

# Breast Augmentation: Periareolar Approach With Cohesive Gel Implants

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Several approaches exist for the successful utilization of cohesive gel breast implants. The most commonly used approach uses an inframammary incision because it affords an excellent view of the implant pocket for hemostasis, allows manipulation of the fascia and the pectoralis, and allows assessment of implant positioning before closure. Periareolar incisions provide similar visual access of the pocket, and hemostasis is theoretically easier because the distance to the furthest area is less than in an inframammary approach.

A periareolar approach to breast augmentation is not new.<sup>1-4</sup> Typically, the technique may be used in any patient requesting augmentation, except when larger devices are planned for patients with smaller areolar diameters, as discussed later. The Montgomery glands help camouflage any irregularity of the incision such as the point where the suture knots are tied.

## **PATIENT SELECTION**

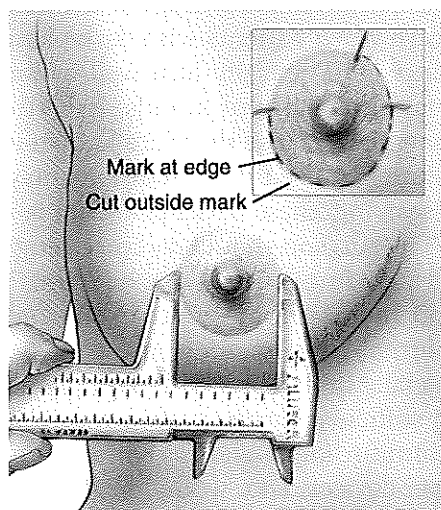
Typically, periareolar incisions are indicated whenever camouflage of the incision is desirable. There is always an underlying concern when patients with dark-pigmented skin present for surgery. However, periareolar incisions typically heal well as long as basic plastic surgery principles are followed. A family history of keloids, hypertrophic scarring, or abnormal wound healing should be noted because these are known risk factors, especially in people with dark-pigmented skin. Because these conditions may indicate a tendency for poor healing and unfavorable scarring, these patients should be offered the option of a more-hidden incision location. The surgeon should do everything possible to minimize the risk of hypertrophic scarring, including gentle tissue handling, sharp incision technique, and minimal blunt tension trauma from retractors and instruments. Rough tissue handling may result in abnormal inflammation and poor healing with postinflammatory hyperpigmentation, especially in patients with dark pigmentation. It is of utmost importance to use an incision sufficient for the proposed implant size. An incision of 5 cm is the recommended minimum for implants that are approximately 250 cc, with larger incisions needed for larger devices. Poor wound healing and unfavorable scarring can be expected when insufficient exposure results in tissue maceration from pulling on the tissues to gain access.

## TECHNIQUE

### Markings and Incisions

The incision length depends on the diameter of the areola (Fig. 1). An unstretched areolar diameter of 3.5 cm will result in an incision of approximately 5 cm. The patient is marked for augmentation in the upright position, with the arms abducted at the shoulder to simulate the position on the operating table. To attain this position the surgeon may ask the patient to place her hands high on her hips. The edge of the areola is marked at the zone of the last color change. Although the brownish-pink color of the areola sometimes fades indistinctly, especially in nulliparous patients, in most women it is defined clearly. The area should be marked so that the surgeon's blade can stay on the lighter side of the demarcation line. Because a scar will eventually become pale and hypopigmented, it has the best chance of being hidden on the pale side of the line. Creating a dotted line with a surgical marker is a good idea, because the precise location of the color change in the tissues can be seen between the dots during surgery. Loupe magnification adds precision.

