Long-Term Effects of Breast Aging in Patients Undergoing Explantation

Analysis of Breast Aesthetics From Before Augmentation to After Explantation

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Purpose: Although most patients with implants have an uneventful course, some will require explantation. Moreover, women's breasts and their perception of their body habitus change with time. This study covering greater than a 32-year period will address the reconstruction options available after breast implant explantation.

Methods: Augmentation mammoplasty was performed on 42 patients who subsequently underwent explantation. The following data were recorded: age at time of implantation and explantation, length of implant, type, reason for explantation, and decision after explantation. Recommendations were made based on patient preferences, degree of ptosis, clinical history, opinions regarding scars, and breast contour. Reconstruction options were categorized into none, mastopexy, capsulectomy and reaugmentation with saline implants, and mastopexy with immediate or delayed augmentation.

Results: The average age of patients at implantation was 32.3 years, 46.8 years at explantation, with a length of implantation of 14.4 years. Thirty-six (86%) of 42 patients received explantation for capsular contracture, 7 (17%) for negative publicity of silicone implants, 7 (17%) for change in body habitus and perception of implants, 6 (14%) for rupture, 5 (12%) for ptosis, and 1 (2.4%) each for synmastia, breast cancer, and painful implants. Sixteen (38%) patients underwent mastopexy after explantation, 15 (36%) underwent no reconstruction after explantation, 6 (14%) with mastopexy and reaugmentation (2 immediate and 4 delayed), 4 (9.5%) with implant exchange, and 1 (2.4%) with mastectomy and reconstruction. All patients demonstrated satisfactory to excellent results.

Conclusions: This study provides long-term results of augmentation mammoplasty by a single surgeon (G.P.G.) evaluating available options and reasonable expectations after explantation. Although most of the augmentation patients have a good outcome, some require removal of implants for a variety of reasons and long-term satisfactory options do exist after explantation.

Key Words: breast implants, augmentation, explantation, mastopexy

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For the last 5 years, breast augmentation has been the most commonly performed cosmetic surgical procedure, with almost 300,000 performed in 2010 alone and more than half a million in the past 2 years.[1] Since the moratorium on silicone breast implant was removed in 2006, the annual number of implants placed has consistently increased. Today, half of all breast augmentation procedures, cosmetic and reconstructive, are with silicone implants.[1] Although implant explantation was presumably sought due to the previous silicone scare in the past, it continues to be commonly performed. According to the American Society of Plastic Surgery, more than 40,000 explantation procedures were performed in 2009 and 2010. With increasing numbers of implants being placed, we will likely continue to see patients requesting explantation.

Reasons for explantation include capsular contractures, changes in body habitus resulting in dissatisfaction with breast appearance and shape, breast ptosis, and change in the patient's opinion or perception regarding the implants, among others. Several studies have examined patients and their options after explantation, and even developed clinical algorithms for guidance.[2–5] Postexplantation breast shaping options include (1) explantation alone (up to 20% of the breast volume may be regained within 12 weeks[4]), (2) mastopexy, (3) mastopexy and augmentation (immediate vs delayed depending on clinical scenario), and (4) reaugmentation.

We present a retrospective study of a subset of consecutive patients under a single surgeon with a relatively long length of implantation (mean, >14 years) who underwent explantation for a variety of reasons, with the most extensive follow-up in literature to date (mean, 18 years after explantation). We also provide a discussion of options after explantation with lessons learned from our group and prior studies.

METHODS

We conducted a retrospective study of all patients in a 29-year period who had breast implantation and underwent explantation during the practice of senior author (G.P.G.). Breast implants were performed for cosmetic purposes only. Thorough evaluation of patient charts was conducted before inclusion in the study. All incomplete medical records were excluded from the study.

Inclusion criteria included no previous history of connective tissue disorders, preoperative and postoperative evaluations, no previous history of breast implantation, and augmentation with either saline or silicone implants. Explantation is defined as the removal of the implant and capsule. The following data were recorded: patient age at time of implantation, patient age at time of explantation, length of implant, type of implant, reason for explantation, decision after explantation. Recommendations after explantation were made based on patient preferences, degree of ptosis, clinical history, opinions regarding scars, and breast contour. Photographs obtained before and after augmentation and before and after explantation/reconstruction were reviewed for outcome. Statistical analyses were performed using analysis of variance (ANOVA) testing.

