



Retrospective evaluation of complications in patients who underwent breast reduction surgery without drains: No drain, no pain!

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Abstract

Aim: In women, breast reduction surgery is performed due to macromastia, i.e., excessive breast size, regardless of age, and is the most effective method for eliminating problems such as dermatitis and malodor under breasts, as well as pain in the musculoskeletal system. To contribute to the establishment of standards that will ensure maximum patient comfort and minimum complications in the follow-up of breast reduction surgery, an operation frequently performed by plastic surgeons, by comparing the data of women who underwent breast reduction surgery without drains with those reported in the literature.

Materials and Methods: Demographic and surgical record of 31 women who underwent bilateral breast reduction surgery performed by the same surgeon without the use of drains were evaluated retrospectively following the approval of the local ethics committee.

Results: Breast reduction surgery was performed with the superomedial pedicle technique in 22 of the patients and the free nipple graft technique in nine. Early complications were seen in three (1.82%) of the total of 62 breasts that were operated on.

Conclusion: The use of no drains in breast reduction surgery did not increase postoperative complications, and it also provided a more comfortable follow-up process for both the patient and the surgeon.



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Introduction

Large breast size, also known as macromastia, is responsible for many women experiencing reduced comfort in daily life. There are literature data showing that large breasts cause back and shoulder pain in patients, malodor due to dermatitis beneath the breasts, posture disorders, and self-confidence problems [1,2]. The most effective treatment for macromastia is breast reduction surgery, with most patients reporting a regression in the above-mentioned complaints after this surgery [3-5]. The use of drains in breast reduction surgery is a method frequently preferred by surgeons [6]. Although the evidence-based guidelines published by the American Society of Plastic Surgeons (ASPS) do not recommend the use of drains in reduction mammaplasty surgery that does not involve liposuction [7], drains are still routinely used as a surgical habit or the traditional approach of some clinics. The aim of this study was to compare the retrospective analysis of the data of

patients who underwent breast reduction surgery without drains to the literature data and contribute to the determination of standards that will increase the comfort of both the patient and the surgeon in the follow-up process.

Materials and Methods

Thirty-one patients who underwent bilateral breast reduction surgery performed by the same surgeon without liposuction were included in the study. The data of the patients were evaluated retrospectively. Ethics committee approval was obtained for the study (Health Sciences University Antalya Training and Research Hospital Clinical Research Ethics Committee, date: 03.07.2020, decision no: 10/24).

Surgical technique

Preoperative markings were performed with the patient standing up. Antibiotic prophylaxis was administered as a standard to the patients before the surgical procedure. In addition, subcutaneous low-molecular-weight heparin was

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administered to the patients over 40 years, depending on their weight and additional medical conditions. The operations were performed under general anesthesia, without using local anesthetic infiltration, at normotensive blood pressure values. The reverse T incision with superomedial pedicle or free the nipple areolar complex (NAC) graft techniques were performed in the surgeries. After de-epithelization or the full-thickness graft extraction of the NAC with a scalpel, a needle-tipped cautery tip was used during tissue excision. Following the complete excision of the tissues, mutual symmetry was checked, the surgical fields were washed with saline and suctioned, and bleeding control was made for the last time. The incisions were repaired with primary repairs suitable for their thicknesses without tension. Liposuction was not performed, and drains were not used in the surgical fields in any of the patients included in the study. After dressing was applied, all patients wore a compression corset bra as a standard immediate after the surgery. None of the patients required a blood transfusion. The patients were generally discharged on the first postoperative day.

Results

The mean age of the 31 patients participating in the study was 43.53 (18-69) years. The mean follow-up period was approximately 19 (5.5-25) months. The surgery was performed with the superomedial pedicle reverse T incision technique in 22 patients and the free NAC graft reverse T incision technique in nine patients. Twenty-seven of the patients were discharged on the first postoperative day, one on the second postoperative day, two on the third postoperative day, and one on the same day of the operation.

Among the patients who underwent superomedial pedicle mammoplasty, the mean amount of tissue removed was 552.04 (100-1,100) g for the right breast and 574.31 (150-1,200) g for the left breast, and the average amount of tissue removed per patient was calculated to be 1,126.35 g. In the same patient group, the mean preoperative right breast nipple (RBN)-suprasternal notch (SSN) distance was 29.63 cm, and the mean preoperative left breast nipple (LBN)-SSN distance was 29.86 cm. After the operation, the mean distance from the both nipples to SSN was 20.11 cm. In the patients who underwent surgery with the free NAC graft transfer technique, the mean amount of tissue removed was 1,321.66 g (940-2,750) g for the right breast and 1,354.44 (860-2,800) g for the left breast, with the average amount being determined to be 2,676.1 g per patient. In this group, the preoperative RBN-SSN and LBN-SSN distances were measured to be 36.44 cm and 37.01 cm, respectively. After the operation, the mean distance of the both nipples to SSN after the operation was 21 cm.

