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The Use of Postoperative Drains Versus No Drains in Reduction Mammoplasty: Does it Affect the Complications Rate?

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ABSTRACT

Background: Minimizing the postoperative complications after reduction mammoplasty is an important goal. Our aim of the study was to compare the complications rate when using drains versus no drains.

Methods: The study was conducted in the period from February 2014 to January 2017. We recruited women between 26 to 45 years presenting for reduction mammoplasty with BMI 28-37. All patients subjected to the same preoperative preparations. Operative techniques used were inferior pedicle, superior pedicle, supero-central pedicle and supero-medial pedicle. The only difference between the two groups of the study is the use of drains in one group only. The follow-up period was six weeks.

Results: Thirty-one subjects were included in the analysis of this study. Seventeen allocated to the drain group and 14 to the no-drain group. Both groups are comparable as regard the age and BMI (*p*-value >0.05). However, there was a significant difference between both groups as regard the previous pregnancy with more gravida in the drain's group. The time of operation in relation to menstrual cycle was comparable in both groups (*p*-value 0.621) as well as the operative techniques done in both groups (*p*-value = 0.621).

In the drain groups, the average duration of the drain was 10.29+1.77 days.

The rate of complication was comparable in both groups (*p*-value 0.517). The hematoma occurred in two cases, one case in each group. Infection occurred in two cases in the no-drain group. Seroma occurred in four cases, two in each group. However, wound dehiscence in lower T junction occurred only in one case of the drain group.

Conclusion: To sum up, we conclude that despite the limited evidence, our study supports the non-use of drains in reduction mammoplasty. However, a further large-sample study is recommended to allow a real evidence and quantification of the risks due to using the drains.

Key Words: *Drains – Reduction mammoplasty – Complications rate.*

INTRODUCTION

Despite the literature has been experienced extremely expansion in studying the area of using postoperative drains in reduction mammoplasty, still, the topic is debatable **[1]**.

The body of evidence against the use of postoperative drains is extremely enormous. Multiple studies have been conducted for this area of research; from randomized controlled trials to practice guidelines like that of the American Society of Plastic Surgeons Evidence-based Clinical Practice Guideline (reduction mammaplasty), and also a Cochrane review which is a cumulative study made by the Cochrane Library. These research studies have come to a conclusion that the postoperative use of drains has nothing to do with the complication rate. They found no difference in rates of hematoma or seroma and no difference in complications of wound healing. Moreover, they showed that postoperative use of drains had lead to more patient discomfort, a longer hospital-stay with more costs **[2-6]**.

Those who advocate the use of drainage consider it, as an essential surgical concept, aids to minimize dead space and the postoperative collection of fluid, hence, reducing the risk of hematoma or seroma formation, providing the optimum environment for better wound healing. This was principally true in the past where the achievement of good hemostasis was more difficult. However, several studies from variable surgical specialties and routines showed the non-superiority of using drains as a routine versus no drains **[7]**.

There is an obvious discrepancy between the level of knowledge and the level of practice, not only in the developing countries like Egypt but, also in the well-developed countries. For example, the practice in some developed countries like the USA is still using the drains. One study showed that in 2012, fifty-six percent of their patients had postoperative drains, and in 2014 there was only a 3 percent change to fifty-three **[1]**.

Also in our country Egypt, we still use it. Despite the considerably enough research studies, there is still a lively debate on the issue of using drains.

Thus the rationale intended for this study is to explore the current evidence and the Egyptian experience with the topic of whether to use drains or not in reduction mammoplasty. Moreover, we will conduct a pilot controlled trial to examine the issue in our setting and to report our outcomes.

PATIENTS AND METHODS

The study was conducted during the period from February 2014 to January 2017. The purpose of this study was clearly explained in the Arabic language to all subjects and an informed consent form was signed by and obtained from all subjects.

We recruited females between 26 to 45 years presenting for reduction mammoplasty with BMI 28-37.

Exclusion criteria included: American Society of Anesthesia score 3 or 4 (high risk for anesthesia), patients with diabetes mellitus, collagen vascular diseases, smokers, liver or kidney diseases, and coagulation problems, previous breast surgery, breast cancer, breast reconstruction on one side, any obvious breast lesion or disease, any gynecological tumor or any hormonal drug intake.

Preoperative patient assessment:

All patients were evaluated by detailed history, careful physical examination and photographed pre and postoperative.

