

Innovative New Concepts in Augmentative Breast Surgery

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Abstract. The female breast is seen as a badge of feminine beauty in our society. While it can vary over time and with fashions, the perfect breast will always be symmetrically balanced and proportionate to the rest of the body. To create an aesthetic and symmetrically balanced breast using implants to enhance them is not an easy task. Surgery must combine the concepts of an ideal breast with the desires of the patient in terms of size. The satisfactory breast should remain soft, well positioned, and mobile to respond to gravity and postural changes. In attempting to construct an "ideal breast," certain basic aesthetic anatomical proportions should be taken into account: natural positioning of the breast in the thorax; symmetry; the position of the nipple-areola complex as the focal point of the breast in the frontal view; a side profile of the breast with a natural soft fall; and, overall, the position of the new inframammary crease in the standing position, while lying down, and while moving.

Key words: Augmentation mammoplasty—Breast augmentation

Anatomical Considerations

The aesthetic and natural appearance of the enhanced breast depends on correct positioning of the implants, and for this we consider good anatomical knowledge of the mammary region to be imperative [1,2].

Anatomically, the greater part of the mammary tissue extends between the third and the seventh intercostal spaces, from the sternal edge to the midaxillary line.

Almost 75% of the breast covers the pectoralis major muscle, mainly the upper and middle portions, while the lateral portion of the breast covers the third and fourth

digitations of the anterior serratus muscle, reaching in the midaxillary line the lateral edge of the latissimus dorsi, and the inferior portion lies over the anterior serratus, the external oblique, and the upper part of the rectus abdominis.

Below the dermis the breast lies between the superficial and the deep layers of the superficial mammary fascia, which continues upward to the cervical fascia and down to the fascia of Cooper.

The deep layer of the superficial mammary fascia extends over the fascia which covers the pectoralis major muscle. The retromammary space between them is filled with soft tissue which allows the breast to move freely over the thoracic wall and supplies the anatomical base for the submuscular dissection which we use to place the implants.

Surgical Techniques

We consider the submuscular placement of the implants to be fundamental to our results [3]. In our experience a higher incidence of breasts acceptable in form, position, and texture is obtained using this method (Figs. 1A and B). Other advantages of this submuscular placement include [4,5] the following.

- There is less contact of the prostheses with the mammary parenchyma and with the lactiferous sinus, which are basically contaminated.
- Separation of the mammary glandular tissue from its deep fascial cover is avoided, resulting in less destructuring of the breast.
- The physical and mammographic detection of mammary diseases is facilitated, and if necessary, biopsies or removal of tumors may be carried out without disturbing the implants [6].
- We preserve the continuity of the third, fourth, and fifth lateral intercostal nerves across the serratus

