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Managing the Mammary Gland Infiltrated With Foreign Substances

Different Surgical Alternatives

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Background: In spite of the numerous reports that exist in reference to the damage produced by injecting foreign substances trying to improve different areas of the body economy, these substances are still being used indiscriminately. The breast is one of the most affected areas.

Objective: To present our experience in managing the breast infiltrated with different foreign substances.

Methods: Over a 10-year period, between July 1997 and June 2007, operations were performed on 90 patients presenting different alterations of the breast, secondary to the infiltration of foreign substances for esthetic purposes. The time of infiltration was from 8 months to 22 years (mean, 6 years 4 months), 95% of patients being transsexual and most not knowing the substance used. The main symptoms were hardening (94%), pain (80%), skin alterations (51%), and breast deformity (33%).

Results: Patients were treated with 4 surgical modalities, depending on their own characteristics and the alterations presented. Subcutaneous mastectomy and placement of implants were performed on 84%. Seven percent required subcutaneous mastectomy with skin extirpation and placement of implants. Seven percent received a partial mastectomy without placement of implants, and a total mastectomy was performed on the remaining 2% with a nipple-areola complex graft and placement of implants. In every case, the implants used were round, textured, of cohesive silicon gel, and placed at the same surgical time—46% of them on a subcutaneous plane and 54% on a partial or completely in submuscular plane. Two patients presented hemorrhaging within 12 hours postsurgically and required reintervention. Two presented extrusion of the implant at 3 weeks postsurgically. There were no infections or necrosis.

Conclusions: In spite of the great damage caused by infiltration of foreign substances into the breast for esthetic purposes, these substances are still being used indiscriminately. Treatment in these cases should focus on eliminating the largest possible amount of the foreign material, at the same time providing the best esthetic result. For that, diverse surgical techniques should be used in accordance with the characteristics of each case.

Key Words: breast infiltration, silicon injected on breast, oil injected on breast

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For more than 40 years, a large number of oily substances have been injected into different parts of the body for esthetic purposes.[1–2] These substances include mainly paraffin oil, mineral oil, and silicon. Their principal indication is to produce augmentation and contour in specific regions of the body, the mammary gland being one of the most affected areas.[1–8] Although they have been shown to cause body damage, they are still being used indiscriminately, causing severe injuries that appear after several years.[2–14] We are presenting our casuistic from 10 years' experience, during which we have surgically treated 90 patients who had had their mammary glands infiltrated with different substances to obtain esthetic enlargement.

MATERIALS AND METHODS

Over a 10-year period, between July 1997 and December 2007, 90 patients in whom the mammary glands were infiltrated with foreign substances were treated. All of them had had the mammary gland infiltrated with unknown materials to achieve enlargement of the breast. All patients were between 25 and 46 years of age (mean, 29 years), 86 male patients and 4 female patients. Eighty-seven patients were from the United States and the remaining 3 were from Mexico. Infiltration time ranged between 8 months and 23 years, with an average of 6 years and 4 months. The reason for seeking medical attention always was the desire to remove the infiltrated material while preserving the maximum esthetic appearance. There were no patients who had infiltrated material and did not need surgical treatment. All patients required surgery to treat the problem. The symptoms caused by the infiltrated material were multiple and varied. Most patients did not know the nature of the infiltrated substance. The surgical procedure in each patient was different, according to the degree of the alteration presented. We did not perform preoperative magnetic resonance imaging, but the majority of patients underwent breast ultrasound, which demonstrated several cysts of multiple sizes (Fig. 1). During surgery, our goal was to remove as much material as possible. F1