Major complications (e.g., NAC necrosis, infection, hematoma, and seroma) were seen in only three patients, of whom two had unilateral seroma in the right breasts and one had unilateral pedicle circulation impairment in the right breast. All the patients who developed complications were those who had undergone surgery with the pedicle technique. When the histories and comorbidities of the patients with seroma were evaluated, the first patient was a smoker with nonsteroidal anti-inflammatory drug (NSAID) allergy, epilepsy, and diabetes mellitus history,

and the second patient had asthma history. Both patients were followed up conservatively, and seroma fluid aspiration was performed under ultrasound guidance. The patients who developed seroma recovered uneventfully in the following period. However, the patient who developed unilateral pedicle circulation impairment in the right breast was taken back to the operating room on the first postoperative day. During the salvage procedure, the NAC graft was harvested, and after debridement, it was placed back in the same site with tie-over with bolster sutures to increase graft survival. Complications were seen in three of the totals of 62 operated breasts (1.86%), and the rate of patients with complications was 9.67%. Postoperative infection, hypertrophic scarring, total/partial nipple necrosis, fat necrosis, significant asymmetry, or other systemic complications were not observed in any of the patients included in this study. Data of the patients are indicated in Table 1 in details.

Discussion

Breast reduction surgery is the most realistic treatment method in women with macromastia [5]. There are many techniques and recommendations described in the literature concerning the suitability of patients for this surgery and how to reduce complications [8,9]. Regardless of the method used in breast surgery, the use of drains by plastic surgeons is common [6,10-12]. Postoperative hematoma and seroma are among the early and serious complications observed in patients after reduction mammoplasty [11,12]. If the amount of hematoma increases sufficiently, it may cause pedicle circulatory disorders, which may lead to nipple necrosis [13]. To prevent this situation, plastic surgeons prefer to place a drain in the surgical field even after effective bleeding control [10-12,14]. Sometimes, however, the self-confidence associated with the use of drains may result in overlooking or not paying sufficient attention to good hemostatic control.

In a randomized controlled study, Corion et al. compared the data of patients who underwent breast reduction surgery with (n = 55) and without (n = 52) the use of drains [14]. In the post-study comparison, complications were seen in 22 of the patients in the drain group and 12 of those in the no-drain group. The authors noted that the drains were usually removed on the first postoperative day or when the drain yield was below 20 cc [14]. However, when the amount of drainage fluid is not as low as expected, the drain may be left in place for several days before it is removed. The first disadvantage of drain placement is that it contributes to the prolongation of operative time. In most cases, this prolongation may not be very important for surgeons. A second disadvantage associated with drain use is that approximately 0.5-cm extra incisions are made on both sides for the exit of the drains from the body. To ensure that the drain tube stays where it is after the drain leaves the body, the tube is stabilized with fixation sutures right next to the outlet hole. These fixation sutures are painful for patients and negatively affect their comfort to a great extent. Due to the drains, the patient is restricted even in activities that require simple movements, such as postoperative self-care, mobilization, and changing clothes. In addition, the possible snagging of

Table 1. Detailed surgical record data of 31 patients.

