

Liposuction versus Periareolar Excision Approach for Gynecomastia Treatment

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Abstract

Background: Gynecomastia (GM) is the increased fibroglandular tissue in the male breast by more than 2 cm, which is palpated under the nipple and areola. An ideal surgical approach aims to reduce the breast size, reach an acceptable breast shape, resect excessive glandular tissue, fatty tissue, and skin fatty tissue and excess skin, relocate the nipple-areolar complex, and avoid scars. Based on its importance, we aimed to compare outcomes of liposuction with and without periareolar incision in patients with GM.

Materials and Methods: This was a randomized clinical trial on patients referred for plastic surgery. Patients with GM were allocated into two treatment groups. Group A underwent liposuction without any areolar skin incision and group B had liposuction with the areolar skin incision. Patients were followed-up after surgery. Data were analyzed by Statistical Package for the Social Sciences (SPSS) version 20.

Results: Sixty patients aged between 20 and 27 years old participated in this study. Three hematomas, two surgical site infections, one nipple hypopigmentation after surgery, and one seroma formation were noted in group B. On the other hand, one hematoma and one seroma formation were noted in group A. The patients in group A were highly satisfied after the liposuction without skin incision procedure compared with group B ($P = 0.01$).

Conclusions: The management of GM by liposuction, either with the periareolar excision technique or without skin incision, allows the effective removal of fat and glandular tissue of the male breast. Although there was no significant difference regarding postoperation complications between groups, patients' satisfaction should be considered.

Keywords: Gynecomastia, liposuction, surgery

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INTRODUCTION

Gynecomastia (GM) is the increase of fibroglandular tissue in the male breast by more than two centimeters, which can be palpated under the nipple and areola.^[1] Although the global incidence of GM is 32%–36%^[2] and is more prevalent in youths and elderlies,^[1] the recent prevalence of GM is increased to 50%–70%.^[3-5] So, breast reduction has become one of the top five procedures in plastic surgery.^[3] It could cause emotional distress and shame and disturb social life, especially in adolescents and young men.^[6]

Despite introducing numerous classifications and procedures over the past decades, no evidence-based algorithm exists for GM surgical treatment.^[7] The challenging problem, particularly in high grades of GM, is the presence of excess redundant skin, hypertrophied glandular tissue, lost skin elasticity, skin retraction, nipple-areola complex necrosis, leaving large scars on the chest, and hypoesthesia.^[7,8] Simon (1973) classified it into four groups depending on morphology and volume.^[9]

a) I—Minor breast enlargement without skin redundancy

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- b) IIa—Moderate breast enlargement without skin redundancy
- c) IIb—Moderate breast enlargement with minor skin redundancy
- d) III—Gross breast enlargement with skin redundancy mimicking female breast ptosis.

Simon's classification provides a simple guideline for diagnosis and management. The different amounts of adipose tissue, parenchyma, and skin redundancy are paramount in selecting patients and planning surgical strategies.^[9,10] An ideal surgical approach aims not only to reduce the breast size but also to reach an acceptable breast shape, resect excessive glandular tissue, fatty tissue, and excess skin, and avoid scars.^[7,11,12] The surgical methods used for severe GM range from older techniques such as reduction mammoplasty with free grafting to currently used modified breast reduction techniques (no vertical scar or T-shaped scar pattern) or subcutaneous mastectomy with periareolar concentric skin excision.^[13] Although these procedures might reduce breast size successfully, a high rate of undesirable outcomes has existed.^[13,14] This study aimed to compare outcomes of liposuction with and without a periareolar incision in patients with gynecomastia. However, the site of the liposuction and method of tissue excision was the novelty of our study.