The first incision through the dermis should be perpendicular to the surface, but if visible, the underlying muscular tissue should be left on the areolar side of the incision. The subcutaneous fatty tissue is divided, angled away from the nipple-areola complex to avoid undermining it. When the anterior lamella of Scarpa's fascia is encountered, the fascia can be used as a plane of dissection down to the prepectoral fascia. Usually the lower border of the pectoralis major muscle is dissected even if a submammary approach is planned. Once the lower border of the pectoralis muscle is visible, the external oblique, rectus abdominis, and serratus anterior muscles may be visible in the area immediately adjacent to it. Occasionally when performing a subfascial dissection (or any form of submammary dissection), the sternalis muscle is found.<sup>5</sup> The presence of this muscle is variable; it may be found on the medial aspect of the chest, sometimes bilaterally, adjacent to the sternum. Its fibers extend vertically from the manubrium to the sixth or seventh costal cartilage, and it occupies the space above the medial part of the

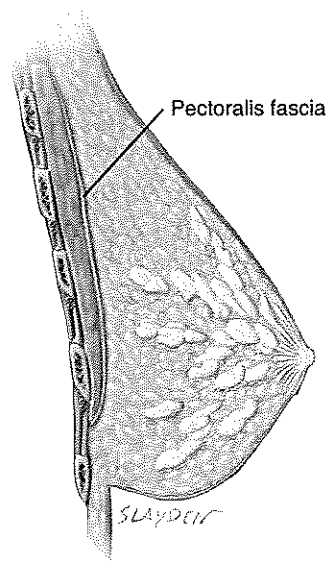


**FIG. 1** Marking for a periareolar incision is made at the junction of the area of the color change from the pink of the areola to the color of the skin. A dotted line helps the surgeon see the color change while making the incision.

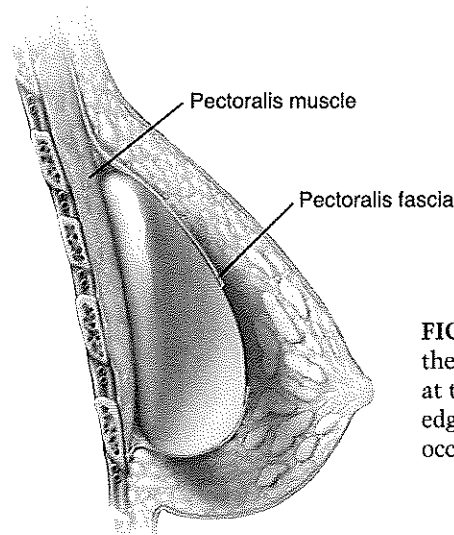
pectoralis major muscle, detectable in approximately 4% of the population.<sup>6</sup> It is important only because it may be mistaken for a pathologic condition. Note that it also may appear on mammograms at the approximate depth of the medial nodes.

### Plane of Dissection

Typically dissection is performed either under the fascia or under the pectoralis major muscle (Fig. 2). There are advantages to a prepectoral plane of dissection. The submammary plane (meaning subfascial) has the advantage of not having abnormal dynamics during patient muscular activity. When using the periareolar approach, the central part of the fascia may be left in place (Fig. 3). This is not an avascular plane; numerous small



**FIG. 2** The pectoralis fascia firmly adheres to the pectoralis major muscle. Multiple vascular fibrous bands join the fascia to the underlying muscle fibers. Although the fascia itself is thin, its adherence to the muscle helps reduce implant edge visibility.



**FIG. 3** Subfascial implant placement. Note how the edge of the pectoralis muscle is pulled up slightly at the implant edge. This helps mask the implant edge and prevent undermining, which sometimes occurs with submammary placement.

bleeding vessels will be encountered. The surgeon should use traditional scissor dissection with cautery of the bleeding vessels or electro-surgical techniques. Using needle point cautery and smoke evacuation, the fascia may be elevated precisely from the underlying muscle, but this is sometimes difficult because of muscle contraction. The muscle is treated as gently as possible, and electro-surgery is used with precision to prevent subsequent discomfort and to minimize fulguration of normal tissues. Using a fine needle point reduces the amount of tissue damage. This is important because burned tissue will cause internal scarring as well as a postoperative serous fluid effusion; it may also promote capsule formation. Precise dissection with minimal blood "staining" of tissues is ideal and may reduce the risk of capsule contraction. Several vertical segments of tissue are encountered deep to the fascia that fix the fascia firmly to the underlying muscular bundles. These may be quite vascular and may be treated with bipolar electro-surgery instead of monopolar electro-surgery, because this also reduces the amount of tissue injury. A fiberoptic, lighted retractor is of great assistance in the dissection to permit a clear view, and it is helpful to have an assistant to help retract. The dissection must proceed carefully, taking into account the size of the implant to be used.