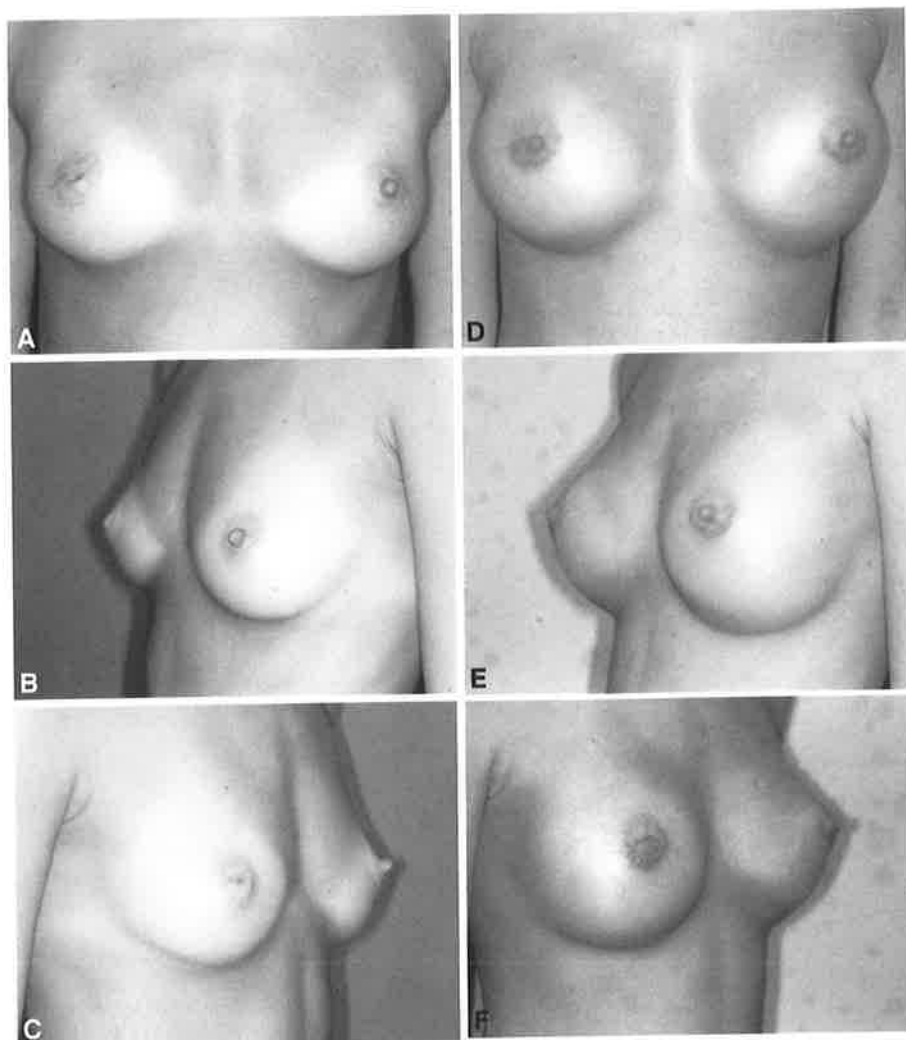


Fig. 1. A 24-year-old woman. Augmentation mammoplasty with 225-cm³ subpectoral implants. Preoperative (A–C) and postoperative views (D–F).

digitations, important in conserving the sensitivity of the areola.

- There is a low incidence of postoperative hematoma if the musculofascial dissection is blunt and the hemostasis is meticulous.
- The cushioning action of the muscle, and the massage which spreads pectoral contraction over the implant, results in a lower incidence of capsular contraction.
- In case of opening of the cutaneous wound the prosthesis is protected by a barrier of muscle.

The submuscular pocket where we prefer to situate the implants is, in practice, a “macropocket” not reduced to the strict limits of insertion of the pectoralis major muscle. Although it is commonly presumed that the entire breast rests on the pectoralis major fascia, we have observed that no more than half of the breast covers this zone, while the rest lies over the anterior serratus, the external oblique, and the rectus abdominis, all covered by a deep fascia of intercrossing fibers.

Using this anatomical basis the submuscular macropocket is prepared, extending the dissection upward to the second rib, laterally to the midaxillary line, and medially to the medial origin of the pectoralis major, taking care not to extend the dissection to the midsternal line.

The key point in our dissection is based on the location of the submammary crease of the patient and the position to which the new submammary crease created by the placement of the implants will be displaced. The main objective must be that the new breast does not lie high on the thorax in the anterior costal plane (Figs. 2A and B).

To achieve this the inferior border of the dissection is brought below the preexisting submammary crease as far as necessary, depending on the size of the implant which we are going to insert, the location of the original submammary crease, and the existing distance between the nipple–areola complex and the submammary crease (Figs. 3A and B).

The site of incision should depend on the individual patient. To most patients the resulting scar is not an issue once the redness has disappeared, as long as their breasts