History included: Age at onset, previous pregnancy, presence or absence of masses, presence or absence of nipple discharge or axillary lymphadenopathy. Also, the local examination was done to exclude any sign of breast cancer as a solid breast mass, nipple discharge or suspicious axillary lymphadenopathy.

Blood samples were taken from patients as routine preoperative preparation for complete blood picture, coagulation profile and liver and kidney functions. Photos were taken preoperative and postoperative in three views: Anteroposterior, dead lateral and oblique. Informed consent was taken from all patients. The timing of the operation in relation to the menstrual period was recorded.

Surgical procedures:

The main surgical procedures used were reduction mammoplasty in the form of one of the following techniques: Inferior pedicle, superior pedicle, supero-central pedicle or supero-medial pedicle according to the surgeon opinion (pedicle type NOT fixed).

Study design:

The study is a non-randomized controlled trial. Allocations of the participants were done at the discretion of the surgeon.

All subjects had the same preoperative preparations; same operative techniques with different pedicle use and same postoperative follow-up except for drains were not used in the study group and were used in the control group.

Routine postoperative follow-up was done for six weeks for evaluation of the success of the operation and check for any emergent complication.

In all subjects, compression bra garments were worn for six weeks postoperative, and sutures removed three weeks postoperatively.

Outcome measures:

The primary outcome measure was the prevalence of complication in both groups. The secondary outcome measure was the success of the surgeries.

Statistical analysis:

All statistical tests were done using a significance level of 95%. A value of $p<0.05$ was considered statistically significant. SPSS software (Statistical Package for the Social Sciences, version 20.0, SSPS Inc, Chicago, IL, USA) was used for the statistical analyses. Data were presented as (mean ± SD) or median (range) for continuous variables and as a frequency for categorical variables. Comparisons between groups were made using Chi-square test and Phi-Cramer test for categorical variable and the *t*-test for continuous variables.

RESULTS

Baseline characteristics:

Thirty-one subjects were included in the analysis of this study. Seventeen allocated to the drain group and 14 to the no-drain group. Both groups are comparable as regard the age and BMI. The mean age for the no-drain group was 34.12±6.09 years with a minimum of 26 and a maximum of 44 years, while for the drain group it was 33.43± 5.49 years with a minimum of 28 and a maximum of 45 years (p-value = 0.281).

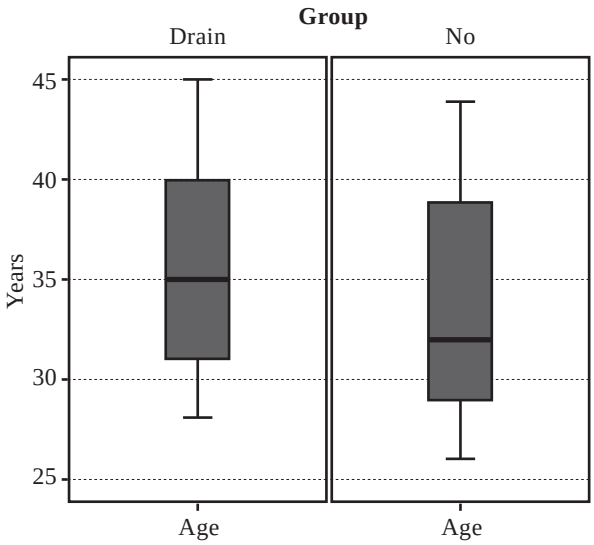

Fig. (1): Age in both groups.

The mean BMI for the no-drain group was 33.65±1.77 with a minimum of 29.90 and a maximum of 36.70, while for the drain group it was 33.09±1.81 with a minimum of 30.70 and a maximum of 36.50 (*p*-value = 0.694).

However, there was a significant difference between both groups as regard the previous pregnancy with more gravida in the drain's group as shown the Fig. (2).

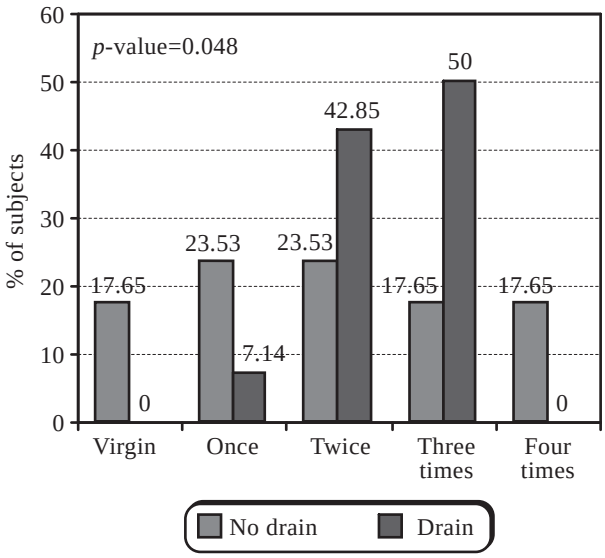

Fig. (2): Previous pregnancy.

