

A new circumareolar approach combined with power assisted liposuction in the management of advanced gynecomastia



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AIM: Gynecomastia is a benign proliferation of the glandular tissue of the male breast that causes considerable emotional distress due to restriction of daily activity, especially in young men. In patients with severe gynecomastia, a new approach is described with liposuction combined with circumareolar subcutaneous mastectomy with minimal periareolar scarring, including the elimination of the excess skin. Prospectively recorded data in a period of fifteen-month were evaluated retrospectively for aesthetic outcomes and early and late complications.

MATERIAL-METHOD: A total of 18 patients (36 breasts) were treated between September 2021 and December 2022. The patient was marked preoperatively while standing up. Under general anesthesia, power assisted liposuction and de-epithelialization of excess skin were performed. A superiorly based nipple areola complex (NAC) flap was created with attention to blood supply intact. The excess fibroglandular tissue was resected. The wound was approximated with purse-string suture and the NAC was positioned in its new location. The wound was closed after the insertion of a hemovac drain into the liposuction port.

RESULTS: The ages of patients with bilateral grade 3 gynecomastia ranged from 17 to 34. Follow-ups ranged from 5 months to 1 year. The prophylactic antibiotic treatment administered to all patients. Liposuction was performed again on one patient due to an aesthetic problem. Minimal areola enlargement was observed in 2 patients.

CONCLUSIONS: This new circumareolar approach with liposuction is a good method for wide excision of breast tissue in the surgical management of severe gynecomastia with minimal scarring and very good cosmetic results.

KEY WORDS: Breast, Gynecomastia, Periareolar incision, Power assisted liposuction, Surgical Technique, Subcutaneous mastectomy

Introduction

Gynecomastia is a benign enlargement of the male breast glandular tissue in adolescent and adult age and affects at least one-third of men during their lifetime.

Early diagnostic evaluation is important for anxiety relat-

ed to fear of breast cancer and psychosocial discomfort due to cosmetic appearance. This evaluation should include a detailed medical history, clinical examination, specific blood tests, imaging, and tissue sampling.

Gynecomastia treatment can be pharmacological or surgical but the best method is controversial. To determine the surgical treatment of gynecomastia, Simon et al. classified gynecomastia according to breast size and excess skin, while Rohrich et al. classified gynecomastia according to breast hypertrophy and ptosis^{1,2}.

For the treatment of gynecomastia, many different methods have been recommended depending on the enlargement of the breast and excess skin². Traditional surgical excision of glandular tissue combined with liposuction provides the most consistent results and low complication rate³⁻⁶.

Now many use these two methods together for cosmetically satisfactory results^{7,8}

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ABBREVIATION

NAC: Nipple Areola Complex

Since aesthetic satisfaction is also prioritized, the least scarring and complication rate is definitely the most focused area in this regard.⁹

These goals are difficult to achieve in patients with severe ptotic glandular breast enlargements who have areolar enlargement together with excess skin. Particularly for this patient group, we describe a new circumareolar method combined with power-assisted liposuction that aims for the best aesthetic results with fewer complications. We believe that this new technique, complete circumareolar with purse-string sutures, can manage excessive skin resection in grade 3 ptotic breasts with minimal scarring.

Material and Method

The study was initiated after the study protocol was approved by the hospital ethics committee (Date:10.06.2022, Decision: 100).

PATIENT SELECTION

Prospectively recorded data were extracted from patient files and hospital databases retrospectively. A detailed informed consent form was obtained from the patients. All patients underwent endocrinology and psychiatry consultations, as well as age-matched laboratory studies and ultrasonographic imaging. The patients had excess skin and large ptotic breasts, whose gynecomastia grades were categorized as grade 3 according to the Simon classification¹.

Skin Marking and Surgical Technique

The patients were told to quit non-steroidal anti-inflammatory drugs at least 10 days before the operation and to quit smoking 1 month before the surgery. An intravenous dose of broad-spectrum antibiotic was administered preoperatively.

All markings were made while the patients were standing preoperatively. At this stage, reference points passing through the middle of the sternum, mid-clavicular line and inframammary groove were marked and incisions were planned. The new areola was marked as a 25 mm ring-shape and a second circular incision was

marked around it, corresponding to the excess skin that needs to be removed. A third ring was planned around these rings, showing the fatty tissue to be removed by liposuction. In all patients, a 3 mm incision site was marked either from the axillary region or from the lower-outer edge of the breast tissue for the insertion of a liposuction cannula.