RESULTS

The symptoms presented in the treated patients consisted of hardness in 85 cases (94%), breast pain in 72 cases (80%), cutaneous changes in 46 cases (51%), and breast deformity in 30 cases (33%) (Fig. 2). Cutaneous changes consisted of hyperpigmentation in 33 cases (37%) and erythema in 14 cases (16%) (Table 1). We had no patients with ulcerations or cutaneous continuity defects. Subcutaneous mastectomy without skin resection and immediate placement of a mammary implant was carried out in 76 patients (84%) (patient 1, Fig. 3A–D), subcutaneous mastectomy with cutaneous resection and placement of implants in 6 patients (7%) (patient 2, Fig. 4A–D), partial mastectomy without implant placement in 6 patients (7%) (patient 3, Fig. 5A–D), and total mastectomy with free nipple-areola graft and implant placement in 2 patients (2%) (patient 4, Fig. 6A–D) (Table 2). All implants used were round, textured, cohesive silicon gel. During the subcutaneous mastectomy, a subcutaneous cushion approximately 1 cm thick was left, while leaving infiltrated F2 T1 F3,A F4 F5 F6,T2

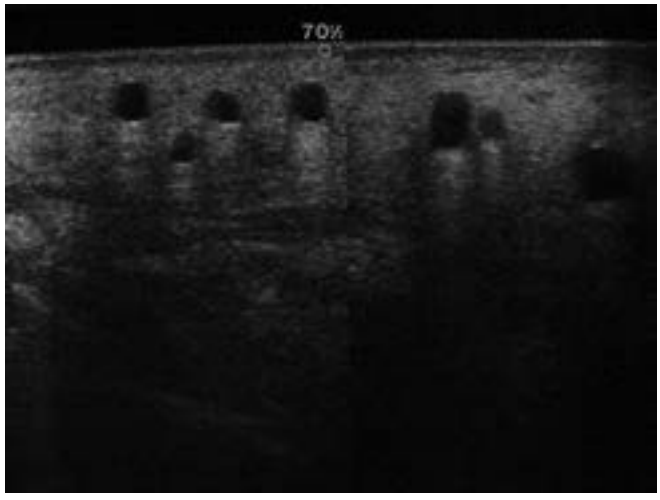

FIGURE 1. Breast ultrasound determinate several cysts of multiples sizes in all the breast tissue.

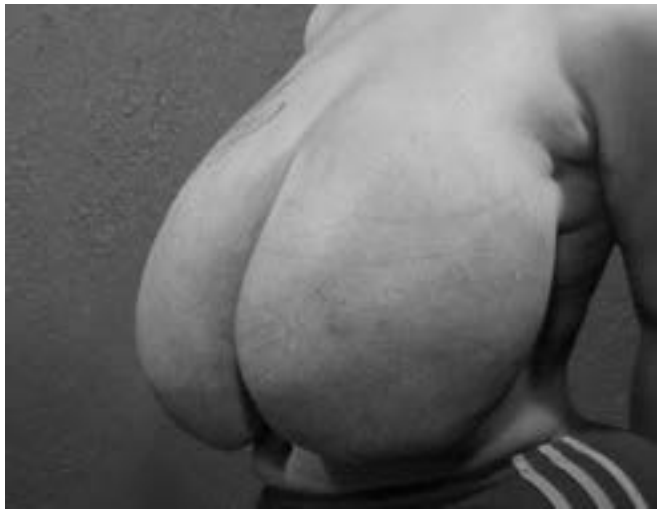

FIGURE 2. Thirty-six years old. Unknown foreign material infiltrated 8 years before in several sessions. She had a very significant deformity of all the breast area.

TABLE 1. Symptomatology

Alterations Presented	Number	Percentage
Hardening	85	94%
Pain	72	80%
Cutaneous changes	46	51%
Hyperpigmentation	33	37%
Erythema	14	16%
Deformity	30	33%