Operative data:

The time of operation in relation to menstrual cycle was comparable in both groups (*p*-value 0.621) as well as the operative techniques done in both groups (*p*-value = 0.621).

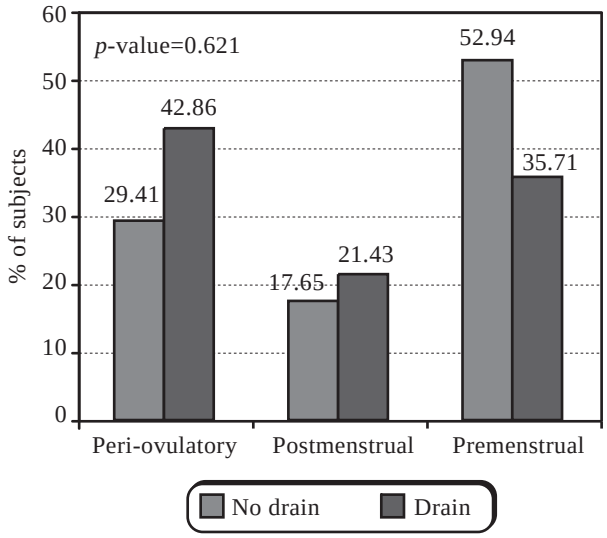

Fig. (3): The time of operation in relation to menstrual cycle.

Inferior pedicle was done in 6 subjects (35.29%) the no-drain group and 3 subjects (21.43%) in the drain's group. Superior pedicle was used in 4 (23.53%) & 4 (28.57%) of subjects in the no-drain and the drain group, respectively. Supero-central pedicle was used in 4 (23.53%) & 4 (28.57%) of subjects in the no-drain and the drain group, respectively. Supero-medial pedicle was used in 3 (17.65%) & 3 (21.43%) of subjects in the no-drain and the drain group, respectively. The excised part ranged from around 350 grams to around 1500 grams in both groups.

Postoperative follow-up:

In the drain group, the average duration of the drain was 10.29+1.77 days with a minimum of 7 and a maximum of 14 days.

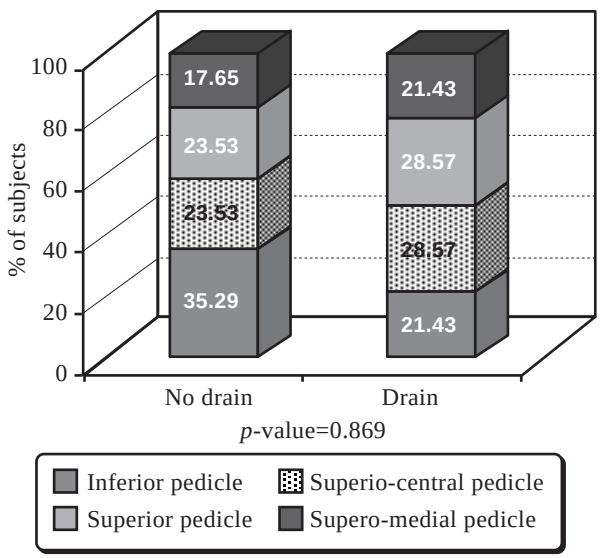

Fig. (4): Type of pedicles made in each group.

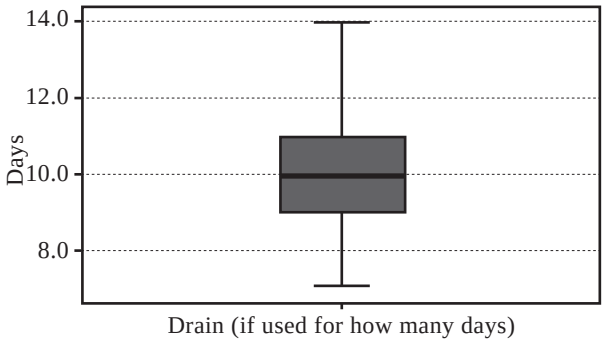

Fig. (5): Duration of the drain.