When placing cohesive gel implants, the size of the pocket must not greatly exceed that of the implant, unlike saline implants, which require larger pockets. However, it is critical that the pocket be made large enough to accommodate the implant. If there must be any error, one should err by making the pocket slightly smaller. Although it is possible to slightly enlarge the pocket with the implant in place, it is preferable to make it the correct size before implant insertion. For example, a Mentor Contour Profile Gel (CPG) Medium 280 cc implant is 12 cm wide, but only 11.3 cm tall, and the pocket dimensions must match the ratio. A pocket that is too narrow will tend to force this type of device to rotate. After insertion, the implant should lie flat without wrinkles. This is especially important with the Biocell Surface (McGhan) device, which has a more aggressive texture. Application of external compression on the breast will help reveal any pocket asymmetry or any areas that are not properly released at the periphery of the augmented breast. If these areas are not readily accessible with retractors through the wound, then the implant should be removed and the pocket enlarged appropriately.

### **Hemostasis and Irrigation**

Complete hemostasis is attained with electro-surgery. Subfascial dissection takes longer than subpectoral pocket dissection, because the subfascial plane is not areolar. An ideal dissection will have little or no staining of soft tissues with blood and a completely dry pocket. In some cases a drain may be advisable, although most of the time I do not use a drain unless performing a complete capsulectomy or another ancillary procedure. The pocket is irrigated several times with normal saline solution. I typically use one syringe of povidone-iodine (Betadine) solution followed by irrigation with normal saline solution until the wash is clear.

### **Implant Insertion**

Before implant insertion, the surgeon prepares the area again and changes gloves. Implants are handled only by the surgeon, who has not touched anything other than the implant and its sterile container. Specifically, no contact is allowed with any cotton, pa-

per products, or anything that might reasonably be expected to have fibers on it. It is my unproven conviction that wood fibers or cotton fibers may be another risk factor for capsular contracture, along with blood and other well-known risk factors. The implant is handled minimally while the surgeon does a quality inspection, then it is inserted through the incision, which is held open by an assistant. Although there may appear to be a significant size discrepancy between the size of the implant and the size of the opening, this can be overcome. With practice even those who have never seen it done learn how to manipulate the implant until it is eased into the pocket. It is a good idea for a novice to practice with a sizer or sample beforehand. A rigid towel mounted on a frame with an appropriately sized opening cut into it will help the novice learn to manipulate the devices.

After placing the implant it is important to use a blunt instrument such as a large dilator to redrape breast tissue over the implant evenly and to ensure there are no folds on the implant. If there are folds they must be addressed intraoperatively. Folds caused by compression from an inadequate pocket size must be eliminated by enlarging the pocket. If the pocket is large enough, the folds are usually caused by improper positioning and will disappear when the tissues are redraped properly.

Once the implant is in place, the deepest layer of the incision is approximated if possible, especially in patients with firm parenchyma, to prevent herniation of the implant into the incision. Absorbable monofilament sutures are preferred, and only one or two deep sutures are required. One must be very cautious and use utmost care to prevent damage to the device during closure, because losing control of the needle may result in perforation during placement of the deep sutures. It is helpful to have an assistant retract the edges of the opening. Closure is done in layers, starting with the deepest layer next to the implant (taking utmost care to avoid puncturing the implant), then the deep subdermal fibrofatty tissues, and finally the deep dermis. The final closure is made with half-buried horizontal mattress sutures at either end of a running subcuticular closure; the knot scar will mimic a Montgomery gland and be less noticeable.