material in the flap did not matter. This thickness was left to leave a significant cutaneous cover for protection of the implant. All the foreign material was accumulated on the subcutaneous tissue and on the breast tissue. There was no infiltrated material on the muscle. Although the infiltrated material was unknown by the patients, in some of them it was possible to see oily material on the removed tissue during surgery. This material had all the characteristics of oily silicon. In almost all cases, the approach used for the subcutaneous mastectomy was through the submammary crease. This approach was for maximum preservation of the nipple-areola complex (NAC) vascularity. The decision on the surgical technique performed depended primarily on the characteristics of the breast and patient's expectations. For patients with very large ptotic breast, it was decided to do a total mastectomy with placement of mammary implants and free NAC graft (2 cases). For patients with normal-sized breasts and without ptosis, it was decided to perform a subcutaneous mastectomy without skin resection and implant placement (76 cases). Partial mastectomy without implant placement was performed on those patients with large ptotic breasts who did not accept free nipple-areola graft (6 cases), in these patients we did a reduction mammoplasty with a superior-lateral dermoglandular pedicle.[15] Finally, a subcutaneous mastectomy with skin resection and implant placement was performed on those patients who did not want or did not need NAC pexia but who presented significant pseudoptosis (6 cases).

The management of the breast, infiltrated and affected with foreigner substances can be summarized in Figure 7. On the 84 patients in whom implants were placed, the plane of placement was subcutaneous in 39 cases (46%) and total or partial submuscular in 45 cases (54%). Placing the implants on a submuscular or subcutaneous plane depended primarily on the type of surgery performed and secondarily on the size of the implant. In those cases where the subcutaneous flap thickness was adequate and the implant's size did not exert too much skin pressure, subglandular was the preferred placement. When the implant's size exerted significant skin pressure, the flap was thin, or skin was eliminated together with the mastectomy, submuscular placement was preferred.

Most of our patients were foreign, so there was no strict postsurgical follow-up. Strict postsurgical follow-up was from 10 to 15 days. Two cases of postsurgical hematoma occurred, which had to be reoperated for drainage and hemostasia 8 hours postsurgically without subsequent complications. We had no infections or cutaneous necrosis. Longer follow-up was done when they returned for different surgeries, or by telephone interview or e-mail, for at least 6 months; with these follow-ups, we were able to determinate that 2 breast implant extrusions occurred 3 weeks following surgery. This complication occurred at the patients' place of origin. On 1 patient, a subcutaneous mastectomy with skin resection and submuscular implant placement was performed. The other patient had a subcutaneous mastectomy without skin resection and subglandular implant placement. Both implants were removed at their place of origin. There were no other complications reported in patients followed by telephone or e-mail during these 6 months. Only 46 patients (51%) were available for follow-up for more than 6 months. Short-term as well as long-term improvement in symptomatology was evident in all operated patients, as reported in telephone interviews or by e-mail. The most notable improvement was in pain in 67 cases (93%), hardness elimination in 58 patients (68%), significant improvement in breast deformity in 20 cases (67%), and evident improvement in cutaneous alterations in 19 cases (41%). We were not able to document any incidence of capsular contracture. Total improvement in the symptoms of each group and its correlation to the surgical procedure performed is shown in Table 3.

DISCUSSION

Infiltration of different substances into diverse body areas for esthetic purposes has been done for more than 50 years.[1–6] The infiltrated substances are multiple and varied.[1–8] Although damage over the long-term is serious and severe, patients keep seeking them as a simple and economical alternative to shape and improve their