After clinical examination, decisions of postexplantation options were made by the surgeon and patient. Simultaneous breast contouring was recommended in patients with grade 2 or 3 ptosis and adequate amount of remaining breast parenchyma. An inframammary

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approach was used and implants were sent to pathology. Techniques differed accordingly to those who underwent immediate reconstruction.

RESULTS

A retrospective chart analysis of cohorts who underwent explantation from 1971 to 1999 demonstrated 42 female patients with an average age of 32.3 years (range, 20–52 years) at time of implantation. Average age at explantation was 46.8 years (range, 32–63 years) with an average of length of implant of 14.4 years (range, 2–23 years). Reasons for explantation (in some cases, multiple reasons were stated) included capsular contracture (86% or 36 patients), negative publicity (17% or 7 patients), change in body habitus or perception of implants (17% or 7), implant rupture (14% or 6), breast ptosis (12% or 5 patients), and 2.4% or 1 patient each for pain, symmastia, breast cancer, or combination of the previously mentioned reasons (Table 1).

After explantation, 16 (or 38%) patients underwent immediate mastopexy, 15 (or 36%) underwent no reconstruction after explantation, 6 (or 14%) underwent mastopexy and reaugmentation (2 of which were immediate), 4 (or 9.5%) with implant exchange, and 1 (or 2.4%) with mastectomy and reconstruction (due to cancer) (Table 2). If inadequate breast tissue was present for an acceptable result, the patients usually opted for reaugmentation. If there was breast ptosis present with adequate breast tissue, patients usually opted for mastopexy after explantation. The one surgical complication was delayed healing and scar formation after an electrocautery burn to skin. The explantation rate for the senior author performing primary augmentation is estimated at 15% over 20 years.

No relationship was found between the following variables using an ANOVA model: reason for explant and length of implant, age at implant and length of implant, procedure performed and length of implant, and procedure performed and reason for explantation.

Case Examples

Explantation With No Additional Procedures

The patient is a 36-year-old woman who underwent explantation primarily due to negative publicity and therefore was not a willing candidate to undergo repeat implantation. Also she was found to have capsular contracture on examination. She had her implants placed at 20 years of age. She regained some of her parenchymal fill of the skin envelope at 2 years after explantation of follow-up with an acceptable result. Her length of implant is 16 years and the number of years after original implantation is 18. Her preoperative and postoperative results are shown (Fig. 1).

TABLE 1. Reasons for Explantation

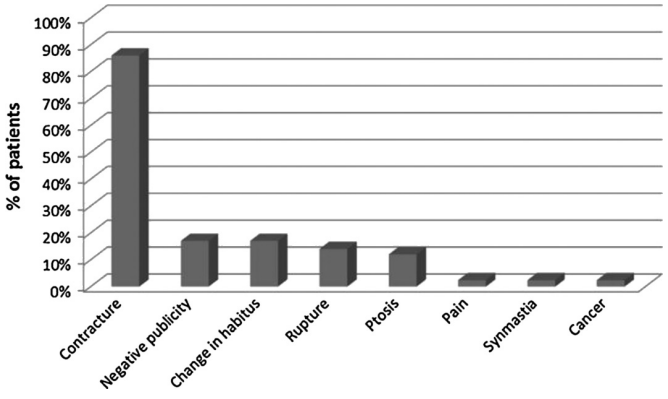
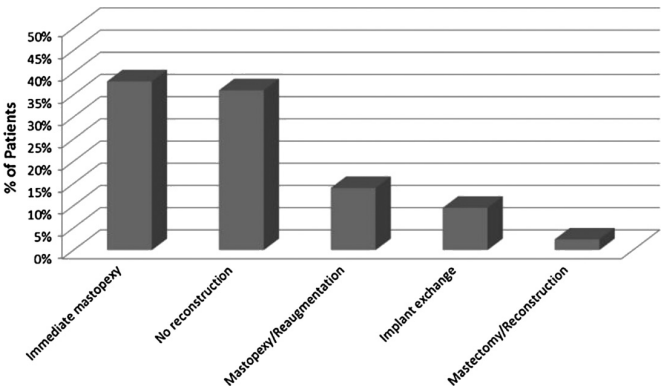


TABLE 2. Post-Explantation Procedure



Explantation With Immediate Mastopexy

The patient is a 44-year-old woman who initially underwent augmentation and mastopexy at 32 years. She decided to have explantation secondary to a change in her body habitus and the perception that she no longer needed implants to augment the size of her breasts. She was noted to have clinically significant ptosis with good parenchymal coverage of her implants preoperatively and therefore underwent explantation with immediate mastopexy. Preexplantation and 4-year postexplantation with repeat mastopexy photographs are shown (16 years after her original implantation) (Fig. 2).