During the operation, all patients were placed in the supine position with arms abduction 90°. In patients undergoing liposuction under general anesthesia, a tumescent solution containing 1000 cc lactated Ringer's, 1:1000 epinephrine in 1 ml and 25 ml of 2% lidocaine solution was infiltrated subcutaneously into each breast according to tissue volume (340 to 450 mL).

After waiting for 20 minutes, the liposuction procedure was first started from the deep tissues around the breast area (with a 4 mm Mercedes-tip cannula) to correct the contour and superficialized gradually (with a 3 mm Mercedes-tip cannula). Then, liposuction of the fibroglandular breast tissue was performed. Treatment was continued until the endpoint was reached and loss of tissue resistance, a significant reduction in breast volume, or bloody aspirate was observed.

The thickness of the surrounding adipose tissues was also taken into account to prevent the collapse of the nipple. It was also targeted to correct the fold in the intramammarian groove.

Then, the area matching the excess skin was deepithelialized and removed. A superiorly based nipple areola complex (NAC) flap was created from the semicircular incision made at the 4 and 8 o'clock positions on the outer border of the epithelialized area, subcutaneous mastectomy was completed. Adipocutaneous flaps were designed thicker in overweight patients and thinner in thin patients in order to obtain a suitable contour for the chest profile.

During the excision, it was ensured that the nipple-areolar disc was 5-10 mm thick and that a 10-15 mm thick fibroglandular tissue was preserved in the area where the disc would sit, without disturbing its bleeding.

Dissections were made in the suprafacial plane, the facial planes were preserved. It was necessary to prevent hematoma and seroma formation. In all cases, maximum excision of the glandular tissue was performed to provide a contour suitable for the chest profile. After hemostasis was achieved with cautery and the pocket was irrigated with saline, the examination was made for any remaining lumps in the tissue that requires bleeding or resection, followed by suction drain placement through the liposuction incision.

Firstly, a non-absorbable material (e.g., prolene 2.0) was used for purse-string suture for skin closure and a 25 mm ring was created around the areola. Then, the dermal Superior pedicle NAC flap, prepared as 25 mm, was folded on itself neatly with subcutaneous sutures, first at the 3, 6, 9 and 12 o'clock positions, and then by adding 4 more stitches between these sutures. Finally, the cuta-