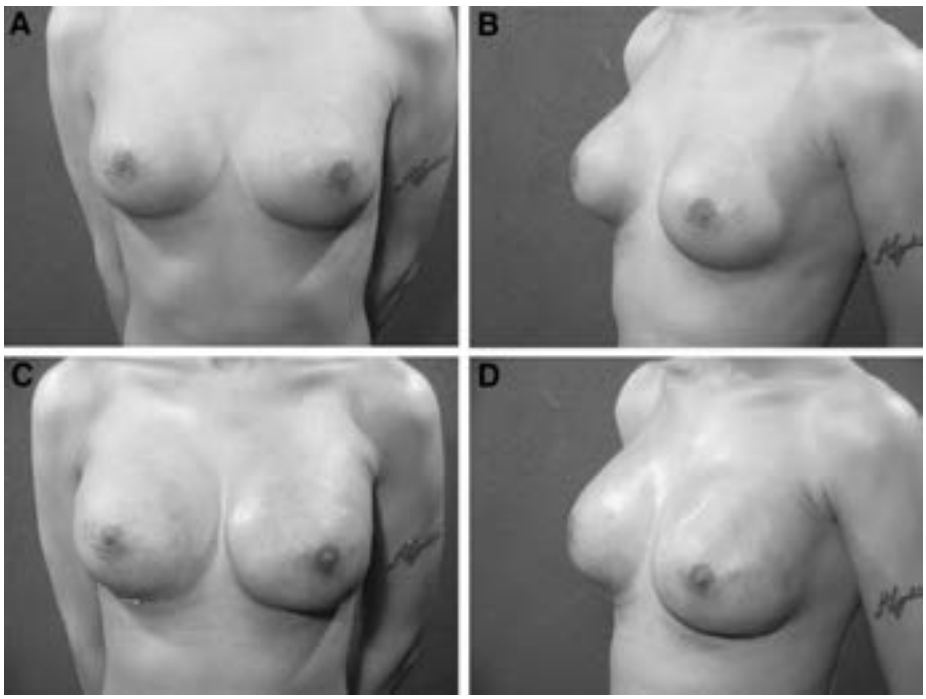

FIGURE 3. Patient 1: 26 years old. A, B, She had foreign material infiltrated 2 years before, and her main reason for surgery was the hardness of her breast. She did not have a significant deformity. We removed the affected breast with subcutaneous mastectomy without skin resection and immediate placement of 350 mL silicon gel round textured implants. C, D, Two weeks postsurgery, and the breast shape and size are very similar to presurgery.

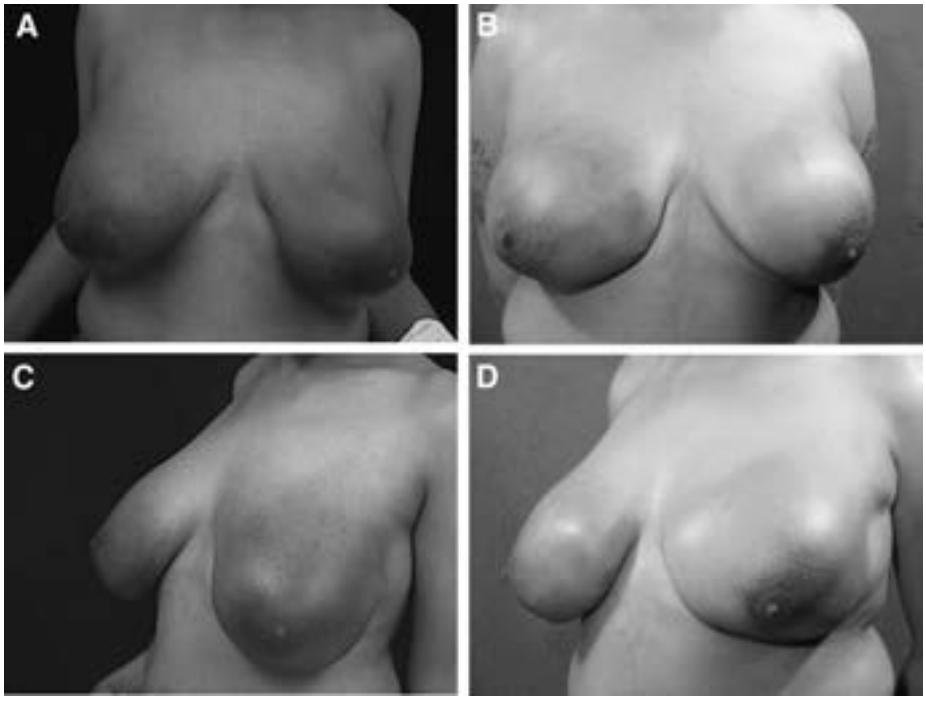

FIGURE 4. Patient 2: 28-years old. A, B, She had received silicone oil infiltrated in both breasts 6 years before. She had significant cutaneous changes, basically hyperpigmentation, but she also had breast hardness. It was necessary to do subcutaneous mastectomy with cutaneous resection and placement of implants. We placed 600 mL, silicon gel round textured implants. C, D, The patient is seen 2 years after surgery with improvement in her skin hyperpigmentation.