Explantation With Immediate Augmentation

The patient is a 41-year-old woman who underwent breast augmentation with subglandular implants at 31 years. She decided to undergo explantation secondary to capsular contracture but wished to maintain her implants. She had minimal ptosis and therefore underwent explantation, capsulectomy, and reinsertion of her implants in a subpectoral plane. Preoperative and postoperative photographs are shown 13 years after her explantation/augmentation, and 23 years after her original implantation (Fig. 3).

Explantation With Immediate Augmentation-Mastopexy

The patient is a 32-year-old woman who underwent subpectoral breast augmentation and release of her contracted, tuberous breast at 20 years. She decided to undergo explantation secondary to capsular contracture 12 years after her original implantation. She had sufficient breast parenchyma (>4 cm) and grade 2 ptosis, and therefore elected to undergo an immediate mastopexy at the time of explantation. Also, she wanted to maintain her upper pole fullness and therefore the decision was to replace her subpectoral implants at the same time after an anterior capsulectomy. She is shown 1 year after explantation with immediate augmentation and mastopexy, and 13 years after original implantation (Fig. 4).

Explantation With Immediate Mastopexy and Delayed Augmentation

The patient is a 46-year-old woman who underwent subglandular augmentation 22 years earlier at age 24, and requested explantation secondary to capsular contracture. She did not want any additional implants at the time of explantation. She had grade 2 ptosis and adequate breast parenchyma for immediate vertical scar mastopexy. One year later, the patient desired an increase in size and underwent an augmentation. She is shown after reaugmentation, 1 year after

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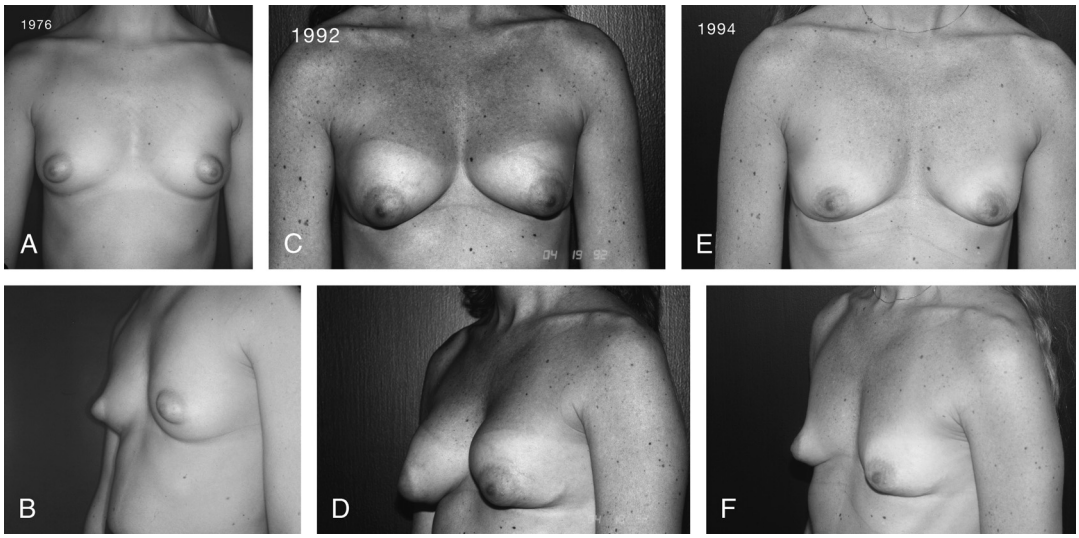

FIGURE 1. Explantation with no additional procedures. Anterior-posterior (A-P) (A) and oblique (B) views are shown at age 20 years, before augmentation. (C) and (D) views are at age 36, prior to explantation (E) and (F) are at age 38, 2 years after her explantation procedure for negative publicity and mild capsular contracture, with regaining some of her parenchymal fill.

explantation/mastopexy, and 23 years after her original implantation (Fig. 5).

After explantation, patients were followed up for an average of 20 years. Outcome is categorized according to surgeon and patient satisfaction. This was categorized as excellent, good, satisfactory, or poor. All patients (as well as the surgeon) reported satisfactory to excellent outcomes.

DISCUSSION

Breast augmentation continues to be the most common cosmetic surgical procedure in the United States.[1] In 2010 alone, more than 20,000 explantation procedures were performed in the United States. Thus, it is important for the plastic surgeon to recognize common reasons for explantation and subsequent available options for reshaping the breast.