MATERIALS AND METHODS

This randomized clinical trial was conducted between 2019 and 2020 on patients referred for plastic surgery as cases needing surgical treatment for GM. The sample size was 27 patients in each group. The final sample size was 30 people in each group, considering the confidence interval of 95%, the study power of 80%, the statistical accuracy of 7% in the pain score, and the drop rate of 10%. Patients underwent surgical treatment by a single surgeon from grade I to II, according to Simon's grading. The patients were then allocated into two treatment groups. Group A underwent a liposuction procedure without any areolar skin incision, and group B underwent a liposuction procedure with an areolar skin incision. The randomization was performed using a computer-generated random list, and an allocation sequence was generated. Patients were allocated in a 1:1 ratio to group A ($n = 30$) or group B ($n = 30$).

The study was approved by the clinical ethics committee of the Isfahan Medical School (IR.MUI.MED.REC.1399.266) and registered in the Iranian registry of clinical trials (IRCT202005108047496N1). Patients who had GM due to liver disease, thyroid disease, imbalanced hormones, and patients with grade III of GM were excluded from the study. All of the included patients had grades I and II of GM and had a problem with the shape of the breast. Patients' records included the first consultations, operation reports, and discharge letters. Patients were called 7th and 21st days, 3rd and 6th months after the surgical procedure for a clinical reevaluation and surgical complications. Patients asked for pain intensity and chest shape in the aspect of patients and asked for satisfaction. They were

also examined for hematoma, seroma, surgical site infection, and nipple hypopigmentation. A single researcher did all the measurements to eliminate intraobserver variability. An unaware person analyzed the data about groups.

Operative strategy

For grades 1 and 2b of GM, according to Simon [Figure 1], patients underwent two kinds of procedures (subcutaneous mastectomy [SCM]). Patients were randomly divided into two groups. Group A underwent a liposuction procedure without any areolar skin incision, and group B underwent a liposuction procedure with an areolar skin incision.

Surgical technique

After the patients were aware of the procedure risks, the breasts' margins were marked in the standing position. An infiltration of 300–500 tumescence solution consisting of 1000 mL normal saline, 10 mL bicarbonate, 1 mg adrenaline in 1000 mL sodium, and 20 mL lidocaine 2% was performed in every subcutaneous mastectomy. After 15 min, a small incision in the lateral and medial of the breast crease was done (in 5 and 7 o'clock positions). In that position, four liposuction cannula were entered at first. For resection of subcutaneous fibrotic tissue, coarse rube was used. In the group of patients, skin incisions were considered to approach the glandular tissue; semilunar incisions at the lower areola margin to preserve the esthetic unity of the nipple-areola complex and ensure an inconspicuous placement of the scar. By this approach, the Cooper-ligaments can be released by palpation, and a stepwise preparation with a scissor or bipolar scissor to the pectoral fascia is allowed. A Kocher-Clamp holds the gland until the mobilization is completed circumferentially, and an extirpation is possible. In the other group, just liposuction was considered.

Patients were examined for hematoma and ischemia on the first day after surgery. The wound was dressed and compression bandaged; after that, patients were reviewed for seroma, bleeding, hematoma, skin necrosis, and infection in 3rd and 6th month after the surgery.

Statistical analysis

The data were analyzed using the Chi-square test for qualitative variables and independent sample *t* test to compare means by IBM Statistical Package for the Social Sciences (SPSS) Statistics for Windows, version 20 (IBM Corp., Armonk, N.Y., USA).

RESULTS

Sixty patients aged between 20 and 27 years old participated in this study [Table 1]. The mean amount of lipoaspirate was 450 mL per side (range = 350–550 mL). The patients in group A were highly satisfied after the liposuction without skin incision ($P = 0.01$) [Figure 2]. Table 2 shows three hematomas, two surgical site infections, one nipple hypopigmentation after surgery, and one seroma formation that were noted in group B. On the other hand, one hematoma and one seroma formation were noted in group A.

