

Clinical Study of Liposuction Combined with Subareolar Incision Adenectomy for Gynecomastia

Lu Sun¹, Wei Shao¹, Xiaolong Weng^{2*}

¹Zhongshan Hospital Affiliated to Dalian University, Dalian 116000, Liaoning Province, China

²Henan Plastic Surgery Hospital, Zhengzhou 450000, Henan Province, China

*Corresponding author: Xiaolong Weng, 1135880433@qq.com

Copyright: © 2023 Author(s). This is an open-access article distributed under the terms of the Creative Commons Attribution License (CC BY 4.0), permitting distribution and reproduction in any medium, provided the original work is cited.

Abstract: *Objective:* To investigate the clinical effect of liposuction combined with subareolar incision glandectomy in the treatment of Simon Grade III adipo-glandular gynecomastia (GYN). *Methods:* From March 2021 to March 2022, the data of patients with Simon Grade III adipo-glandular GYN treated by liposuction combined with glandectomy in the Department of Plastic Surgery, Zhongshan Hospital Affiliated to Dalian University and Henan Plastic Surgery and Aesthetic Hospital were retrospectively analyzed. Based on the medical records, color ultrasound was performed on the patient's breast before surgery, which was determined to be GYN (more than 50% glandular tissue). A 3 mm long incision was made at the lower boundary of the surgical range, through which the adipose tissue in the hypertrophic region of the breast was repeatedly aspirated until a satisfactory thickness was achieved. The residual glandular tissue was removed by a semicircular arc incision under the areola, and then the areola incision was sutured in position. The blood flow, sensation, and wound healing of bilateral nipples and areola were observed after surgery, and the morphology of bilateral thorax and scar of incision were followed up. *Results:* A total of 15 GYN patients aged 18 to 35 years with body mass index of 23.8 to 26.5 kg/m² (mean = 24.8 kg/m²) were included in this study. The average intraoperative liposuction volume of unilateral breast was 170 mL (150–200 mL), the average glandectomy volume was 115 g (95–125 g), and the average blood loss was about 40 mL (15–75 mL). Postoperative hypertrophic breast volume decreased significantly, and no complications such as hematoma, infection, skin ischemic necrosis, or sensory disturbance occurred in the nipple and areola, during the healing process. The patients were followed up for 3 to 6 months, and the bilateral thorax was smooth, symmetrical, and natural in contour. The incision was concealed, and the scar was not obvious. *Conclusion:* Liposuction combined with subareolar incision glandectomy in the treatment of Simon Grade III adipo-glandular GYN is safe. The postoperative chest contour is smooth and natural, and the scar is small and invisible, which achieves good aesthetics.

Keywords: Male breast development; Areola incision; Liposuction; Surgery

Online publication: June 9, 2023

1. Introduction

Gynecomastia (GYN) is a clinical condition of abnormal development of male breast tissue and breast connective tissue hyperplasia caused by physiological or pathological factors. In recent years, the incidence of GYN has gradually increased, and the incidence of cancer of abnormal hyperplasia of breast tissue is significantly higher than that of normal male breast, which severely impacts the patients physically and mentally ^[1–2]. Surgery is the main treatment method at present, and researchers are constantly exploring

new, effective, and aesthetic surgical methods. Through small incision of breast hypertrophy area and repeated suction of the adipose tissue, and resection of residual gland tissue at the halo semicircle arc incision, both avoid residue from simple liposuction and gland resection and reduce scarring on the chest wall. Besides, its postoperative effect is good, thus cases of this procedure are summarized for clinical reference.

2. Data selection

Data of GYN patients admitted to the Department of Plastic Surgery, Zhongshan Hospital Affiliated to Dalian University and Henan Plastic Surgery Hospital from March 2021 to March 2022 were retrospectively analyzed. Inclusion criteria: (1) Diagnosed with Simon Grade III GYN through preoperative breast palpation, color ultrasound and other examinations^[3]; (2) the course of the disease was more than 12 months, and there was no sign of spontaneous resolution; (3) glandular lipodosis was identified (the amount of glands exceeding 50% of the total breast volume) through breast examination and the Cohn classification^[4]; (4) voluntarily accepted follow-up visits; (5) agreed to use their data in this study. Exclusion criteria: (1) complicated with heart, liver, kidney, and blood system diseases; (2) patients with incomplete data; (3) abnormal breast development caused by long-term use of estrogen; (4) pituitary tumor or pseudohermaphroditism; (5) patients who cannot return to the clinic on time. We referred to the Declaration of Helsinki for this study. All patients signed an informed consent and allowed the use of their data. Photos were taken before and after surgery.

