialized one; *B*, Port-a-Cath; *C*, modified Dufourmentel flap.

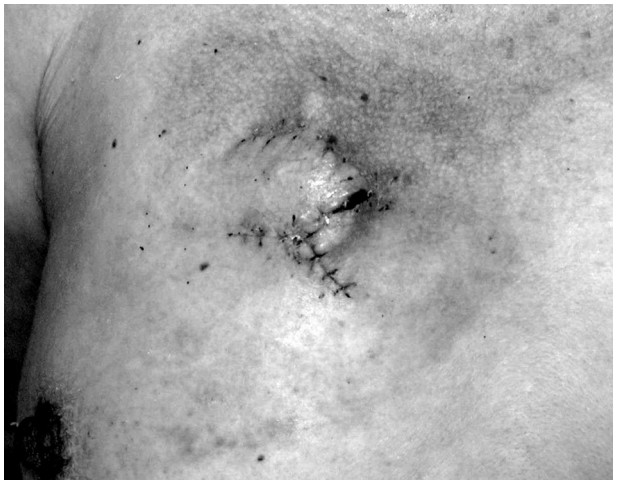

FIG. 3. At 1 month after the operation, the Port-a-Cath is well covered by the flap.

border of the flap is parallel to the inferior border of the rhomboid area instead of being parallel to the prosecution of the minor diagonal (Figs. 1 and 2).[5]

Under local anesthesia, the identified thin rhomboid area was deepithelialized. The modified Dufourmentel flap was sculpted, including a part of the capsule of the Port-a-Cath, using blunt scissors to avoid damage to the device itself. The flap was transposed over the deepithelialized rhomboid area, giving good coverage to the device (Fig. 3). In that way, the deepithelialized area of skin previously present over the Port-a-Cath plus the width of the flap made the cover for the Port-a-Cath. The flap was secured to the recipient site by a 5-0 nylon suture.

The advantage of this solution is that the scars no longer lie on the border of the device. In that way, it is more difficult for the device to extrude through the scars themselves, and the device can be used the day after the operation by positioning the needle in the center of the flap.

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MELANOMA AND DECORATIVE TATTOOS: IS A BLACK SENTINEL LYMPH NODE UNEQUIVOCALLY METASTATIC?

Sir:

The sentinel lymph node theory is based upon the premise that neoplastic cells spread sequentially from the primary site to the regional lymph node basin.[1] Numerous studies have demonstrated the value and benefit of this technique for patients at risk for regional lymph node metastases. In the majority of cases, gross inspection of the lymph node will not demonstrate any abnormal features. However, in some cases, the lymph node may contain melanin pigment, resulting in a black appearance. Although this black discoloration is usually the result of melanoma, there are other conditions that may mimic this appearance and lead to an erroneous initial diagnosis.

In this communication, we present two patients who had sentinel lymph node biopsy for melanoma. Both patients had decorative tattoos in the vicinity of the primary melanoma. The initial appearance of the excised lymph node was highly suspicious for melanoma due to the degree of pigmentation. The purpose of this report is to educate physicians that not all black lymph nodes are due to melanin.

In the first case, a 74-year-old man presented with a decorative tattoo on his left arm and an invasive melanoma

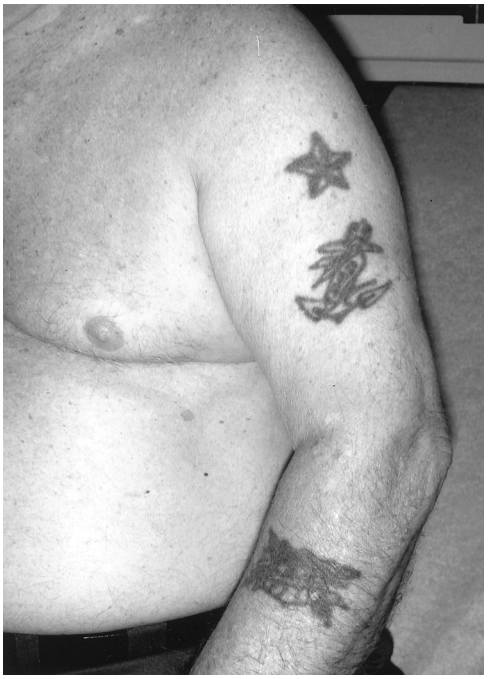

FIG. 1. Decorative tattoo of the left arm in a patient with recurrent melanoma of the same extremity.