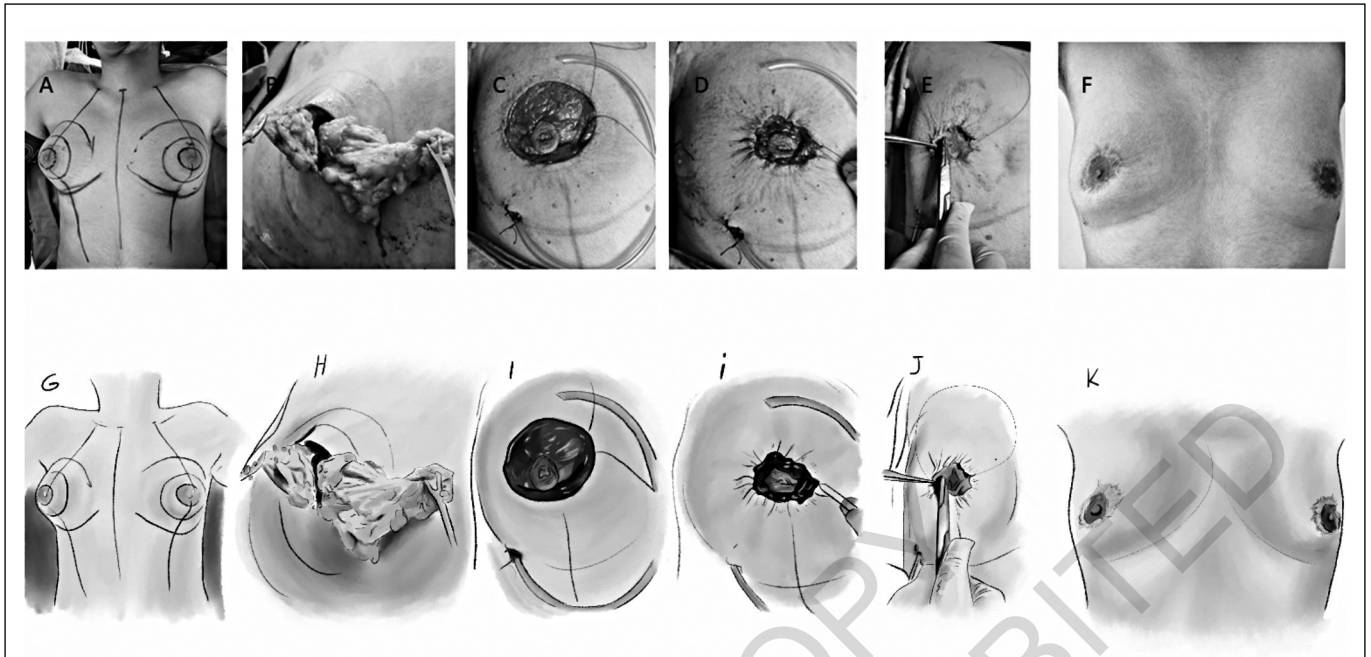


Fig. 1: A and G, Preoperative drawings of a patient with stage III gynecomastia who underwent liposuction combined with a single-stage circumareolar approach. B and H, Resection of fibroglandular tissue from the circumareolar incision at the 4 and 8 o'clock positions at the outer border of the epithelialized area, preserving the superior pedicle NAC after liposuction. C and I, 14-French suction drain inserted through the outer border of the deepitized circumareolar incision with a purse-string suture and liposuction cannula insertion. D and I, contraction of the purse-string suture to form a 25 mm loop. E and J, Repositioning of the NAC with subcutaneous approach sutures. F and F, Postoperative view after 3 months.

neous periareolar incision was fixed with an intradermal suture using Vicryl 3.0. The technical details of the operation are shown in Fig. 1.

POST-OPERATIVE CARE

The compressive dressing was applied and a surgical corset covering the operated area was used by the patients for 1 month to prevent seroma and hematoma formation. The drains were removed 24-48 hours after the operation. Antibiotherapy was completed in a week. Outpatient follow-up was performed 1 week, 2 weeks and 1, 3, 6 and 12 months after the operation.

STATISTICAL ANALYSIS

Patients' data were analyzed using SPSS version 24.0. Quantitative variables are shown as mean (min-max, standard deviation).

Results

All 18 patients included in the study were patients with bilateral (36 breast tissue) Grade 3 gynecomastia. Their ages ranged from 17 to 34. Continuous variables of the patients are presented in Table I.

Postoperative complications such as seroma, hematoma, infection and NAC necrosis were not observed in any of the patients. Overall, patients were satisfied with the final results, but only one patient was recontoured with liposuction at her own request. Mild nipple enlargement occurred in two patients. As edema subsided, evidence of mild skin excess was observed in Grade 3 patients. However, this excess was never severe enough to require a secondary procedure. Pre- and postoperative images of some patients with advanced gynecomastia are shown in Fig. 2.

Discussion

The gynecomastia patient group is a difficult group to please due to concerns about cosmetic appearance. Although surgical intervention is the most effective option in the treatment of gynecomastia, dozens of methods have been described^{1,2,5,10}.

Surgical treatment is a popular field that continues to evolve rapidly with surgical techniques combined with liposuction that has the best cosmetic and minimal complication rates¹¹. Therefore, most of the time a combination of several suitable methods is required according to the experience of the surgeon, the degree of the case and the expectation of the patient. The aim here is to effectively reduce the enlarged breast tissue with minimal scar tissue. In order to be successful in surgical treat-



Fig. 2: Preoperative and postoperative 6th month views of some patients. A, B, C and D; Preoperative view. E,F,G and H; Postoperative 6th month view.