3. Method

3.1. Preoperative examination

Blood and urine, coagulation function, liver function, kidney function, and electrolytes were checked preoperatively. Besides, electrocardiogram, chest X-ray, and breast color ultrasound were performed. The patient's physical condition and gland and fat volume were assessed to estimate the proportion of glands to total breast volume.

3.2. Surgical procedure

(1) Marking of the liposuction range and glandular area

The patient took a standing position with both hands and took preoperative photos (**Figure 1**) to mark the liposuction range and glandular area on both breasts.

(2) Surgery

The patient was placed in a supine position with a slightly elevated back and arms abduction of 90°. After successful general anesthesia through tracheal intubation, the thoracic operation area was routinely disinfected, and a sterile sheet was laid. In the lower boundary of the corresponding fat accumulation site of the breast, a 3 mm skin incision was made, and adrenaline solution (1:200,000 adrenaline; saline) was injected into the subcutaneous fat layer until the tissue in the surgical area became hard and uniformly uplifted, and the skin was peau d'orange. Liposuction was performed 15–20 min after fluid injection. The liposuction machine is purchased from Beijing Keyi Zhenyanshan Medical Technology Co., Ltd., and the negative pressure was set as -75 kPa. The liposuction needle with a diameter of 3 mm and sharp side holes was used to pump fat uniformly and repeatedly in a fan-shaped way. The tissue below the nipple and areola was pinched, and the liposuction needle was inserted between the pinched tissues. In the process of suction, the liposuction needle destroyed the integrity of the gland and suck away part of the broken gland, and the volume of the remaining gland tissue in the nipple and areola area was significantly reduced.

A semicircular arc incision was made at the lower margin of areola, and the skin and subcutaneous tissue were cut through with a scalpel to the fatty fascia layer. Hemostatic forceps were used to fix the subcutaneous tissue of areola and lift it up. The submammary space was opened along the subareola incision, and the subareola plane was fully free to form a fascia tissue flap with a few glands in areola, and glandular tissue was removed from the subareola incision (**Figure 2**). An appropriate thickness of tissue was retained below the nipple and areola to avoid postoperative necrosis or depression of the nipple and areola. After excision, the bilateral breast area was observed for symmetry, and chest wall for flatness. The surgical site was checked for residual glands. The bleeding was stopped thoroughly, and the surgical site was repeatedly rinsed with diluted active iodine and normal saline. A 200 mL negative pressure drainage device was routinely placed after the operation. The subcutaneous tissue was sutured layer by layer with 5-0 absorbable thread and skin with 6-0 nylon thread, and the subareolar incision was sutured layer by layer. After the operation, sterile dressing was used to wrap the surgical site, and the chest was wrapped with gauze bandage. The excised tissue was sent for pathological examination.



Figure 1. Pictures taken before surgery



Figure 2. The glands removed during surgery

(3) Postoperative management and follow-up observation

After the operation, the drainage tube was left in place for 2–3 days, and the drainage volume was less than 15 mL within 24 hours, then the tube was pulled out for symptomatic treatment such as hemostasis and anti-infection. The stitches were removed 10 days after surgery (**Figure 3**). After the incision healed, the chest was secured with elastic clothing for 1 month (**Figure 4**). Generally, the chest surface became flat after a month. Postoperative follow-up was done mainly to observe the blood transport and healing of bilateral nipples and areola, the thoracic morphology, and wound scars, and to evaluate the sensation of the patient's nipples and areola by touching them with cotton swabs.