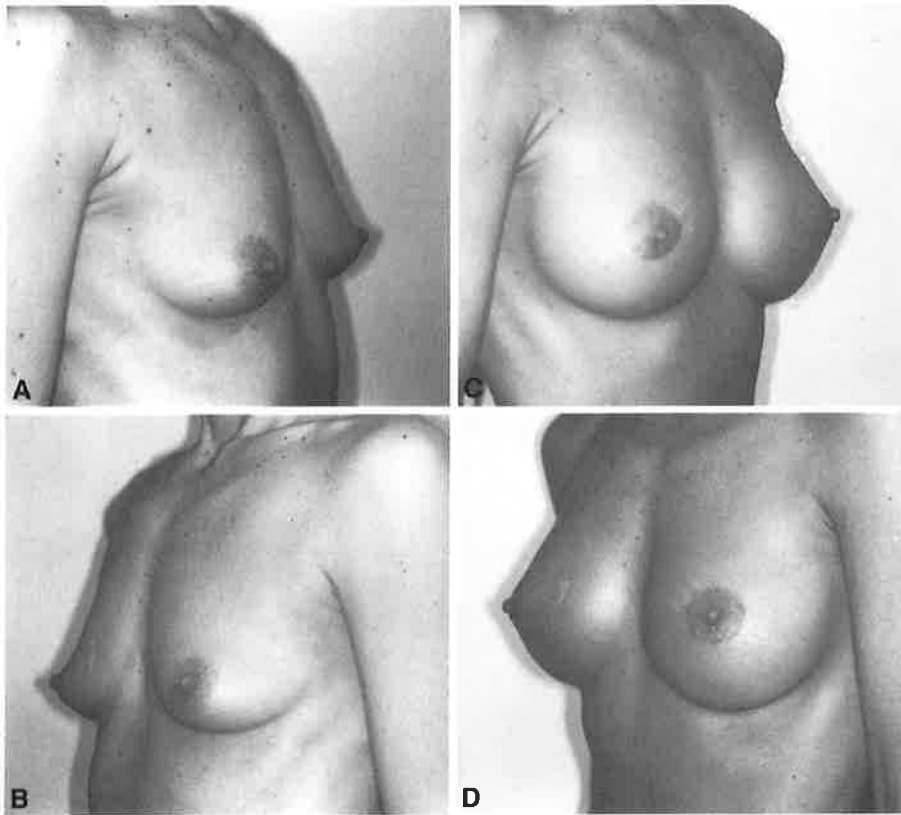


Fig. 3. A 37-year-old woman with ptotic-hypoplastic breast. Augmentation mammoplasty with 275-cm³ subpectoral implants. Preoperative (A, B) and postoperative (C, D).

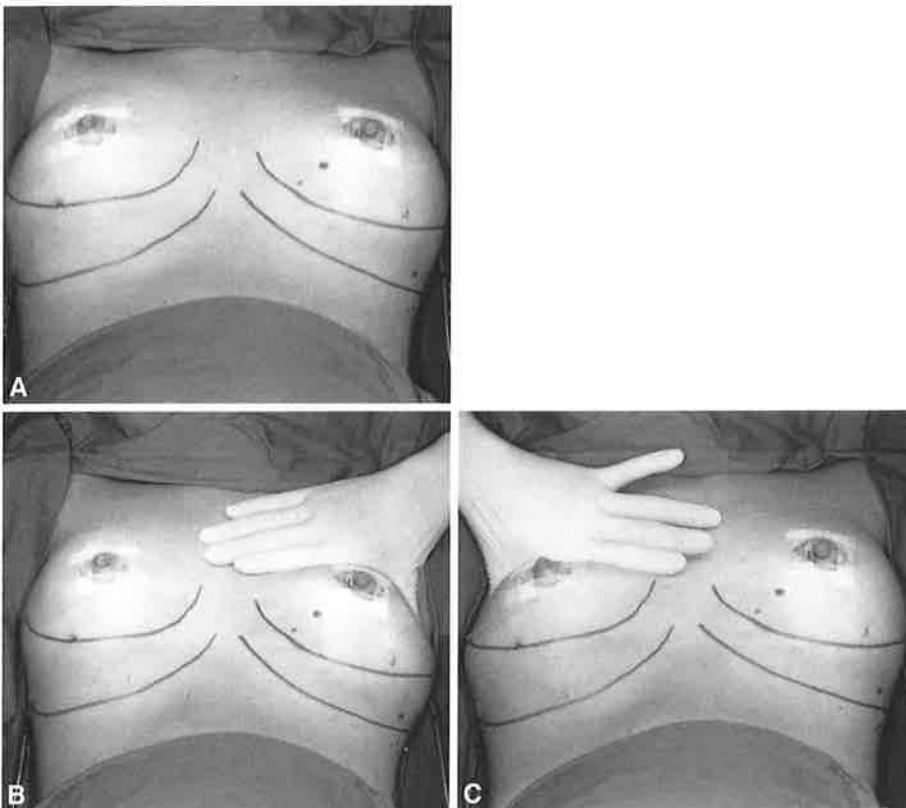


Fig. 4. Intraoperative views. (A) Note the position of the preoperative inframammary crease and the lower localization of the new one after positioning the implants (same patient as in Fig. 2). (B, C) Handling of the implants to check the lower border of the subpectoral macropocket.