TABLE I - Continuous Variables of Patients

Variables (for each breast)	Mean	Min-Max	SD
Age	25.0	17-34	7.4
Areola diameter (mm)	34.0	30-36	2.2
Follow-up (months)	8.2	5-12	2.3
Surgery time	44.8	40-55	6.2
Complaint duration (year)	2.0	1-3	1.00
Infirmary volume (ml)	392.2	340-450	41.8
Aspiration volume (ml)	201.1	150-250	32.2
Tissue weight removed (gr)	297.8	170-430	76.6

ment, ensuring symmetry in both breasts, eliminating the inframammary groove, and removing excess skin in a way that minimizes scar formation are necessary. This study describes a modified circumareolar approach combined with liposuction targeting all these outcomes in patients with Grade 3 gynecomastia. This approach combines Simon's circumareolar, Webster's periareolar resections and Benelli's circumareolar approach with power-assisted liposuction, especially in this group requiring severe skin resection^{1,10,12}. Although it is now well accepted that low-grade gynecomastia is best treated with liposuction alone, its use alone is criticized due to the lack of histopathological analysis of the resected tissue¹³.

However, surgical management of Simon's Grade III gynecomastia remains problematic as it often requires a second operation after both liposuction and conventional subcutaneous mastectomy without skin excision. Webster's periareolar and Simon's semicircular excisions are popular and well-documented surgical techniques for the correction of gynecomastia, but are of limited benefit for severe gynecomastia due to excess skin in ptotic breasts^{1,10}. Rohrich et al described 25 different techniques for the treatment of gynecomastia, including subcutaneous mastectomy, breast reduction, liposuction, or a combination of these techniques². Nevertheless, most techniques have limited usefulness in the treatment of severe gynecomastia due to severe excess skin. Gynecomastia correction has evolved over the years, especially with the advent of liposuction techniques. Liposuction with surgical excision of the gland is followed by a small incisional design for removal of the breast parenchyma, a consistent improvement in quality of life, few complications, and good cosmetic results^{11,13-15}. The preoperative distinction between adipose tissue and glandular tissue is difficult, and we, therefore, think that liposuction should be used in the first part of the operation in almost all cases of gynecomastia. In this way, it becomes much easier to correct the

peripheral contour and define the glandular tissue. Power-assisted liposuction is an easily accessible and useful tool for realizing these¹⁶.

In this technique, the benefits of liposuction include better access for removal of excess breast tissue, good hemostasis, and a large window for better contouring. In addition, the wide base of the NAC dermoglandular flap both contributes to NAC perfusion and allows wide excision by means of direct visualization of parenchyma. Thus, the duration of the operation is shortened and the complication rates are reduced accordingly. No postoperative complications were observed in our study, the average operation time was 45 minutes for each breast. The use of hemovac drains, avoidance of physical activities for 1 month after surgery, and prohibition of tobacco in the perioperative 1 month period are beneficial to prevent hematoma and seroma formation. In extremely large breasts, sometimes it may be necessary to perform liposuction again just for cosmetic appearance. We performed liposuction again on one of our patients at his own request.

Preservation of the retroareolar glandular tissue disc during subcutaneous mastectomy is also beneficial in preventing retraction of the areola and accompanying saucer deformity due to scarring in this area. Thus, this deformity did not occur in our cases.

In parallel with new equipment and technical developments, the liposuction procedure will be used more and more for better aesthetic results in the surgical management of gynecomastia¹⁷.

Additional reports are needed as our patient cohort consisted of only 18 patients, a limitation of the study.

In the study, circumareolar approach that allows extensive removal of excess skin and breast tissue with satisfactory cosmetic results is redefined.

Conclusion

Our study shows that the circumareolar approach combined with liposuction yields satisfactory results including the size of the scar while allowing adequate resection.

We believe that this technique should be recommended as a standard surgical treatment in patients with severe gynecomastia and that it can give excellent results in extreme fibroglandular tissue excisions.

Riassunto

La ginecomastia è una proliferazione benigna del tessuto ghiandolare del seno maschile che provoca un notevole disagio emotivo dovuto alla restrizione dell'attività quotidiana, specialmente nei giovani uomini.

Nei pazienti con ginecomastia grave, viene descritto un nuovo approccio con la liposuzione combinata con la

mastectomia sottocutanea circumareolare con minima cicatrizzazione periareolare, compresa la eliminazione della cute in eccesso. I dati registrati prospetticamente per un periodo di quindici mesi sono stati valutati retrospettivamente riguardo ai risultati estetici e le complicanze precoci e tardive.