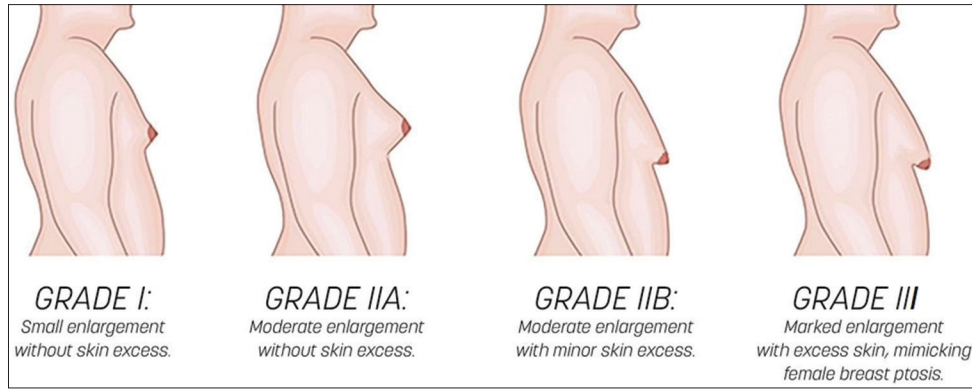


Figure 1: Schematic treatment algorithm of stage-adapted surgical treatment of gynecomastia adapted from Simon's grading



Figure 2: (a) Preoperation and (b) postoperation pictures of adult male patients

Ten cases were concerned about skin scar after 6 months of surgery with skin incision; however, two cases who underwent surgery without skin incision were concerned about skin scar.

Both groups observed major complications needing an operative revision in three cases. The bleeding risk was the same in the two groups (52.4% to 47.6%). Complications such as irregularity of breast after surgery, edema, pain after surgery, and asymmetry had no statistical differences between groups.

DISCUSSION

GM is one of the common problems in men, which needs to be assessed by plastic surgeons. In the active phase of proliferation, the treatment is started by medicine. If GM is resistant to medical treatments or lasts more than 6–12 months, surgical procedures would be needed to be corrected.^[15,16]

Various surgical techniques have been described to rebuild the chest wall, which has differences in the incision course, incision location, and use in the combination of other procedures.^[4] The critical problem in the correction of GM is the excess amount of skin and the residual scar.^[17] This study compared liposuction and subcutaneous resection with a periareolar incision to liposuction without a periareolar incision.

Table 1: Comparison of underlying characteristics in patients treated with two methods

Variable	Liposuction without incision	Liposuction with incision	P
Age (Years) (Mean±SD)	24.8±3.81	23.4±3.74	0.15
Gynecomastia grade, n (%)			
I	13 (54.2)	11 (45.8)	0.79
II	16 (48.5)	17 (51.5)	

This study showed a statistical difference between the two groups ($P = 0.03$) regarding the postoperative need for skin removal. The skin remained in one patient in the only liposuction group while it happened in six patients in the liposuction/incision group. Taheri *et al.* applied liposuction and a periareolar incision for mastectomy in another study. They indicated that only 7.4% of patients had remained skin and were unsatisfied with the excessive chest wall.^[18]

Besides, this study showed that undesirable scars happened in 2 (16.7%) and 10 (83.3%) of the only liposuction and liposuction/incision groups, respectively. It showed a statistical difference between the groups ($P = 0.002$). In a study, Ayman *et al.* used the combination of liposuction with periareolar skin reduction to restore GM. Their results showed hypertrophic scare in one patient out of 18.^[19]

In our study, patient satisfaction was statistically higher in the only liposuction group than in the liposuction/incision group ($P = 0.04$). However, Taheri *et al.*^[18] showed higher satisfaction (8.1 ± 1.39) in the mixed method compared with our results. In another study, Wolter *et al.* applied liposuction along with periareolar mastectomy and circumferential mastopexy to correct breasts in men. Their results indicated satisfaction in 88% of patients.^[20] Similarly, the satisfaction score was 8.2 out of 10 in the Brafia *et al.* survey, which compared the combination of liposuction with periareolar inferior incision and circumareolar incision to treat GM.^[21]

This study showed that nine patients in liposuction only and 12 patients in the combination group had bleeding.