Age n = 31	RRBW (g) / RBNP-SSN (cm)	RLBW (g) / LBNP-SSN (cm)	Technique / NPN (cm)	Complications	Discharge (Day)	Follow - Up (Month)
59	750 / 32.5	810 / 33.5	SMP / 21	-	1	23.5
43	570 / 30	750 / 33	SMP / 21	-	1	24
55	1400 / 34	1500 / 35	FN / 20	-	1	5.5
28	300 / 29	265 / 28	SMP / 19	-	1	6
25	500 / 28	550 / 28.5	SMP / 19	-	1	16.5
31	1100 / 32.5	1200 / 33.5	SMP / 19	-	1	24
38	610 / 32	650 / 31	SMP / 20	-	1	17
63	700 / 31	800 / 29	SMP / 19	-	1	22
49	300 / 27	500 / 29	SMP / 20	Seroma	3	21.5
32	700 / 32	500 / 30	SMP / 21	-	1	24.5
55	915 / 30	860 / 30	SMP / 22.5	Seroma	1	25
40	1070 / 34	890 / 32	SMP / 22	NAC ischemia	2	24.5
34	500 / 28.5	550 / 30.5	SMP / 19	-	1	11
38	150 / 25.5	260 / 28	SMP / 19	-	1	8
32	750 / 27	710 / 28	SMP / 19	-	1	24
56	1200 / 40	1100 / 39	FN / 21	-	1	20
48	940 / 32	860 / 32	FN / 22	-	1	24
44	1230 / 38	1150 / 38	FN / 20	-	1	25
18	450 / 29	400 / 28.5	SMP / 20	-	1	20.5
65	1100 / 36	1250 / 37	FN / 21	-	1	21
55	1025 / 32	1030 / 33	FN / 20	-	1	21
39	700 / 33	750 / 33	SMP / 22	-	1	19
24	290 / 30.5	310 / 30	SMP / 21	-	1	19.5
47	550 / 29	500 / 28	SMP / 19	-	1	20.5
42	460 / 31	580 / 32	SMP / 21	-	1	14
47	2750 / 45	2800 / 48	FN / 22	-	1	19.5
24	280 / 28	300 / 29	SMP / 21	-	1	19.5
32	100 / 25	150 / 26	SMP / 19	-	0	17.5
49	1050 / 36	1250 / 37	FN / 22	-	3	17
69	1200 / 35	1250 / 35	FN / 21	-	1	20
25	400 / 27.5	350 / 26.5	SMP / 19	-	1	15

RBW: reduced right breast weight, LBW: reduced left breast weight, RBN: right breast nipple position before surgery, LBN: left nipple position before surgery, SSN: suprasternal notch, NPN: new position of nipples, SMP: superomedial pedicle, FN: free nipple, NAC: nipple-areolar complex.

the drain tube can cause great pain. On the other hand, postoperative mobilization is one of the most important factors in preventing pulmonary embolism [15]. The use of drains can also result in reduced mobilization, which is something surgeons would want to avoid. Furthermore, the prolonged stay of the drains results in poor healing of the wound site. The most important disadvantage of drains can be considered as associated wound infections [16,17]. In addition, postoperative drain removal in a patient who is conscious and has not received anesthetics causes not only pain but also anxiety and fear. In clinical practice, even fainting due to hypotension may occur during drain removal.

In this study population, in which drains were not used, no hematoma was observed in the postoperative period. A unilateral seroma occurred in two patients. When the history of the patients who developed seroma was examined in detail, one was a smoker who had an NSAID allergy, epilepsy, and diabetes mellitus, for which she was using metformin. The effect of the patient's smoking or diabetes diagnosis on seroma development was not clearly determined. In their meta-analysis, Zhang et al. showed

that smoking increased complications in the postoperative period in patients undergoing reduction mammoplasty. To reduce complications after reduction mammoplasty, patients were recommended to stop smoking six months before surgery [18]. One of the most important factors in the prevention of post-surgical hematoma is to ensure that the patient is under normotensive anesthesia while hemostasis is being performed [18]. In addition, in a prospective randomized controlled study, Unger et al. revealed that diabetes mellitus facilitated the development of seroma in breast surgery patients [19]. The second patient who developed unilateral seroma in the current study had a diagnosis of asthma. There are no clear data on the relationship between asthma and complications after reduction mammoplasty in the literature. Therefore, the contribution of the patient's diagnosis or chronic medical treatment to the development of seroma could not be clarified. Both patients with seroma were followed up every other day. Seromas were aspirated using a 50-cc injector with a 18-G needle tip under ultrasound guidance. Five aspiration sessions were performed for seroma in the patient with epilepsy, and three aspiration sessions were required in the patient

with asthma. Another problem encountered in the postoperative period was the unilateral impaired circulation of the NAC on the right side in one patient. Upon the detection of this complication in the postoperative follow-up, skin sutures and subdermal pedicle fixation sutures were removed. However, due to the lack of improvement in pedicle circulation, the NAC was extracted as a full-thickness graft under local anesthesia and sedation in the operating room on the first postoperative day. Debridement was performed on the old pedicle site. Since the sutures were loosened in the early period, excessive debridement was not required, and there was no significant asymmetry between the breasts. The NAC was then fixed in place as a full-thickness graft using tie-over sutures. In the following period, NAC necrosis was prevented.