Algorithms for options after explantation proposed in previous studies are based on factors including the degree of preexplantation breast ptosis, smoking history, skin elasticity, implant size, pocket position, areola size, and integrity and thickness of remaining breast parenchyma.[4] The senior author followed a similar algorithm. If there was grade 2 or greater ptosis, with adequate breast parenchyma, mastopexy was suggested, with or without augmentation depending on specific patient desires. Patients who were at higher risk for complications (i.e. smoking history, vascular disease, and obese) underwent delayed procedures.

Often in delayed reaugmentation procedures, patients return after initially deciding against immediate reaugmentation because they have become accustomed to their augmented breast sizes. Also, the surgeon and patient should be aware that changing planes from subpectoral to subglandular after capsulectomy results in decreased superior pole fullness.[3] Despite variation in patient presentations, breast

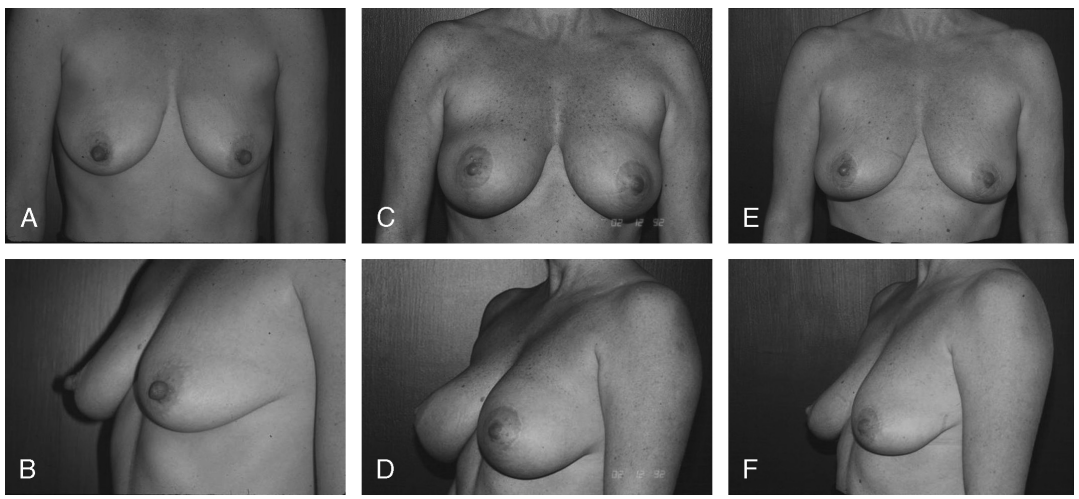

FIGURE 2. Explantation with immediate mastopexy: (A) and (B), views are shown at age 32, before augmentation and mastopexy. Preexplantation (C) and (D) views are shown at age 44 (E) and (F) views are shown at age 48 years, 4 years after an explantation procedure with immediate repeat mastopexy with good results.

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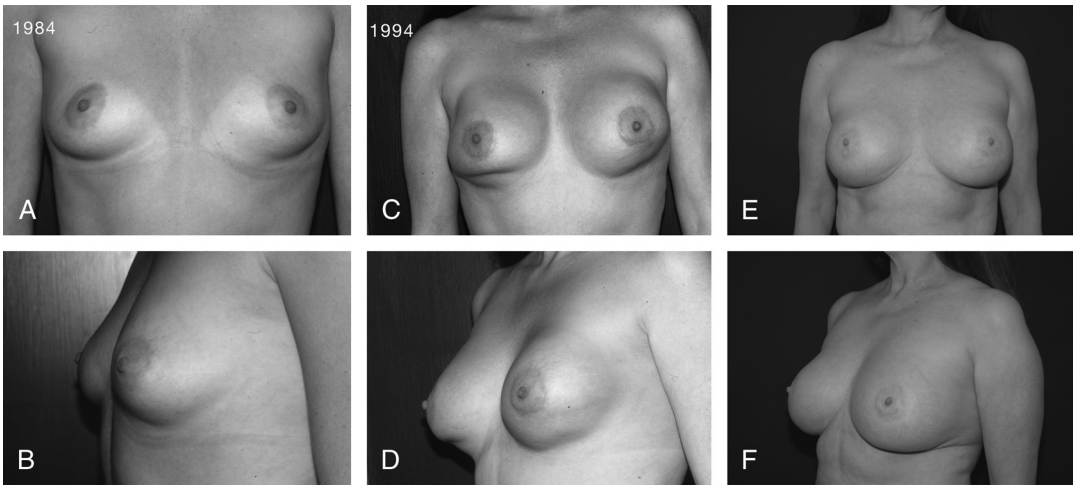