The rate of complication was comparable in both groups (*p*-value 0.517). The hematoma was occurred in two cases, one case in each group. Infection occurred in two cases in the no-drain group. The seroma occurred in four cases, two in each group. However, wound dehiscence in lower T junction occurred only in one case of the drain group.

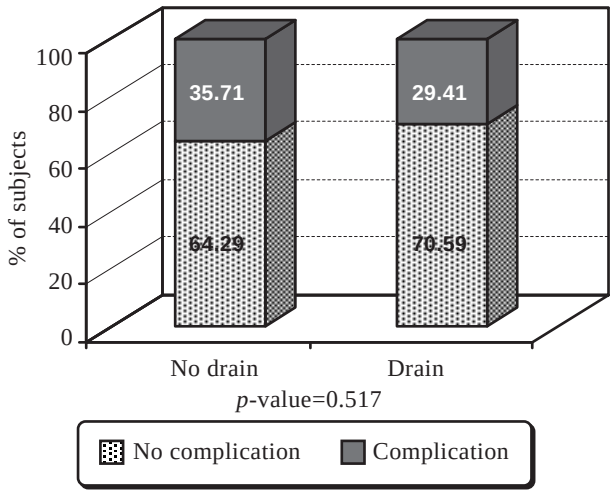

Fig. (6): Percent of complications.

Table (1): Baseline characteristics.

	No Drain's group	Drain's group	*p*-value
Number of cases	14	17	
Age:			
Mean (SD)	34.12 (6.09)	33.43 (5.49)	0.281
Minimum	26	28	
Maximum	44	45	
BMI:			
Mean (SD)	33.65 (1.77)	33.09 (1.81)	0.694
Minimum	29.90	30.70	
Maximum	36.70	36.50	
Previous pregnancy:			
Virgin	3 (17.65%)	0 (0.00%)	0. 048
Once	4 (23.53%)	1 (7.14%)	
Twice	4 (23.53%)	6 (42.85%)	
Three times	3 (17.65%)	7 (50%)	
Four times	3 (17.65%)	0 (0.00%)	

Table (2): Operative data.

	No Drain's group	Drain's group	*p*-value
Number of cases	14	17	
Time of operation in relation to menstrual cycle:			
Peri-ovulatory	5 (29.41%)	6 (42.86%)	0.621
Postmenstrual	3 (17.65%)	3 (21.43%)	
Premenstrual	9 (52.94%)	5 (35.71%)	
Operative technique:			
Inferior pedicle	6 (35.29%)	3 (21.43%)	0.869
Superior pedicle	4 (23.53%)	4 (28.57%)	
Supero-central pedicle	4 (23.53%)	4 (28.57%)	
Supero-medial pedicle	3 (17.65%)	3 (21.43%)	

Table (3): Postoperative data.

	No Drain's group	Drain's group	*p*-value
Number of cases	14	17	
Complications:			
No complication	9 (64.29%)	12 (70.59%)	0.517
Hematoma right	1 (7.14%)	1 (5.88%)	
Infected left lower T junction	1 (7.14%)	0 (0%)	
Infected vertical wound	1 (7.14%)	0 (0%)	
Seroma	1 (7.14%)	0 (0%)	
Seroma right side	1 (7.14%)	1 (5.88%)	
Seroma left side	0 (0%)	2 (11.76%)	
Wound dehiscence in lower T junction	0 (0%)	1 (5.88%)	
Duration of the drain:			
7 days		1 (7.14%)	
8 days		1 (7.14%)	
9 days		2 (14.29%)	
10 days	NA	4 (28.57%)	
11 days		3 (21.43%)	
12 days		2 (14.29%)	
14 days		1 (7.14%)	

DISCUSSION

In plastic surgery, a minimal postoperative complication is one of the primary goals of one of the most frequently performed operations; **[8]** the reduction mammoplasty with all its different types of techniques that have been developed **[9-13]**. Of course, the notion of the breast as a symbol of femininity adds more emphasis on the importance of preventing any postoperative complication.