## COMPLICATIONS

### Hypertrophic Scars

Prevention of hypertrophic scars is best; this may be accomplished by using a good surgical technique with minimal tissue maceration, gentle tissue handling, and precise wound closure. Risk of hypertrophic scars may also be reduced by applying long-term support of the incision with paper tape. The tape is worn constantly, and patients are instructed to change the tape only when it begins to fall off, typically once every week or so. Patients may shower with the tape in place. If patients develop sensitivity to the tape, then other types of gentle compression such as silicone gel sheeting may be effective. However, cleanliness is difficult with occlusive dressings of this nature. In rare cases injections of triamcinolone (Kenalog) may be required. I begin with a dilution of 5 mg triamcinolone per cc. Kenalog comes in a strength of 40 mg per cc, and if injected at full strength, it may cause severe tissue atrophy. However, some patients do require larger doses, and I assess the patient's response at 14 days. If there is not a good response, I double the strength of the triamcinolone to 10 mg per cc. If there is still no response after another 14 days, I double the strength again to 20 mg per cc. It is important to titrate the dose to the response, because tissue atrophy and telangiectasia may occur in

sensitive patients that may take months or years to resolve. The solution must be injected directly into the hypertrophic scar tissue. Scar tissue is usually dense, so the amount of fluid that can be injected directly into it is quite modest. Ice applied topically for a few moments before injection may help reduce the initial discomfort and subsequent bruising. Inject a small area first and wait a few moments to allow the local anesthetic in the solution to work. The remainder of the treatment should proceed from anesthetized toward nonanesthetized skin, so that the patient should really only have to suffer one needle injection through the skin during any one treatment session. This technique should become easier, and the patient should be less tender during subsequent sessions.

### Loss of Nipple Sensitivity

Loss of nipple sensitivity is uncommon with this technique, occurring in less than 5% of cases. In fact, my clinical impression is that loss of nipple sensation is more related to implant size than incision placement. Larger implants likely are related to loss of nipple sensation, similar to any other technique of breast augmentation. Other complications are similar to those encountered with other techniques of breast augmentation.

Approximately 50% of 400 cases have been performed using the periareolar approach with good results and few hypertrophic scars or other complications requiring revision. Two patients with dark pigmentation required further wound management; one patient of Mediterranean extraction required a late scar revision; and one patient with a history of hypertrophic scarring developed hypertrophic scarring in spite of maximum wound care. It resolved with compression and triamcinolone injections.

## RESULTS

The patient shown in Fig. 4 was 39 years old with two children, and was 5 feet, 4 inches tall and 114 pounds before surgery (*A*, *C*, and *E*). She was treated with a 245 cc Mentor Medium CPG implant in the subfascial space. She underwent uneventful subfascial augmentation using a periareolar technique. She is shown at the completion of surgery immediately before a tape bandage was applied (*G*). Her postoperative course was uneventful. She is shown 3 years postoperatively (*B*, *D*, and *F*). The scars are well healed with minimal visibility: *H*, left breast; and *I*, right breast after 3 years. The breast implants are soft and in good position, and no abnormalities are present.