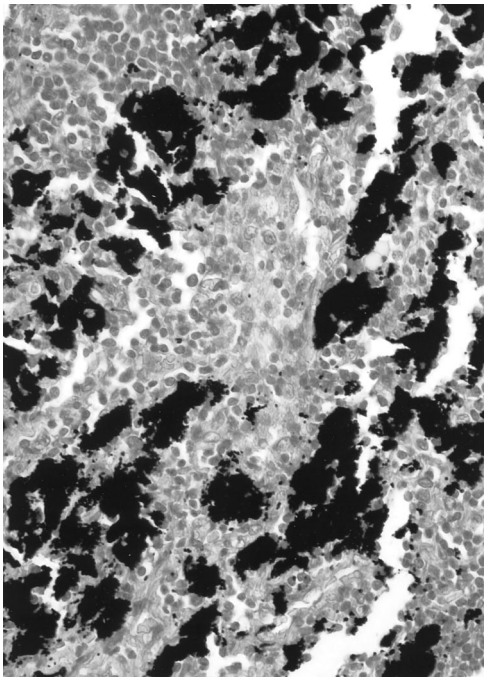

FIG. 2. Sentinel lymph node with reactive hyperplasia and black pigment in macrophages with no evidence of melanoma cells (hematoxylin and eosin stain, ×100).

adjacent to the tattoo (Fig. 1). One year after excision, a subcutaneous nodule was observed on his left shoulder. An excisional biopsy was performed, and the pathologic analysis demonstrated metastatic melanoma. Reexcision of the left shoulder site and sentinel lymph node biopsy were performed. A large sentinel lymph node was excised and noted to have multiple black regions suspicious for metastatic melanoma. Histologic analysis demonstrated no evidence of metastatic melanoma (Fig. 2). Immunohistochemical analysis with HMB-45, melan-A, and S-100 was performed, and the results were negative.

In the second case, a 45-year-old man with a decorative tattoo on his right arm presented with an invasive melanoma measuring 1.05 mm in thickness (Fig. 3). The primary site was

FIG. 3. Decorative tattoo of a patient with excised melanoma lesion in the tattoo boundaries.

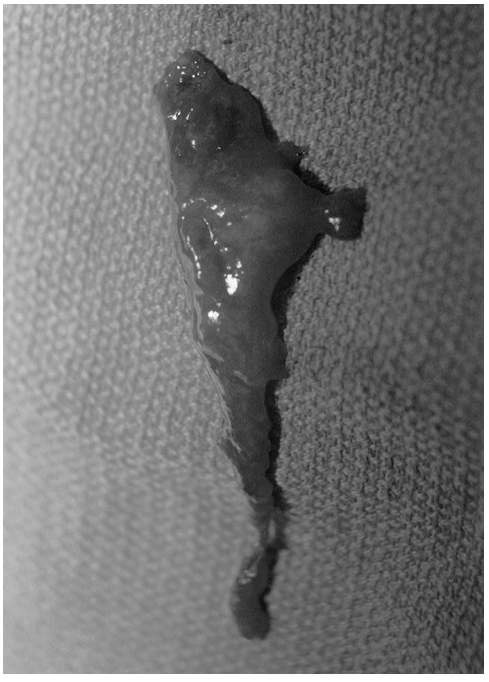

FIG. 4. Grossly pigmented sentinel lymph node.

adjacent to the tattoo. The margins of excision were not free of tumor based on histologic evaluation. No axillary adenopathy was observed. Reexcision of the melanoma and a sentinel lymph node biopsy were performed. The excised sentinel lymph node was large and had a pigmented component to it (Fig. 4). Histology of the lymph node demonstrated black particulate matter within it and negative tumor markers.