FIGURE 3. Explantation with immediate augmentation: (A) and (B) views are shown at age 31 year, before augmentation. Preexplantation (C) and (D) views are shown at age 41 years demonstrating significant capsular contractures. (E) and (F) views are shown at age 54 years, 13 years after an explantation procedure with immediate augmentation with excellent results.

shapes, and postexplantation options, we found all methods used result in satisfactory to excellent outcomes (Figs. 1–5).

After unfounded concern over the use of silicone implants in the 1990s, the approval of the Food and Drug Administration (FDA) on the use of silicone implants for cosmetic procedures revived their popularity.[6] In fact, approximately half of all implants used in augmentation are currently silicone and studies have reported implant exchange with silicone implants being usually chosen again if used initially.[7] Of note, preoperative contour and size in patients whose silicone-gel implants are replaced with saline filled is difficult to replicate given the inherent differences between these implants.

Given the large number of implant procedures, we expect there to remain a population of patients who will undergo explantation for various reasons discussed previously and new concerns over the safety of implants. During the "silicone scare" of the 1990s, almost half of the patients who underwent explantation were choosing not to have their implants replaced.[7,8] In our patient population, approximately two thirds chose not to replace implants after explantation in the 1990s. Currently, however, most of the authors' patients who undergo explantation have their implants replaced. This is in line with other recently published reports of 90% reimplantation rates after explantation.[7]

Although the "danger" of silicone implants was not supported by scientific evidence, the discussion of potential dangers led to an increase in the number of explantation procedures. Recently the FDA released information regarding the increased risk of Anaplastic Large Cell Lymphoma (ALCL). Although only 34 cases have been reported to date of 10 million implant procedures performed during the last 20 plus years, the potential of a public scare and increase in explantation procedures is present. It is our duty to educate patients regarding the facts that the American Society of Plastic Surgery and FDA concluded that breast implants "remain safe and effective" and that the potential risk of ALCL resulting from implants is "extremely

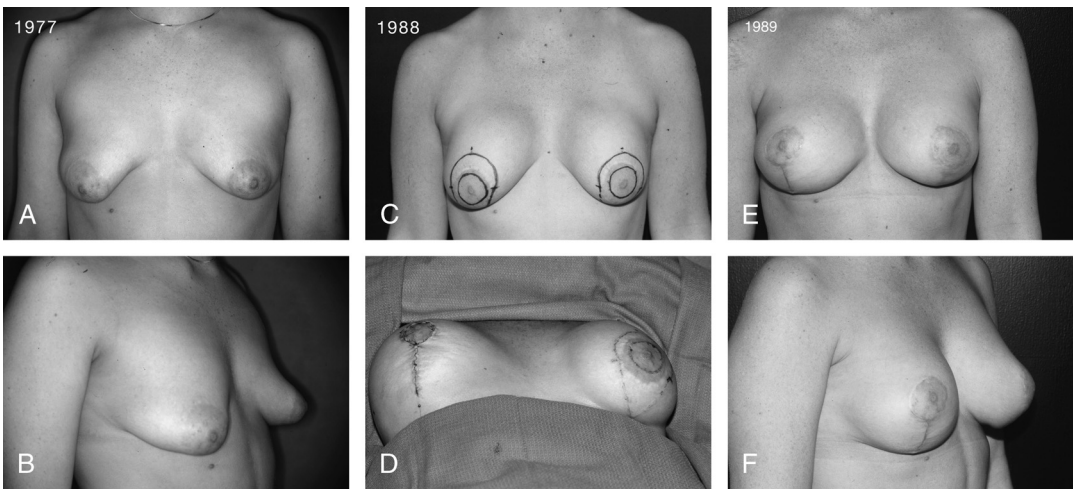

FIGURE 4. Explantation with immediate augmentation-mastopexy: (A) and (B) views are shown at age 20 years, before augmentation and release of constricted breast. A preexplantation photograph (C) is shown at age 32 years with capsular contracture, as well as an intraoperative photograph (D) demonstrating a ''comma'' mastopexy (E) and (F) views are shown at age 33 years, 1 year after an explantation procedure with immediate augmentation and mastopexy with an excellent result.