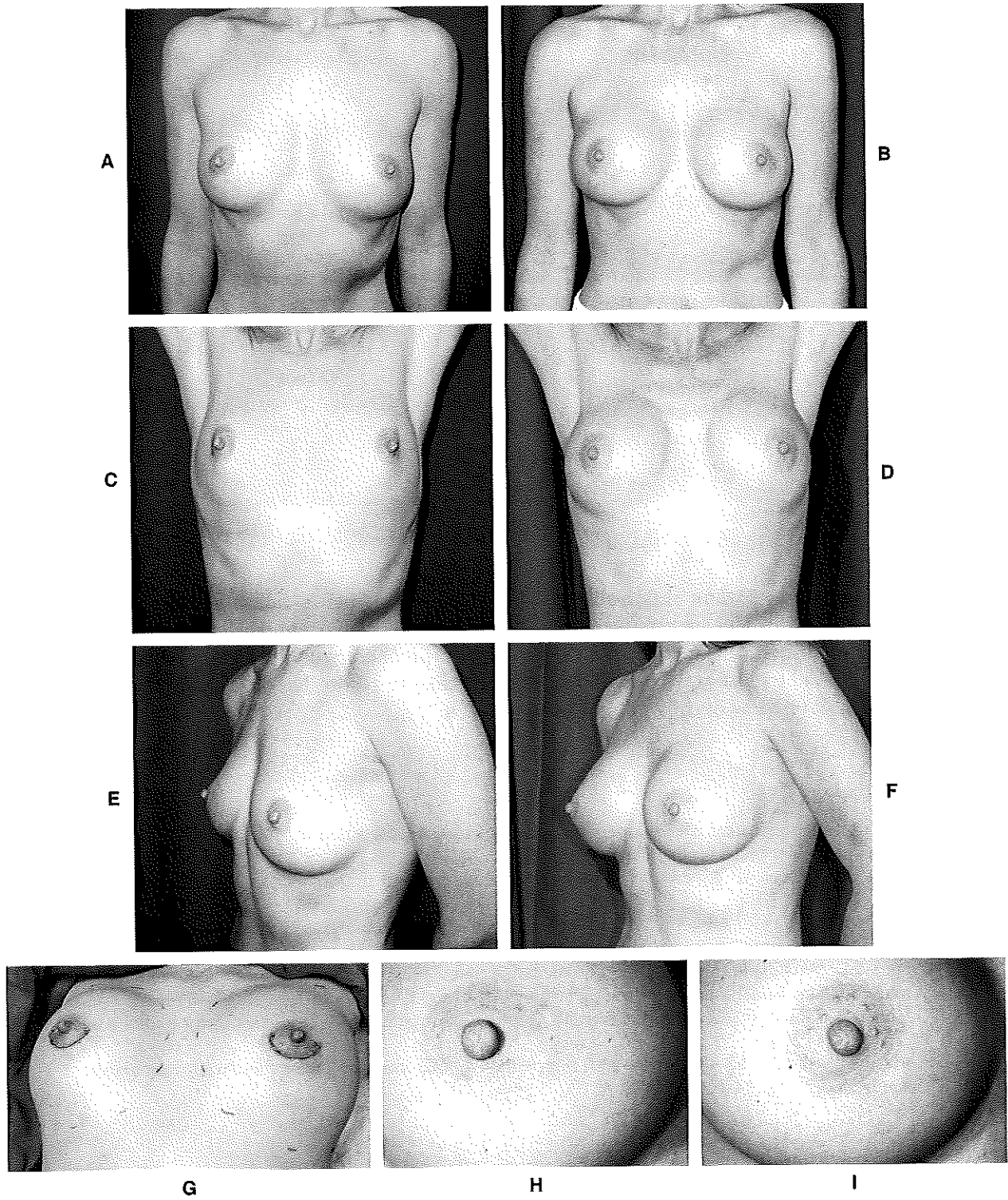


FIG. 4

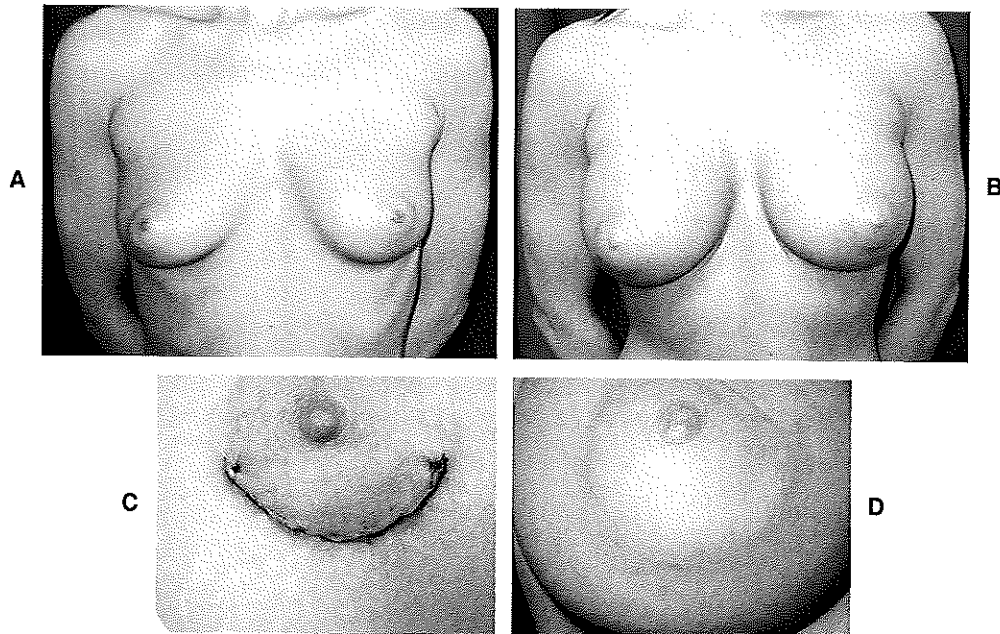


FIG. 5

This 25-year-old patient was nulliparous, was 5 feet, 6 inches tall, and weighed 122 pounds. *A* and *B*, Her breasts were augmented with 315 cc Mentor Medium CPG devices through periareolar incisions. She is shown preoperatively and 18 months postoperatively. The close-up views show standard closure before bandage application (*C*) and a follow-up view of the scar at 18 months (*D*).

## REFERENCES

1. McKinney P, Shedbaker AR. Augmentation mammoplasty using a non-inflatable prosthesis through a circum-areolar incision. *Br J Plast Surg* 27:35-38, 1974.
2. Jones FR, Taurus AP. A periareolar incision for augmentation mammoplasty. *Plast Reconstr Surg* 51:641-644, 1973.
3. Norman JD, Snyder GB. Augmentation mammoplasty through a circumareolar incision using a solid, gel-filled implant. *South Med J* 68:1456-1457, 1975.
4. Spear SL, Matsuba H, Little JW III. The medial periareolar approach to submuscular augmentation mammoplasty under local anesthesia. *Plast Reconstr Surg* 84:599-606, 1989.
5. Harish K, Gopinath KS. Sternalis muscle: Importance in surgery of the breast. *Surg Radiol Anat* 25:311-314, 2003.
6. Saeed M, Murshid KR, Rufai AA, et al. Sternalis. An anatomic variant of chest wall musculature. *Saudi Med J* 23:1214-1221, 2002.



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### *Editorial Commentary*

Dr. De Lorenzi speaks from a great deal of experience using cohesive gel implants. He has placed these implants in 400 patients, and half of these have been placed using the periareolar approach.

Our experience using the periareolar approach with standard gel-filled implants has been a very happy one, but of course insertion is much easier in average patients. However, there are patients who want very large implants placed through very short periareolar incisions, and, as described in this article, these cases simply require good retraction and careful technique. In my own experience, beginning with using submammary incisions in the dim and distant past followed by periareolar incisions and then going enthusiastically into the axillary approach, my nurses and myself all quickly realized that the periareolar approach gave as good an exposure as any of the others, but there was a learning curve. However, the important things are that this technique really provides the least obvious scars and, if performed properly, is virtually problem-free. Obviously, with gel-filled implants in general, and with cohesive gel implants in particular, there is apprehension about using what seems to be a more limited approach. But when one tries it and follows the instructions given in this article, it easily becomes one's favorite method of placing gel-filled breast implants of any type.

Another important feature of this article is the advice about the very careful handling of the implants and the careful closure of the wound. These instructions are virtually mandatory, and deviating from them will result in grief. I heartily concur with Dr. De Lorenzi that loss of nipple sensation is extremely rare.

In conclusion, the periareolar approach is safe, simple, and in my experience, almost complication-free.

**Ian T. Jackson, MD**