Table 2: Comparison of the consequences of two surgical methods in patients

Variable	Liposuction without incision	Liposuction with incision	P
Skin removal, <i>n</i> (%)			
Yes	0	7 (100)	0.01*
No	29 (56.9)	22 (43.1)	
Bleeding, <i>n</i> (%)			
Yes	9 (42.9)	12 (57.1)	0.6
No	20 (54.1)	17 (45.9)	
Hematoma, <i>n</i> (%)			
Yes	1 (25)	3 (75)	0.6
No	28 (51.9)	26 (48.1)	
Seroma, <i>n</i> (%)			
Yes	4 (80)	1 (20)	0.19
No	24 (46.2)	28 (53.8)	
Infection, <i>n</i> (%)			
Yes	0	2 (100)	0.23
No	29 (52.7)	26 (47.3)	
Need for reoperation, <i>n</i> (%)			
Yes	3 (50)	3 (50)	0.71
No	30 (57.7)	22 (42.3)	
Existence of undesirable scars, <i>n</i> (%)			
Yes	0	12 (100)	>0.0001**
No	29 (63)	17 (37)	
Paresis of nipple, <i>n</i> (%)			
Yes	2 (66.7)	1 (33.3)	0.9
No	27 (49.1)	28 (50.9)	
Irregular breast shape, <i>n</i> (%)			
Yes	7 (46.7)	8 (53.3)	0.7
No	22 (53.7)	19 (46.3)	
Breast skin discoloration, <i>n</i> (%)			
Yes	0	1 (100)	0.22
No	33 (60)	22 (40)	
Nipple hypopigmentation, <i>n</i> (%)			
Yes	0	1 (100)	0.4
No	29 (52.7)	26 (47.3)	
Edema, <i>n</i> (%)			
Yes	2 (66.7)	1 (33.3)	0.9
No	27 (49.1)	28 (50.9)	
Asymmetry, <i>n</i> (%)			
Yes	3 (42.9)	4 (57.1)	0.9
No	26 (51)	25 (49)	
Pain (Mean±SD)	4.2±2.35	4.7±1.99	0.43**
Satisfaction (Mean±SD)	6.9±1.99	5.6±2.09	0.01
Tissue volume (Mean±SD)	887.9±168.31	882.4±171.43	0.14
Tissue weight (Mean±SD)	68.1±21.18	65.60±20.64	0.66

*Chi-Square test for descriptive data, **Independent *t* test to compare means

However, Mett *et al.*, who used liposuction with the incision in different grades of GM,^[3] reported three cases of bleeding out of 43 patients, which was lower than our results.

Our results showed no differences in the short-term and late postoperative complications between the two groups ($P > 0.05$), which were similar to Taheri *et al.*,^[18] Ayman *et al.*,^[19] and Mett *et al.*^[3]

The breast reduction procedure in Taheri *et al.* was similar to the liposuction/incision group in our study. Twenty-seven

patients with GM participated in their research, and their results indicated sensory changes in seven patients. Two patients complained of hypo esthetics in the areola. Satisfaction of no excessive chest wall was reported by 92.6% of patients.

In another similar study,^[19] short-term complications such as hematoma, partial necrosis, and seroma were reported by two, one, and two patients, respectively. Eight patients complained of nipple asymmetry, and a hypertrophic scar was noted by one.

Despite the previous studies about breast reduction in men with GM applying the different incision methods to resect the glandular tissue, no previous research evaluated liposuction without incision. Based on the results, further studies with a larger sample size can be recommended to define the best surgical approach.

CONCLUSION

The management of GM by liposuction, either with the periareolar excision technique or without skin incision, allows the effective removal of both the fat and the glandular tissue of the male breast. However, there was no significant difference between important postoperation complications between the two kinds of procedures. Therefore, patients' benefits should be considered.

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Conflicts of interest

There are no conflicts of interest.

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