Figure 3. The stitches were removed 10 days after surgery



Figure 4. Postsurgery elastic after surgery

4. Results

A total of 15 patients with Simon Grade III GYN were included in this study, all with bilateral disease, aged 18 to 35 years, with body mass index of 23.8 to 26.5 kg/m² (mean = 24.8 kg/m²). Postoperative breast volumes of all GYN patients were significantly reduced, and there was no abnormal bleeding during and after surgery. The average intraoperative fat extraction volume of unilateral breast was 170 mL (150–200 mL), and the average glandular excision volume was 115 g (95–125 g). The average blood loss is about 40 mL (15–75 mL). There were no complications such as subcutaneous hematoma, subcutaneous effusion, or ischemic necrosis of nipple and areola, and the incisions all healed smoothly. The average hospitalization was 5 days (3–7 days). After the operation, the patient wore elastic body-shaping clothes for 1 month, and some patients experienced skin folds and loose skin in the early stage of the operation. The follow-up at 3 to 6 months after surgery showed that the patient's chest was flat and symmetrical on both sides, the incision was concealed, with no obvious scars. Besides, the skin was free of bruises and bumps, with no signs of recurrence, the sensation of the nipple and areola was normal, and the appearance was satisfactory.

5. Discussion

GYN is commonly seen in adolescent, middle-aged and elderly males, with an incidence rate of up to 32%–65% in young men and is the most common disease of male breasts [5–6]. In recent years, the amount consultation for this condition has increased significantly. According to etiology, GYN can be divided into four categories: physiologic, pathological, pharmaceutical, and idiopathic, among which pathologic and idiopathic GYN require treatment [7–9], and surgery is the main treatment method [10]. Most patients do not experience much discomfort, and a few may have mild symptoms such as tenderness and swelling. However, the protruding chest shape will cause social difficulties for some patients and affect their mental

health^[11]. There are many causes for of GYN, including congenital factors, endocrine disorders, tumors and some side effects of drugs^[12]. The Simon's method^[3] was used to grade the severity of GYN clinically, and Webster's method^[13] was used to classify the histological types of GYN. Simon et al^[3] divided GYN into 3 grade: Grade I – mild breast enlargement without skin redundancy; Grade II – moderate breast enlargement without skin redundancy, Grade IIb –moderate breast enlargement with skin redundancy; Grade III – breast enlargement, accompanied by obvious skin redundancy. Webster^[13] classified GYN into three types according to the pathological components of hyperplasia, including glandular type (only glandular hyperplasia), adipo-glandular type (hyperplasia of both glands and fat), and fatty type (only hyperplasia of fat). Adipo-glandular GYN means that there is hyperplastic glandular connective tissue in the central region of the breast, and hyperplastic adipose tissue throughout the anterior chest. The traditional surgical method of simple resection has disadvantages such as large incision and wound and postoperative bumpiness^[14]. Simple fat aspiration cannot completely remove hyperplastic glandular tissue, which may lead to incomplete treatment and risk of recurrence and may lead to local bumpiness, which is not ideal for most patients^[15-16]. Therefore, in the cases of this study, the hyperplasia of chest fat were first removed by liposuction, and the glandular connective tissue in the central region of the breast were then removed through areola incision. This combined method can reduce vascular injury, postoperative complications, and improve surgical safety.

The operative techniques of liposuction combined with glandular excision in the treatment of GYN can be summarized into four points.

- (1) Before liposuction, adrenaline solution in the operative area was injected into the prefascia of the pectoralis major and the superficial layer of the subcutaneous layer. The injection of adrenaline solution not only reduces intraoperative bleeding, but also separates the hyperplasia tissue of the GYN from the deep tissue (pectoralis major and other tissues deep in the pectoralis major fascia) and the superficial tissue (skin), thus reducing the damage to deep and shallow tissues during fat aspiration and glandular excision.
- (2) In order to avoid necrosis of the nipple and areola during GYN gland resection, glands and adipose tissue of certain thickness should be retained in the nipple and areola area.
- (3) The postoperative complications of this procedure are usually obvious loose skin and folds in the short term after surgery. The removal of excess glands and adipose tissue will cause the skin tissue to be loosened. Therefore, it is necessary to pay attention to adequate hemostasis during the operation, and postoperative gauze bandage and elastic clothing to fully compress and bandage to reduce bleeding and promote skin retraction at the same time.
- (4) Shortcomings of this study: (i) Color ultrasonography, facial examination and palpation can only estimate the ratio of fat to glands in GYN patients, which makes them subjective and lacks accuracy, thus needing further research and improvement. (ii) This surgical method is only suitable for adipo-glandular GYN; (iii) In order to avoid possible necrosis of the nipple and areola during GYN gland resection, glands and adipose tissue of certain thickness should be retained in the nipple and areola area, but there is a risk of recurrence after surgery, and local unevenness or incomplete correction. (iv) This procedure cannot remove the excess skin tissue, and local skin accumulation will occur in the early postoperative period, which affects the appearance and confidence of the patient, and requires a certain amount of time and compression treatment with elastic clothing to make the skin tissue shrink.