In patients with melanoma, the overall metastatic rate to regional lymph nodes is slightly less than 20 percent.[2,3] Regional nodes positive for cancer signify a high chance for distant metastasis, with a 5-year survival rate of less than 40 percent.[4] The presence of a positive sentinel lymph node is considered the most important prognostic factor for disease-free 5-year survival and recurrence in melanoma patients with lesions equal to or thicker than 1 mm with clinically negative nodes.[5]

The advantages of sentinel lymph node biopsy for melanoma have been well described.[3,5–8] This technique has been demonstrated to reduce the morbidity that is traditionally associated with complete axillary dissection. In addition, it has been clearly shown that the presence of neoplastic cells in the sentinel lymph node accurately predicts the tumor status of nonsentinel lymph nodes in the rest of the nodal basin.[3] The initial appearance of the sentinel lymph node can be suggestive of metastases; however, there are circumstances that can mimic the appearance of melanoma within these nodes. The two cases presented demonstrate how the pigments used in decorative tattoos can enter the dermal lymphatics and accumulate in the regional lymph node basin. This phenomenon has previously been described.[9–14] Chemical analysis of tattoo pigments identified aluminum in 87 percent of the pigments, oxygen in 73 percent, and titanium and carbon in 67 percent.[15] Although the appearance of these lymph nodes on initial evaluation can cause concern, there are differences in the appearance of the lymph node that contains metastatic melanoma and the lymph node that contains tattoo pigment.

The visual appearance of metastatic melanoma on a lymph node usually demonstrates no abnormalities on initial evaluation; however, with growth, small black nodularities may be seen on the surface of the lymph node. These are discrete and uniformly colored and generally range in size from 2 to 5 mm. With advanced involvement, the lymph node becomes enlarged, firm, and diffusely discolored. In contrast, the lymph node that contains pigment from decorative tattoos is usually normal in size, soft, and diffusely discolored without the discrete black nodules seen with melanoma.

The histologic appearance of the lymph node with tattoo pigment is different from that of the lymph node with melanoma. Melanoma cells are usually tight aggregates of atypical melanocytes with high mitotic activity that contain large nuclei with irregular contours. The chromatin is usually clumped at the periphery of the nuclear membrane, and prominent red (eosinophilic) nucleoli are usually located in the subcapsular sinus. In contrast, the carbon pigment associated with tattoos is usually contained in histiocytes, and there is no associated cellular atypia. The melanin granules with melanoma are highlighted by silver stain and are decolorized by bleaching agents, as opposed to the carbon pigment, which is not highlight by silver stain and resists bleaching. If the diagnosis is still uncertain, then immunohistochemistry stains will be of further help.

Other conditions are also known to harbor black or dark pigment within lymph nodes. Spindle cell neoplasms, such as angiosarcomas, may be misdiagnosed as melanoma if hemosiderin is mistaken for melanin. Benign nevocytes in lymph nodes of patients with melanoma are not uncommon and may be mistaken for melanoma. Iron containing Monsel's solution, used for hemostasis, may be found in macrophages and confused with melanin.[16] Titanium fragments that may have eroded from titanium prostheses may also cause pigmentation of the specimen.

In summary, the presence of melanin pigment in cytologically malignant cells is the major criterion for the diagnosis of melanoma, but not all pigments are melanin and, therefore, not all large, pigmented sentinel lymph nodes are malignant. Even in cases highly suspicious for metastatic melanoma, it should be noted that there is a differential diagnosis for pigmented sentinel lymph nodes. The surgeon should refrain from conveying any prognostic or future treatment plans to the patient based on the visual assessment of a lymph node.

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STERILIZED TOYS

Sir:

Toys are often used in medical practice to put children at ease in an unfamiliar environment and gain their confidence and cooperation. Many children are extremely frightened during their clinical examination and minor procedures, especially if some degree of discomfort is involved. This fear is often reduced by the use of distraction therapy, such as books and toys. In circumstances where asepsis is highly required, such as operations under local anesthesia and in bone marrow transplant units, any toys used should be clean and possibly sterilized to prevent cross-infection. Unfortunately, most toys will not withstand the sterilization process due to the high temperatures involved or the harsh cleaning materials used. We have had great success using ordinary sterilized marking pens and sterilized wrapping paper for drawing, sterilized gloves of various colors filled with sterilized water and knotted at the wrist portion to act as balloons, and sterilized specimen bottles containing beads of different colors to produce rattling sounds. The wrapping paper of a sterilized instrument tray can be also used to create boats, planes, and different toys for amusement (Fig. 1). Similarly, Hibiscrub (AstraZeneca, London, United Kingdom), Betadine scrub (Purdue Pharma, Stamford, Conn.), and Savlon solution (Pharmedica Ltd., London, United Kingdom) can also be used with a dental wire loop to produce air bubbles of different colors. These objects are available in every operating room and procedure room and have already been through the rigorous cleaning and sterilization process. For very little additional cost, these everyday surgical instruments and materials can be converted into toys.