figures.[1–6] One of the principal areas affected by this type of treatment is the mammary gland,[2–8] with transsexual patients being one of the most commonly affected groups because of their specific characteristics and needs.[2]

Because of the special characteristics that surround this type of treatment, and because those who infiltrate these products are persons not related to the medical area,[1–3] it is difficult to know what products were used. Ortiz-Monasterio and Trigos reported that in 45% of their cases, oils were the predominant products infiltrated, but without specifying what type, while in 24% the infiltrated product was unknown.[3] Parson and Thering reported only "silicon" as the material used.[4] The problem was identical in all our patients; most only reported having been infiltrated with unknown substances, not knowing whether it was silicon, oil, or some specific mixture of these products.

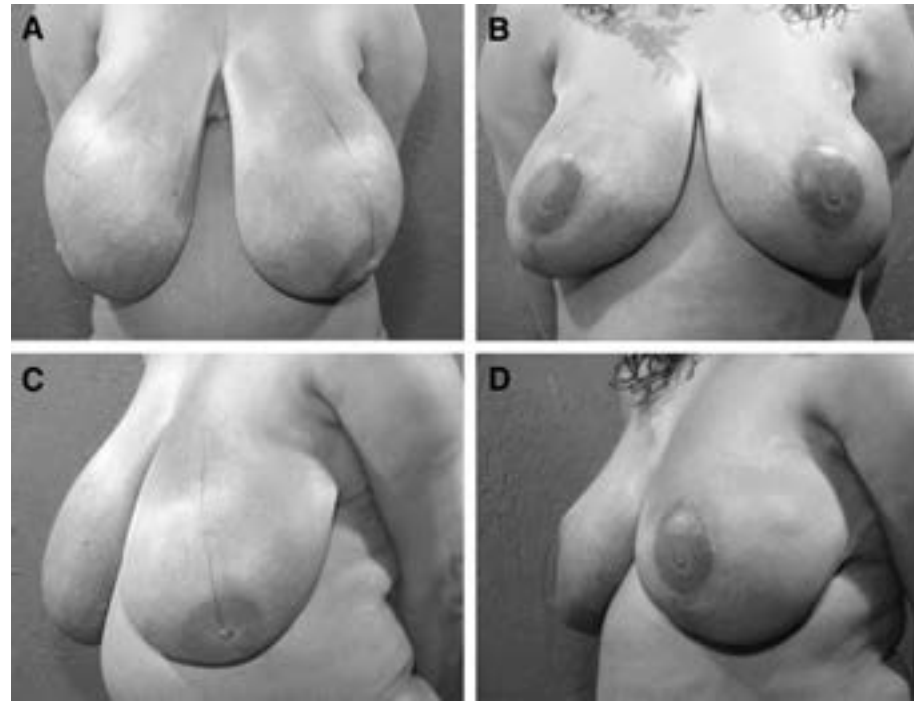

FIGURE 5. Patient 3: 42-years old. A, B, She received unknown foreign material in both breasts over 18 years. She had important breast changes with significant ptosis of the breast tissue. She did not agree to have a total mastectomy with a free nipple-areola graft and implant placement, so we decided to do reduction mammoplasty. She wanted to keep big breasts, but almost 1 kg of breast tissue was removed from each breast. C, She was seen 3 years after surgery and we have ptosis again because of the breast size and breast heaviness. D, We used reduction mammaplasty with a superior-lateral dermoglandular pedicle.[15]