6. Conclusion

Liposuction combined with areola incision for gland resection has fewer postoperative complications, and it results in a smooth and natural chest shape, with small and invisible scars, which makes it worth popularizing.

Disclosure statement

The authors declare no conflict of interest.

References

- [1] He K, Liu S, Yu Z, 2016, Male Breast Cancer and Gynecomastia Identification and Related Research Progress. *Chinese Journal of Medical Oncology Surgery*, 8(3): 163–166.
- [2] Longheu A, Medas F, Corrias F, et al., 2016, Surgical Management of Gynecomastia: Experience of A General Surgery Center. *Chir*, 37(4): 150–154.
- [3] Simon BE, Hoffman S, Kahn S, 1973, Classification and Surgical Correction of Gynecomastia. *Plast Reconstr Surg*, 51(1): 48–52.
- [4] Sir E, Üçer O, Aksoy A, et al., 2016, Sexual Function and Hormone Profile in Young Adult Men with Idiopathic Gynecomastia: Comparison with Healthy Controls. *Breast Dis*, 36(1): 1–4.
- [5] Braunstein GD, 2007, Clinical Practice: Gynecomastia. *N Engl J Med*, 357(12): 1229–1237.
- [6] Brown RH, Chang DK, Siy R, et al. 2015, Trends in the Surgical Correction of Gynecomastia. *Semin Plast Surg*, 29(2): 122–130.
- [7] Lu H, Lou L, Wang H, et al., 2020, Study on the Value of Breast-Assisted Liposuction Adenectomy in the Treatment of Gynecomastia. *Chinese Modern Doctor*, 58(1): 52–55.
- [8] Sansone A, Romanelli F, Sansone M, et al., 2017, Gynecomastia and Hormones. *Endocrine*, 55(1): 37–44.
- [9] Soliman AT, De Sanctis V, Yassin M., 2017, Management of Adolescent Gynecomastia: An Update. *Acta Biomed*, 88(2): 204213.
- [10] Zhu H, 2021, Clinical Analysis of Endoscopic Treatment of Severe Gynecomastia. *China Practical Medicine*, 16(17): 74–76.
- [11] Ordaz DL, Thompson JK, 2015, Gynecomastia and Psychological Functioning: A Review of the Literature. *Body Image*, 15: 141–148.
- [12] Cai J, Yang J, 2005, Current Status of Etiopathology of Gynecomastia. *Chinese Journal of Practical Cosmetic and Plastic Surgery*, 16(3): 169–171.
- [13] Webster JP, 1946, Mastectomy for Gynecomastia Through a Semicircular Intra-Areolar Incision. *Ann Surg*, 124(3): 557–575.
- [14] Wang W, Plastic Surgery Department. Hangzhou: Zhejiang Science and Technology Press, 1999:1170–1172.
- [15] Wani SA, Rabah SM, AlFadil S, et al., 2015, A Novel Method of Marking Nipple Areola Complex in Gynaecomastia Surgery. *Indian J Plast Surg*, 48 (1): 96.
- [16] Nuzzi LC, Cerrato FE, Erikson CR, et al., 2013, Psychosocial Impact of Adolescent Gynecomastia: A Prospective Case-Control Study. *Plast Reconstr Surg*, 131(4): 890–896.

Publisher's note

Bio-Byword Scientific Publishing remains neutral with regard to jurisdictional claims in published maps and institutional affiliations.