Although there are recommendations in the literature that drains be placed in cases where electrocautery is used for excision in reduction mammoplasty and there is no harm in not using drains otherwise, no scientific study has been conducted to support this recommendation [20]. Surgical excision was performed by needle tip electrocautery in all patients in our study. In the literature, Ngan et al. recommended the use of drains in patients over 50 years of age and in cases where more than 500 g of tissue was removed, while they considered that it might not be necessary to use drains or that the drain might be kept in place for a shorter time in younger patients or those with less removed tissue [21]. The ages of the patients who had complications in the current study were 40, 49, and 55 years, and the mean amount of breast tissue removed from these patients was 980, 400, and 887.5 g, respectively. The author of this study does not agree with the recommendation of Ngan et al. concerning the use of drains depending on the parameters specified. There are studies in the literature showing that the complication rates increase as the amount of tissue removed increases. However, although these studies often indicate prolonged pedicle length in excessively large and sagging breasts as the reason for complications, no inference has been made regarding the presence or absence of drain use [22]. When the complication rates after reduction mammoplasty in the current study were compared to those reported in the literature, it was seen that there was even no agreement in terms of the grouping of complications. Some studies categorized complications into early and late stages, while others did not make such a classification [23,24]. On the other hand, while grouping complications, some studies also defined a subacute complications group [22]. In a study of 16,812 patients in which no drain data were available, Simpson et al. reported the rate of patients with complications to be 6.2% [23]. In a series of 200 cases in which drains were used, Shipkov et al. observed complications at a rate of 13% [24]. In this study, the rate of patients with complications was found to be 9.67%. In a breast reduction series of 938 cases in which drains were used, Bauermiester et al. found the complication rate to be 16% (6% for major and 10% for minor) [12]. In a series of 444 cases with drain use, Stevens et al. reported the rate of minor complications to be 14% and the rate of major complications to be 0.67% [25]. Although the prominent feature of the study of Stevens et al. was that reduction mammoplasty was performed an

outpatient surgery, the patients returned to home with drains after surgery [25]. In a study of 49 patients who underwent surgery without drains, Wrye et al. observed complications in six patients (12%) [17]. In another study on breast reduction mammoplasty without drains, Vandeweyer et al. found the complication rate to be 7% in the reduction of 70 breasts [26]. In another study examining 341 breast reduction operations performed with the superomedial pedicle technique and drains, minor complications were encountered in 18.6% of the patients and major complications in 4.1% [27]. On the other hand, the first study in the literature to question the need for the routine use of drains in reduction mammoplasty belongs to Matarasso et al., who determined the rate of patients with complications to be 6% [28]. In another study, Arrowsmith et al. reported that 6% of their patients developed complications [29]. In the current study, complications were seen in 1.86% of the operated breasts, and the rate of patients with complications was 9.67%.

There are many studies in the literature supporting no drain use after reduction mammoplasty [14, 17, 26, 28-30]. In a prospective randomized study, Wrye et al. concluded that there was no difference between the drain and no-drain groups in terms of complications and that it was safe not to use drains in breast reduction surgery [17]. In a prospective randomized study, Collis et al. stated that using or not using a drain in breast reduction did not result in any difference in terms of hematoma or other complications, and the use of drains was not necessary for this surgery [30]. In a randomized controlled study, Corion et al. showed that prolonged hospital stay, and patient discomfort were more common in the drain group, and the use of drains did not cause an increase in complications [14]. The results of our study agree with these findings from the literature.

According to the guidelines published by ASPS in 2011, which are expected to be updated soon, the use of drains does not have any benefit for patients undergoing reduction mammoplasty and does not reduce the risk of complications when compared to cases in which drains are not used [7].

Although drains are used to reduce the amount of fluid accumulated in the surgical field, according to the available evidence, they do not reduce the risk of postoperative complications and can even have certain disadvantages, such as movement restriction after surgery, pain in the breast, at the drain outlet, or during drain removal, and additional permanent scars at the drain outlet.

Limitations

One of the most important limitations is that the results of the no-drain group were not compared to a drain group matched in terms of patients with similar medical characteristics. More satisfactory statistical data can be obtained in randomized controlled trials with larger patient populations in which the risk factors of patients are detailed before surgery.

Conclusion

Breast reduction is an operation that is frequently performed by plastic surgeons. Although many different tech-

niques are used in this surgery, the only approach that has been demonstrated based on the evidence is that drains are not required. The inclusion of this evidence as a standard in the routine practice of plastic surgeons will play a role in improving the comfort of both the surgeon and the patient in the postoperative follow-up process.

Ethical approval

Ethics committee approval for this study was obtained from the Clinical Research Ethics Committee of Health Sciences University Antalya Training and Research Hospital, date: 03.07.2020, decision no: 10/24).

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