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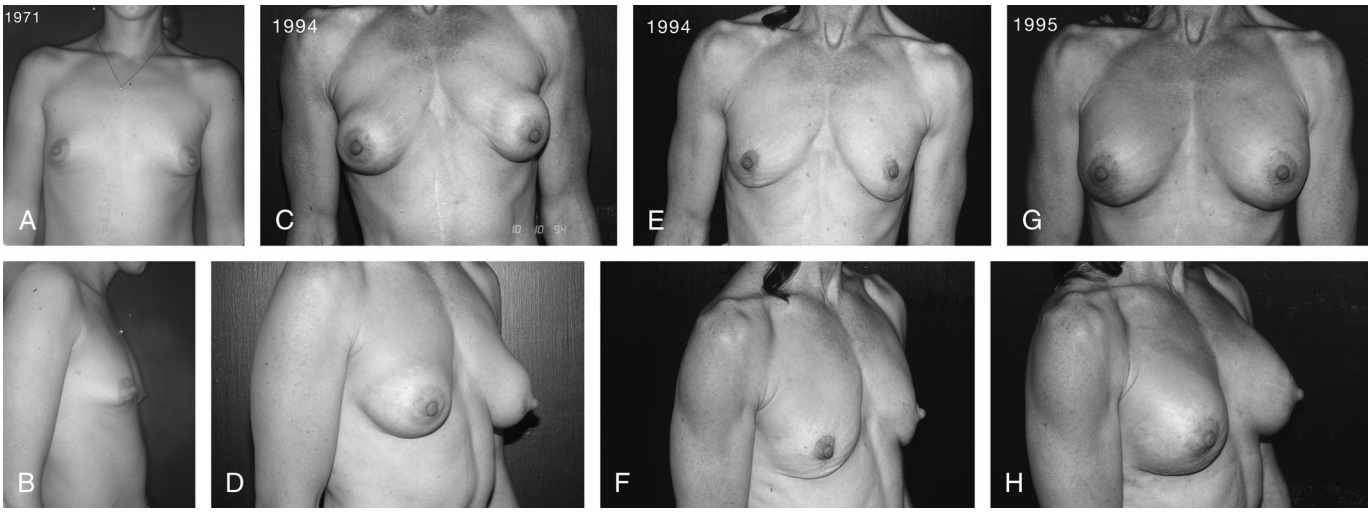

FIGURE 5. Explantation with immediate mastopexy and delayed augmentation: (A) and (B) views are shown at age 24 years, before augmentation. Preexplantation (C) and (D) views are shown at age 46 years demonstrating significant capsular contractures. Postexplantation and immediate mastopexy (E) and (F) views are shown postoperatively (before reaugmentation), along with (G) and (H) views 1 year after her delayed augmentation with good results.

low."[9,10] The patient must be informed that ALCL is not breast cancer, is considered a relatively indolent course, and all cases resolved after systemic therapy and/or simple explantation and capsulectomy.[10] Despite these facts, it may lead to increases in explantation rates.

In January of 2011, the FDA issued a report stating that up to 20% of patients who underwent augmentation and 50% of patients who underwent reconstruction with implants will require explantation within 10 years.[11] Currently, the most common reason for breast implant removal is related to capsular contracture. Relatively recent data also indicate significant decreases in capsular contractures compared to previous years. For silicone and saline implants during a 36-month period and as far out as 6 years, contracture rates were found to be less than 10% for cosmetic augmentation procedures.[11] Interestingly, in our population of patients for this study, capsular contracture was the reason for explantation in 87% of patients. This accounted for the most common reason for explantation, and interestingly not concerns over the safety of silicone.

This study provides long-term results of augmentation mammoplasty by a single surgeon (G.P.G.) looking at the available options and reasonable expectations after explantation. Interestingly, the lack of relationship between our variables suggests that procedures performed after implantations are not restricted by age or length of implant. As long as implant procedures are being performed, there will be patients requiring explantation procedures for a variety of reasons. Also, as an increasing number of patients achieve longer implant age and more women are having augmentation procedures, explantation remains a procedure that will continue to be performed. We found that acceptable breast shape can be achieved using mastopexy and/or augmentation techniques despite increases in the ages of our patients—the longest follow-up noted to date. In fact, some cases demonstrate improved shape secondary to age-related changes from the original operation to now.

Upon review of postexplantation options and evaluation of long-term results decades out from explantation, it is clear that satisfactory methods and excellent results are possible, even in older patients that have had implants in place for years.

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