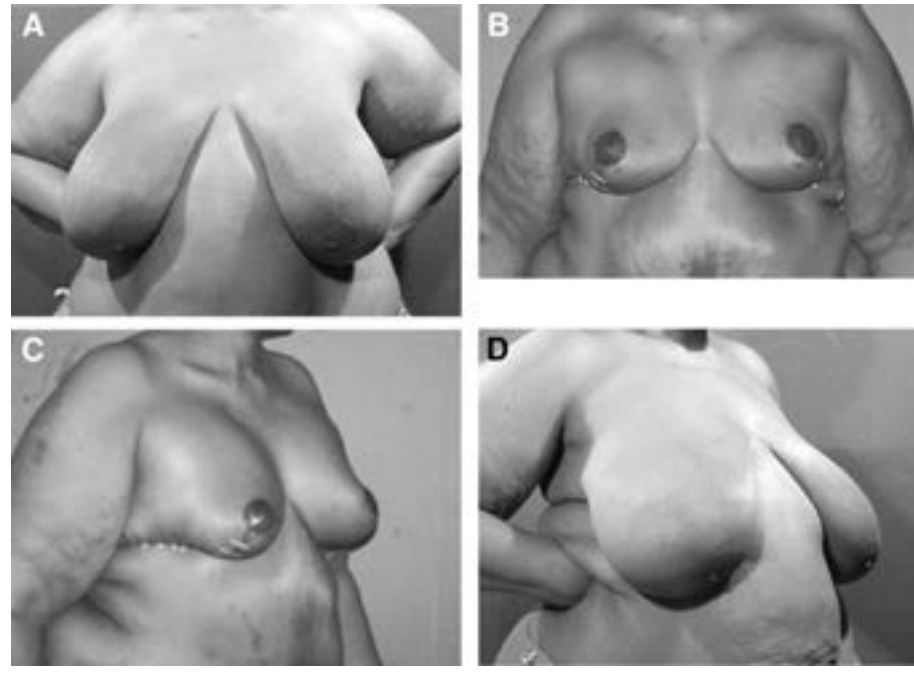

FIGURE 6. Patient 4: 46 years old. A, B, Patient with both breasts affected, injected over 20 years with unknown materials. We did a total mastectomy with a nipple-areola graft and 500 mL, silicon gel round textured implants. C, D, The results 10 days after surgery.

Not having exact knowledge of the infiltrated product prohibited us from making a direct correlation between the material used and the patients' symptoms, because they are multiple and varied. Undeniably, the larger the quantity that is infiltrated and the less inert the product used is, the greater the number and aggressiveness of the signs and symptoms will be. It is interesting to note the large period of time that exists for the onset of signs and symptoms; there are reports of cases that have been infiltrated for 30 years,[8] 1 of our cases had 22 years. Undoubtedly, the main problem in all the reports is the hardness existing following infiltration. This induration is due to the severe inflammatory reaction that is produced secondary to foreign body infiltration,[1–8] with incidence running from 54%[5] to 100%[3] in different reports, whereas in our patients it reached 94%, punctuating that hardness, sooner or later, will be the condition that determines seeking surgical treatment in an attempt to resolve the problem. The incidence of pain is significant, occurring between 40%[5] and 71%[4] in previous reports, affecting 72% of our patients. Approximately half of our patients presented cutaneous alterations secondary to infiltration, the main problems being hyperpigmentation and erythema. These findings were more

TABLE 2. Treatments Effected

Surgical Procedure	Number	Percentage
Subcutaneous mastectomy without skin resection and implant placement	76	84
Subcutaneous mastectomy with skin resection and implant placement	6	7
Partial mastectomy without implant placement	6	7
Total mastectomy with implant placement and free nipple-areola graft	2	2
Total	70	100

common in our casuistic than other reports,[3–5] affecting only around 10% of their cases.

Undoubtedly, surgical treatment in these patients is a challenge for the plastic surgeon, and not only because of the technical difficulty that these cases represent,[2–8] but also because of the nonsurgical complexity that surrounds these patients. Most seek surgical treatment because it is the last option they have for improvement, and nevertheless, they are unaware of the severe health problem that they have.[2–14] They firmly believe that surgery will offer a better result to the esthetic problem that they already have.[3] The large majority of patients want treatment because of pain, hardness, or cancerophobia, and not precisely because of deformity or esthetic alteration; they are unlikely to agree to the treatment and the planned result.[3] The ideal treatment would definitively be the