In this current study, we did reduction mammoplasty for thirty-one subjects with four different pedicles. We used the postoperative drain in seventeen of them while the other fourteen were without any drain. We used the same preoperative preparation for both groups as well as we used the same operative procedures with the exception of

using the drains only in the seventeen subjects. All were followed-up for six weeks for any emergent complication. Both groups are comparable as regard the age and BMI. However, as regard the previous pregnancy, more gravida was seen in the drain's group. The time of operation in relation to menstrual cycle was comparable in both groups as well as the operative techniques done in both groups.

The study showed the non-superiority of using the drain as the rate of complication was comparable in both groups. The hematoma was occurred in two cases, one case in each group. Infection took place in two cases in the no-drain group. Seroma occurred in four cases, two in each group. However, wound dehiscence in lower T junction occurred only in one case of the drain group. The result of our study is in agreement with the enormous body of literature against the use of postoperative drains **[2-6]**.

However, the apparent schism between the knowledge and the practice, not only in the developing countries like Egypt but, also in the well-developed countries, make the issue more debatable and need further elaborations and investigations.

Over the past two decades, the many studies that were conducted to expand our knowledge of uses of drains in reduction mammoplasty resulted in the same conclusion as our study. However, some studies raised some factors to be considered. The debate raised the question about is there special circumstances when drains are indicated?.

The American Society of Plastic Surgeons Clinical Practice Guideline left the issue of using the drains for the surgeon's discretion whenever liposuction is used as an adjunct procedure **[2]**. Another study conducted by Ngan et al. (2009) suggested that women older than 50 years or with more than 500g of resected breast tissue weight had a greater risk for total drainage while hospitalized compared with those who were younger and had lower resection weights. However, their study was a retrospective cohort study, and the clinical significance of the findings was unclear **[14]**.

Other study raised the issue of the pedicle type as a controlling factor. The authors found that there was no association between pedicle type and use of drains. In the bivariate analysis, the results of the study demonstrated that drains were associated with an increase in complication rate. However, when they used the regression model, they found that using the drains were not an independent predictor of the adverse outcomes **[15]**.

When particularly applied to reduction mammoplasty surgery, the research studies demonstrated that drains were associated with considerable infection risk, and additional scarring at the site of the drain, which all might deter the recovery, and hence, the final aesthetic outcome **[6,16]**. From the perspective of the patient, of course, the presence of the drain adds significant discomfort **[5]**.

In contrast, early removal of a drain following breast surgeries has been abandoned due to the higher incidence of seroma and drain reinsertion **[17]**.

One important issue about the use of the drains is that they may also require a nursing care of higher quality. Another problem is the longer hospital stay with the increased cost **[4,6,18,19]**.

In 2015, in a Cochrane review, the authors sought to review the evidence concerning the benefits of using drains in the reconstructive surgery of the breast. They used the primary outcomes as the wound infection, hematoma, edema, Seroma, fat necrosis and other outcomes. The secondary outcomes were the discomfort, the pain, the length of hospital stay and costs. During their literature search, they found a total of 190 references. Screening of these references identified 108 papers reporting randomized trials, eight of which were duplicates. Eleven studies of the total 108 papers were conceivably relevant, and they were assessed against the inclusion and exclusion criteria. Only three of them met the inclusion criteria and were included in the review **[20]**.

Interestingly, after data synthesis of the three trials, the review concluded that the limited evidence available reveals no benefit in using postoperative drains in breast reduction surgery, however, this is based on only three trials, two of which had methodological limitations that put them at a high risk of bias **[20]**.

One advantage of the current study is that it is comparative study exploring the topic in the Egyptian patients. However, one limitation of our study is that it is non-randomized, so selection bias was not avoided. Another limitation is the sample size and the use of different pedicles.

The main question of the debate is still demanding a strong evidence. This warrant the need for a large-scale, multicenter, randomized controlled trial with large sample size and rigorous methodology. Further research questions about the predictor factors affecting the decision of whether to use the drain or not, also mandate the study. These

factors are the age, BMI, the volume of resected tissue, the type of the pedicle, the use of electrocautery versus harmonic scalpel or knife for tissue resection, liposuction, wetting solution, duration of the operation and timing of the operation in relation to the menstrual cycle.

An intra-patient design comparison has the advantage that less number is needed, and allows for comparison of breast-related factors. On the other hand, the inter-patients design allows for comparison of patient-related factors, such as hospital stay and the use of antibiotics.

Conclusions:

Finally, we conclude that despite the limited evidence, our study supports the non-use of drains in reduction mammoplasty. However, a further large-sample study is recommended to allow a real evidence and quantification of the risks due to using the drains.

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