Discussion

The biggest challenge in augmentation mammoplasty is the maintenance of the anatomic submuscular space created to contain the prosthesis, so that the breast does not lie high on the thorax when the patient is standing, maintains space for mobility in the upper region, descends naturally in the inferior and lateral planes, and falls laterally when the patient is lying down [9].

In order to achieve this, correct dissection of the submuscular pocket which will hold the implant is fundamental. The importance of the dissection of a submuscular "macropocket" which generously exceeds the lower limits of the pectoralis major muscle must be emphasized so that the new submammary crease is in the correct position, allowing a soft natural fall of the breast over the thoracic plane in accord with the ideal aesthetic proportions of the breast. Thus the nipple-areola complex will be the focal point of the breast toward which all the contour lines flow.

With appropriate positioning of the nipple-areola and of the new submammary crease, we will create a pleasing breast, full and rounded, with the larger volume lying in the lower portion. The profile of the breast will show a discrete concave line descending from the upper quarters to the projection of the nipple and a convex line continuing from this point to the submammary fold.

The nipple should sit over the fourth-fifth intercostal space, about 19-21 cm below the midclavicular point, on a line descending from it, and about 9-11 cm from the midsternal line (Fig. 6A).

In evaluating the aesthetic anatomic positioning of the implants from the frontal view, the transverse nipple line will define the hemispheres of the breast so that two-thirds of the total volume lies below this line and the other one-third above it.

In the profile view (Fig. 6B), the projection of the breast will begin at the second-third ribs, flowing down and outward as far as the areola, which projects out slightly from the surrounding mammary tissue, and from there the breast will descend in a convex line to the inframammary fold, which sits over the sixth-seventh intercostal space, where it joins the upper part of the abdomen.

In the oblique view (Figs. 6C and D), the breast should descend from the clavicle marking the anterior axillary fold, showing a fuller image in the lateral and inferior portions.

When the patient is standing with the arms raised, the breast will displace downward, so that the upper hemisphere is less evident and the lower one protrudes farther.

We are insistent with the patients, particularly during the first month after surgery, about the importance of the massages to achieve our objectives, so that we base the frequency of our consults on how persistently they follow our instructions. The patient should be made fully aware of the importance at this point of her active and interested participation in the recovery period by means of adequate, energetic, continuous, and prolonged massages (Figs. 7A and B).

This automassage maintains the amplitude of the macropocket, which allows natural movement of the breast with positional changes and prevents capsular contraction around the implant, favoring a sort of continued microcapsulotomy which allows the breasts to remain soft and optimum to the touch [10,11].

Occasionally in the third or fourth day of the postoperative period we have found breasts which are clearly inflamed and tense, with signs of fluctuation. As this phenomenon is generally bilateral, localized, and sudden, we are not concerned about hematoma but, rather, believe that this is caused by a lymphatic hypersecretion within the submuscular pocket, caused by the extensive dissection and by the early mobilization of the implants rubbing against the fascial layer [12]. In fact, even major subfusions of this type diminish in 24-48 h simply by the patient wearing a bra to maintain pressure and ceasing the massages, which we renew once the phenomenon has regressed without it recurring, maybe because during the rest period we have given time for the destructured lymphatics to stabilize.

Conclusions

The basis of our technique is the dissection of an extensive submuscular macropocket which will contain the implant, with an extensive dissection of the inferior and inferolateral borders to allow correct positioning of the new submammary crease and of the nipple-areola complex.

Early and continued massage of the implants will help to maintain the amplitude of the submuscular pocket, allowing natural movement of the breast and helping to prevent capsular contraction.

Occasionally we come across an insignificant amount of firming of the breasts. This generally does not affect the expectations or satisfaction of the patient, but is probably more significant in our own self-criticism.

With this technique we get an optimum aesthetic-anatomic positioning of the implants, which remain soft and with a natural range of movement, with practically no development of capsular contraction in our patients [13,14].

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