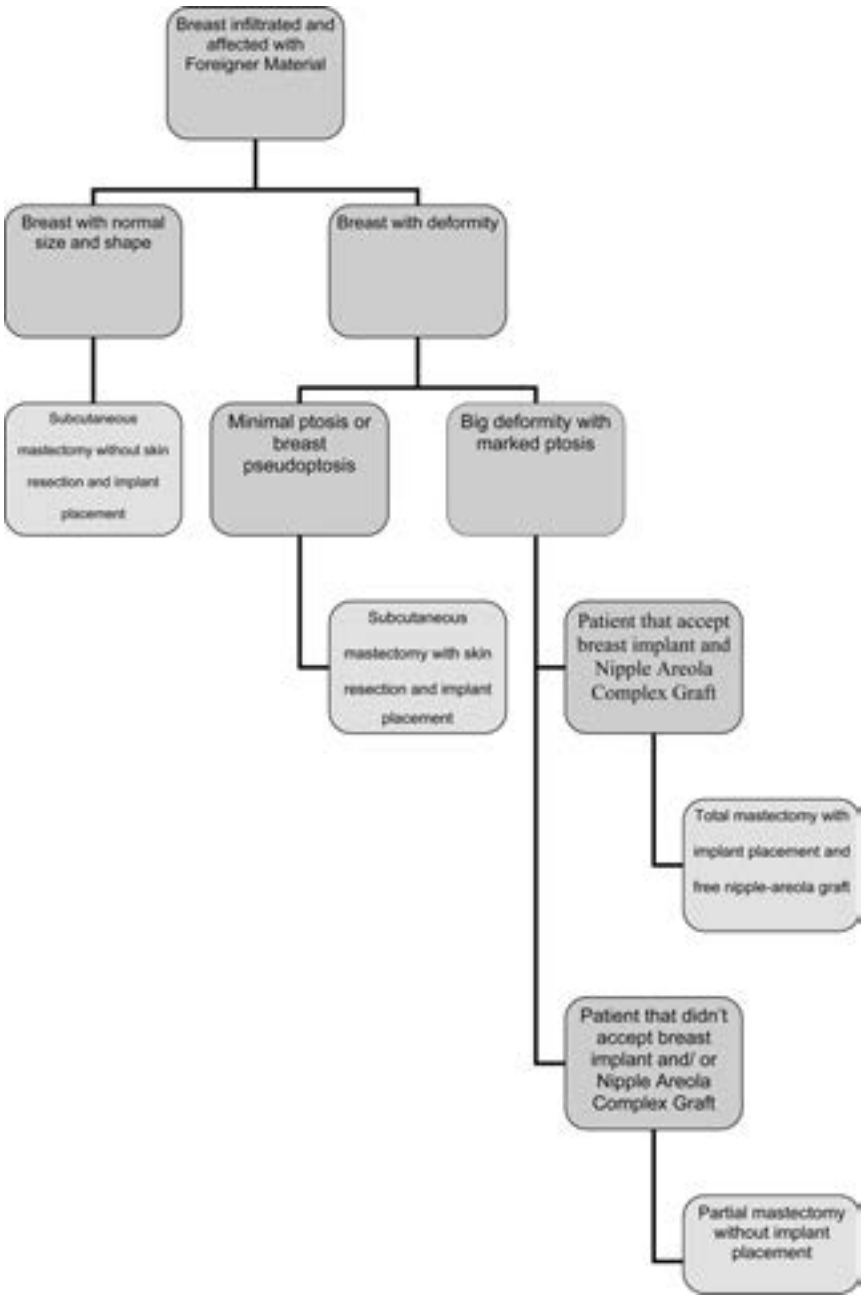

FIGURE 7. The management of the breast, infiltrated and affected with foreigner substances can be summarized on the following figure.

