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The reoperation cascade after breast augmentation with implants: What the patient needs to know☆

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Summary Breast augmentation with implants is the most commonly performed aesthetic surgical procedure. However, the risk of complications requiring revision surgery with unsatisfactory final results is often underestimated.

In a 10-year retrospective study, patients receiving implant exchange or implant removal after breast augmentation were reviewed with regards to surgical technique, implant type and position, complications and follow-up interventions.

As many as 230 patients were included with a mean age of 40.23 years. A total of 192 (83.5%) had primary augmentation for aesthetic reasons, 24 (10.4%) patients were transsexuals and 14 (6.1%) were treated for malformations. The median primary implant size was 260, 224 and 327 g for aesthetic, malformation and transsexual patients, respectively. Capsular contracture was the leading cause for revision in aesthetic patients whereas size and shape were the main reasons for reoperation in transsexual and malformation patients, respectively. As many as 25% of patients required more than one revision procedure. The time between operations in aesthetic augmentation patients was significantly shorter for the second revision procedure (106.2 months vs. 11.4 months, $p < 0.0001$). The cumulative risk for needing a second revision procedure in aesthetic patients at 12 months was 24.5%. There was no correlation between implant site, size, position or type of complication and the number of revision procedures.

Our data highlight the high complication rate of revision surgery involving implant removal or replacement. We conclude that patients must be routinely informed of the high risk and arduous consequences of revision surgery, which should be stated as such in the written consent for the procedure.
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Breast augmentation with implants is the most commonly performed plastic surgical procedure worldwide, with close to 10,000 patients treated annually in both Germany and the United Kingdom and nearly 300,000 patients treated in the United States per year (Annual Report 2010 Gesellschaft für Ästhetische Chirurgie Deutschland, Annual Audit 2010 British Association of Aesthetic Plastic Surgeons. American Society of Plastic Surgeons. National Clearinghouse of Plastic Surgery Statistics, 2010 Report of the 2009 Statistics, Arlington Heights, Ill: American Society of Plastic Surgeons, 2010). The abundance of literature on the subject is therefore not surprising, with authors presenting data from single and multicentre studies, some covering impressively large case series. Although the safety of silicone-filled implants with regards to the initially feared induction of malignancy has been widely accepted,[1–6] most studies conclude that other complications requiring revision surgery, be that medical or aesthetic, are very common. According to The Mentor Core Study on Silicone MemoryGel Breast Implants[7] and the Inamed Breast Implant Core Study,[8] both published in 2007, the complication rate for primary breast augmentation requiring reoperation was reported to be as high as 15% and 28% within the first 3 and 6 years, respectively, and even higher rates were found for revision-augmentation or reconstructive cases. These two well-designed studies confirm similar numbers from other recently published studies with large patient cohorts.[9–11] Of late there has been some discussion about the definition of reoperation and revision surgery, in particular whether an aesthetically unsatisfactory result leading to a patient's request for reoperation should also be classified as a complication, thus causing an over-dramatisation of the term revision surgery and its incidence.[12,13] Irrespective of the reason, one might expect that knowledge of the probability of requiring any secondary surgery being as high as 30% within the first few years would be a deterrent for many patients considering such a procedure. The question therefore arises whether the patients are adequately informed about the short- and long-term course following breast implant surgery.

The purpose of this study was to analyse the data of patients having undergone revision surgery with either implant removal or replacement as a distinct cohort, aiming to gain information on contributing factors and trends, subsequently allowing adequate patient information.

Material and methods

In a retrospective study of patients treated at the Department of Plastic Surgery and Hand Surgery, University Hospital Zurich, Switzerland, between 1999 and 2010, the incidence of implant removal or replacement and their subsequent complications and follow-up interventions after primary augmentation mammoplasty were examined. Surgical technique, implant type and position, number of reoperations and complications were assessed. The patient cohort included patients having undergone primary augmentation for subjective hypoplasia, malformations such as Poland syndrome and male-to-female transsexualism. Patients with implant-based reconstruction due to breast cancer were excluded from the study. The patients were analysed in three groups: aesthetic, transsexual and malformation based on the primary reason for augmentation.

After obtaining Institutional Review Board approval, the data were collected from each patient's electronic medical history record at the University Hospital Zürich (KISIM, 4.901). Statistical analysis was performed using IBM SPSS Statistics, version 20, and included Student's two-tailed *t*-test and Pearson's chi square test for comparing continuous and categorical variables, respectively, together with Kaplan Meyer Survival analysis. A p value < 0.05 was considered significant.

Results

During the retrospective observation period between 1999 and 2009, 1079 breast implant procedures, excluding reconstructive cases, were performed at the Department of

Table 1 Patients and primary augmentation data.

Group		Aesthetic	Malformation	Transsexual	Total
No. of Patients		192	14	24	230
Age: years (range)		41.5 (39.9–43.1)	29.0 (23.1–34.9)	36.3 (31.8–41.0)	40.2 (38.8–41.7)
Primary surgery	In house	52 (27.1%)	14 (100%)	21 (87.5%)	87 (37.8%)
	Referral	140 (72.9%)	0	3 (2.5%)	143 (63.2%)
Implant size: g (range)		267.9 g (256.3–279.4)	219.8 g (179.2–260.3)	336.5 (277.3–393.7)	271.4 g (259.7–283.2)
Implant shape	Round	121 (63.0%)	7 (50%)	13 (54.2%)	141 (61.3%)
	Anatomic	71 (37.0%)	7 (50%)	11 (45.8%)	89 (38.7%)
Implant site	Subglandular	57 (29.7%)	10 (71.4%)	15 (62.5%)	82 (35.6%)
	Subpectoral	100[a] (52.1%)	2[b] (14.3%)	9 (37.5%)	111 (64.4%)
Incision	Inframammary	127[b] (66.1%)	12 (85.8%)	17 (70.8%)	156 (67.8%)
	Mastopexy	28 (14.0%)	1 (7.1%)	0	29 (12.6%)
	Periareolar	16 (8.3%)	1 (7.1%)	0	17 (7.4%)
	Axillary	18 (9.4%)	0	6 (29.2%)	24 (18.4%)
	Umbilical	1 (0.5%)	0	0	1 (0.6%)

[a] No data available for patients $n = 34$.
[b] No data available for patients $n = 2$.

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