Tra settembre 2021 e dicembre 2022 sono stati trattati bilateralmente un totale di 18 pazienti. Ogni paziente è stato contrassegnato prima dell'intervento in posizione eretta. In anestesia generale sono state eseguite la liposuzione power assistita e la asportazione della cute in eccesso. È stato creato un lembo del complesso areolacapezzolo (NAC) a base superiore con attenzione a conservare intatto l'afflusso di sangue. Il tessuto fibroglandolare in eccesso è stato asportato. I lembi della ferita sono stati avvicinati con una sutura a borsa di tabacco e il NAC è stato posizionato nella sua nuova posizione. La ferita è stata suturata dopo l'inserimento di un drenaggio in aspirazione nella porta della liposuzione.

RISULTATI: L'età dei pazienti con ginecomastia bilaterale di grado 3 variava da 17 a 34 anni. Il follow-up realizzato è variato da 5 mesi a 1 anno. Un trattamento antibiotico è stato somministrato a tutti i pazienti come profilassi. La liposuzione è stata ripetuta nuovamente su un paziente per correggere un difetto estetico. In 2 pazienti è stato osservato un minimo allargamento dell'areola.

CONCLUSIONI: Questo nuovo approccio circumareolare con liposuzione è un buon metodo per un'ampia escissione del tessuto mammario nella gestione chirurgica della ginecomastia grave con cicatrici minime e ottimi risultati estetici.

References

1. Simon BE, et al.: *Classification and surgical correction of gynecomastia*. 1973; 48–52.
2. Rohrich RJ, et al.: *Classification and management of gynecomastia: defining the role of ultrasound-assisted liposuction*. *Plast Reconstr Surg*, 2003; 111(2):909–23.
3. Fagerlund A, et al.: *Gynecomastia: A systematic review*. *J Plast Surg Hand Surg*, 2015; 49(6):311–18.
4. Longheu A, et al.: *Surgical management of gynecomastia: Experience of a general surgery center*. *G di Chir*, 2016; 37(4):150–54.
5. Zavlin D, et al.: *Complications and outcomes after gynecomastia surgery: analysis of 204 pediatric and 1583 adult cases from a national multi-center database*. *Aesthetic Plast Surg*, 2017; 41(4):761–67.
6. Choi BS, et al.: *The characteristics and short-term surgical outcomes of adolescent gynecomastia*. *Aesthetic Plast Surg*, 2017; 41(5):1011–21.
7. Khalil AA, et al.: *No-Drain single incision liposuction pull-through technique for gynecomastia*. *Aesthetic Plast Surg*, 2017; 41(2):298–303.
8. Kim DH, et al.: *Surgical management of gynecomastia: Subcutaneous mastectomy and liposuction*. *Aesthetic Plast Surg*, 2016; 40(6):877–84.

9. Taheri AR, et al.: *The satisfaction rate among patients and surgeons after periareolar surgical approach to gynecomastia along with liposuction.* World J Plast Surg, 2016; 5(3):287–92.
10. Webster JP, et al.: *Mastectomy for gynecomastia through a semi-circular intra-areolar incision.* Ann Surg, 1946; 124(3):557–75.
11. Boljanovic S, et al.: *Surgical Treatment of gynecomastia: Liposuction combined with subcutaneous mastectomy.* 2003; 160–62.
12. Benelli L: *Periareolar mammoplasty - Round block technique.* Rev da Soc Bras Cir Plast, 1990; 5(1):44–8.
13. Ibrahiem S.M.S.: *Severe gynecomastia new technique using superior pedicle nac flap through a circumareolar approach.* Ann Plast Surg, 2016; 76(6):645–51.
14. Prasetyono TOH, et al.: *liposuction assisted gynecomastia surgery with minimal periareolar incision: A systematic review.* Aesthetic Plast Surg, 2022; 46(1):123–31.
15. Kasielska-Trojan A, et al.: *Gynecomastia surgery-impact on life quality: A prospective case-control study.* Ann Plast Surg, 2017; 78(3):264–68.
16. Oh YH, et al.: *Liposuction using wall suction and portable suction in the treatment of gynecomastia.* Indian J Surg, 2022; 84(3):517–23.
17. Heymans O, et al.: *Liposuction: review of the techniques, innovations and applications.* Acta Chir Belg, 2006; 106(6):647–53.

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