TABLE 3. Improvement of Symptomatology According to Surgery Performed

Surgical Procedure	Patients Operated	Total Patients With Symptoms/Patients With Improved Symptoms (Percentage of Patients With Improvement)			
		Hardening	Pain	Changes to Skin	Deformity
Subcutaneous mastectomy without skin resection and implant placement	76	72/53 (74%)	58/56 (97%)	36/17 (47%)	17/11 (68%)
Subcutaneous mastectomy with skin resection and implant placement	6	6/4 (67%)	6/6 (100%)	4/2 (50%)	5/4 (80%)
Partial mastectomy without implant placement	6	5/0 (0%)	6/3 (50%)	4/0 (0%)	6/3 (50%)
Total mastectomy with implant placement and free nipple-areola graft	2	2/1 (50%)	2/2 (100%)	2/0 (0%)	2/2 (100%)
TOTAL	90	85/58 (68%)	72/67 (93%)	46/19 (41%)	30/20 (67%)

one that would remove all foreign material and would provide them with the perfect esthetic result. However, this is impossible. Therefore, the objective is maximum removal of the affected tissue, providing the best possible esthetic result. For that reason, the main goal was to remove as much material as possible, but in several cases removing all foreign material on the skin envelope was not possible. Fortunately the residual material was in very small amounts, and it did not produced significant symptoms, hardness of the skin being the main remaining one. With this approach, we have achieved a significant improvement in the symptoms, with very satisfactory esthetic results, and protecting the skin as much possible. Like other authors, subcutaneous mastectomy with implant placement is the most commonly recommended treatment.[3–8] This treatment achieves maximum removal of the affected tissue and at the same time is able to restore the esthetics of the breast significantly. However, this treatment is only possible in those breasts where a significant deformity does not exist, and in which there is no need of NAC displacement. Performing subcutaneous mastectomy with NAC displacement entails a very high risk of NAC necrosis. However, unlike most reports on this topic,[3–5] we have performed this procedure at a single surgical time with a low rate of complications. Only 2 patients of 84 who required implants presented extrusion of the implant (2.3%). We feel that this low complication rate is due primarily to leaving the implant covered with the largest possible amount of tissue, either with muscle or a thick cutaneous flap.

However, it is not always possible to apply subcutaneous mastectomy. There are patients whose breast is so deformed or whose condition is so severe that treatment has to be more aggressive, in which we agree with Wustrac and Zarem.[5] There are patients whose deformity is so significant that it is not possible to perform a subcutaneous mastectomy exclusively. In those patients, we perform a larger resection of mammary tissue. If the NAC is not greatly displaced and a smaller breast is wanted, we can do a subcutaneous mastectomy and remove mammary tissue and skin together, placing implants at the same surgical time. When the patient does not want implant placement, which we have had in 7% of our cases, there is no other alternative but to perform reduction mammoplasty, removing the largest amount of mammary tissue possible, in accordance with the requirements of our patients. For this, we have used the technique of reduction mammoplasty with a superior-lateral dermoglandular pedicle previously described.[15] In cases where the deformity is bigger, there is no other option but to perform a total mastectomy, implant placement, and NAC graft.

This type of approach, consisting of maximum removal of the affected tissue, with immediate mammary reconstruction, has allowed us to obtain satisfactory esthetic results and above all, improvement in the symptoms. Thus, we have achieved improvement in hardness, pain, cutaneous changes, and deformity in two-thirds of the patients, the improvement in pain being the most significant modification.

In spite of improvement in the surgical techniques for breast contouring and augmentation, the infiltration of foreign substances into the breast is a procedure that has not change over the years. Contrary to what we might suppose, with improved communication and the flow of information, the same problems that existed 30 years ago continue arising today.[3–5] The same incidence continues, along with a lack of knowledge about the substances used, the esthetic and systemic alterations that are secondary to infiltration, and above all, the large public health problem that all this entails.[7–14] It is up to us as plastic surgeons to provide ongoing education to our patients, to orient them to completely avoid looking for miraculous results with untrained people, because contour improvement and breast augmentation have very simple solutions in the hands of qualified plastic surgeons.

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AUTHOR QUERIES

AUTHOR PLEASE ANSWER ALL QUERIES **1**

AQ1—Please note that Figures have been renumbered.

AQ2—Please check whether the abbreviated form of nipple-areola complex is okay as given.