For the ready-made toys, we recommend the use of smooth-surface objects only that can be cleaned by denatured alcohol spray, and we recommend avoiding yarn or rough-surface objects, which can act as fomites.[1] However, these can be sterilized, individually packaged, and opened as gifts before each use. The concept of sterilized toys has been presented before[2] in bone marrow transplant settings. We suggest their wider scope in the operating room during surgical procedures carried out under local anesthesia. There is, perhaps, a good potential for commercial manufacturing of toys for this particular need.

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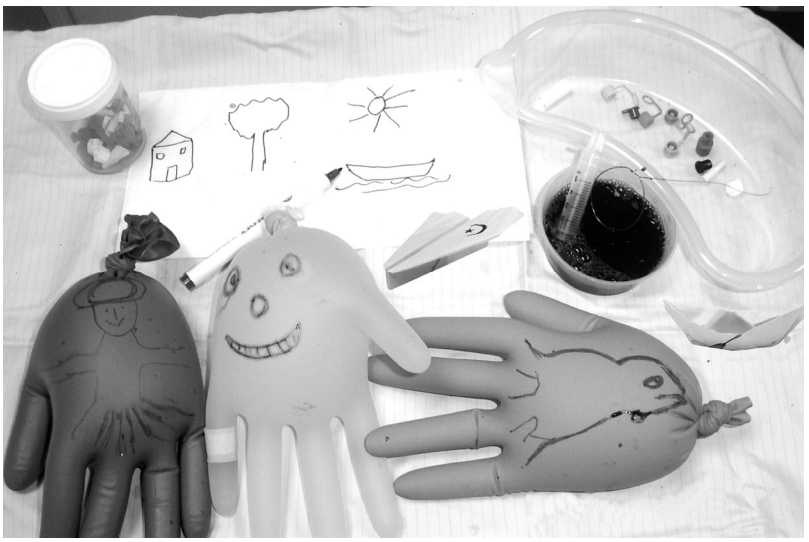

FIG. 1. Objects readily available in the operating room that can be used as sterilized toys.

FORGETTING RARE CASES

Sir:

I read with interest the case reported in the letter by Friedman et al. in the May 2003 issue of the *Journal*.[1] The authors warn us of the fortuitous and fortunate (for the patient) chance that a lesion simulating a melanoma eventually is found to be a pigment collection that has migrated from a tattoo.

Unfortunately, such a fortunate event is rate, as the authors underscore, but not as rare as they state, because at least one more case must be added to the ones cited by the authors in their references, already published in the October 2001 issue of the *Journal*.[2]

In pointing this out, I am not moved by a sterile *vis polemica*; this is just an occasion to remind that often the real number of reported cases is unacknowledged, unless accurately verified through different and sometimes less popular databases, particularly if published in local non-English–edited journals. But this was not the case.

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REPLY

Sir:

We would like to comment on Dr. Scevola's letter concerning our report entitled "Tattoo Pigment in Lymph Nodes Mimicking Metastatic Malignant Melanoma" (*Plast. Reconstr. Surg.* 111: 2120, 2003).

Dr. Scevola correctly points out that she had published a similar case that appeared in the October of 2001 issue of the *Journal*,[1] and was not cited by us. However, our report was written in the summer of 2001, at which time we did a survey of the literature, and of course Dr. Scevola's repot did not appear. It was delayed by the *Journal* for some technical reasons. Had we seen Dr. Scevola's report, we would have emphasized it as the most recent, up-to-date source.

We regret not doing a subsequent literature survey prior to publication, and hope that Dr. Scevola will forgive this oversight.

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