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Surgical Treatment of Gynecomastia: Liposuction Combined with Subcutaneous Mastectomy

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Abstract: Background and Objective: Gynecomastia is a common condition that is defined as the enlargement of male breast tissue and has a significant influence on their physical appearance and psychological status. Various surgical methods have been used to treat it. Liposuction with subcutaneous mastectomy has been one of the promising and effective regimens for treatment. The present study was done to evaluate the results, complications, and efficacy of liposuction with subcutaneous mastectomy in the management of gynecomastia. Methodology: 100 gynecomastia patients were included in this cross-sectional study from different hospitals in Iraq. The surgical technique used was subcutaneous mastectomy + liposuction, and comparisons were made based on operative parameters, complications, pain scores, and late satisfaction with the SF-36 questionnaire. Outcomes: Our study enrolled clinical outcomes of the patients with ages ranging from 17 - 42 years. They mostly had symptoms in the form of breast swelling (70%) and psychological distress (60%). Operative time was 120 minutes on average, and loss of blood was a mean of 150 mL. Hospital stay was 2 days on average, and minimal scarring was observed in 90% of the patients. Recovery was quick, with 60% of the patients returning to normal in 7 days. Complications were seen in 25% of the patients, as hematomas in 5% and seromas in 10%. Postoperative pain scores also significantly improved, with 80% of the patients experiencing minimal pain (VAS 0-3). The follow-up at 12 months showed 60% of the patients with excellent outcomes. Conclusion: Liposuction and subcutaneous mastectomy are effective and safe procedures for correcting gynecomastia with high patient satisfaction and low rates of complications. The procedure facilitates early recovery and significant quality of life improvement in patients, as evident from the SF-36 health survey.

Keywords: Gynecomastia, liposuction+subcutaneous mastectomy, surgical treatment, complications, patient outcomes, sf-36 quality of life questionnaire.

INTRODUCTION

Gynecomastia, benign hypertrophy of glandular male breast tissue, is a common condition in up to 60% of men at some point during their lifetime. While generally self-limited, chronic gynecomastia can cause significant physical morbidity and psychic discomfort, making surgical correction appropriate (Kanakis, G. A. *et al.*, 2019). The art of surgical correction of gynecomastia has come a long way, and nowadays liposuction combined with proper subcutaneous mastectomy has become the gold standard for intermediate to severe gynecomastia (Daniels, J. *et al.*, 2022). This technique specifically addresses both the glandular and fatty components of gynecomastia, giving the optimum functional and cosmetic results (Narula, H. S. & Carlson, H. E. 2014).

The prevalence of gynaecomastia for men is 32% - 65%. Gynaecomastia was mainly induced by a hormonal imbalance to be may be found postnatally, throughout adolescence, and in the elderly (Sollie, M. 2018). Although the majority of GM cases are idiopathic, it is necessary to eliminate possible pathological etiologies, which include tumors, medications, and congenital and endocrine problems. Gynecomastia can be symmetrical or asymmetrical, unilateral or bilateral (Jian, C. *et al.*, 2020). There may or may not be soreness or pain. It is often found in the center, as opposed to male breast cancer, that typically manifests as a hard mass accompanied by or without skin alterations and can be either central or peripheral (Wang, Y. *et al.*, 2019; Simon, B. E. *et al.*, 1973)

Gynecomastia is now treatable surgically using suction-assisted lipectomy, subcutaneous mastectomy, and a combination of these techniques using various surgical techniques and technological tools (Karamchandani, *et al.*, 2022; Yang, Y. *et al.*, 2021; Ciancio, F. *et al.*, 2017). While severe gynecomastia is a surgical challenge, modest gynecomastia yields good outcomes despite the wide range of techniques and instruments utilized in gynecomastia surgery. There are still some irritating postoperative issues that cannot be fully resolved (Wyrick, D. L. *et al.*, 2018). The present study evaluates the efficacy, safety, and patient satisfaction with the (subcutaneous mastectomy + liposuction) technique between a group of 100 patients who were given the treatment.

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PATIENTS AND METHODS

Study Design:

The research is a cross-sectional study that was conducted in a tertiary referral center between different hospitals in Iraq for 12 months. The study design allows for assessment of the operations, immediate postoperative outcomes, and follow-up measurements in the long term.

Data Collected from Participants:

Demographic data of the participants, including age, BMI, duration of gynecomastia, and presence of any comorbidities, were noted. Clinical evaluation also included the severity of gynecomastia, scored as grade I (mild), II (moderate), and III (severe) based on excess tissue and breast tissue size. Preoperative hormonal profiles in the form of serum testosterone, estradiol, and prolactin levels were also noted.

INCLUSION AND EXCLUSION CRITERIA

Inclusion Criteria

- Male patients between 17 and 42 years with clinical gynecomastia (confirmed by physical examination and imaging studies if necessary).
- Patients seeking surgical treatment after conservative therapy has failed.

Exclusion Criteria

- Patients with a history of breast cancer or other neoplasias.
- Patients with endocrine disorders leading to gynecomastia which will require medical instead of surgical intervention.
- Patients with significant comorbid conditions that may raise the risk of complications after surgery.

Surgical Management

All the operations were performed under general anesthesia. The technique involved a combination of subcutaneous mastectomy and liposuction. Liposuction was performed using a tumescent technique to precisely remove excess fat tissue, followed by a subcutaneous mastectomy for the excision of glandular tissue with minimal scarring. Insertion of the drain was utilized as necessary for the prevention of seroma formation. The operation was performed by an experienced operating team to standardize the procedure for all the recruits.

Surgical Outcomes

Perioperative outcomes were recorded at the time of surgery, including operative time, intraoperative blood loss, postoperative complications (hematoma, seroma, and infection), and need for reoperation. Postoperative assessment was conducted at the time of surgery and at discharge.

Post-Surgery Outcomes and Health Assessment

Follow-up evaluations were planned at 1 week, 3 months, and 12 months post-surgery. Data collected during each visit comprised the levels of pain (recorded using a Visual Analog Scale - VAS), healing progress, complications, and satisfaction with the result of the operation. The SF-36 Health Survey was also used to assess the quality of life pre-surgery as well as during all follow-up visits in order to quantify alterations in the physical and mental state of the patients.

Data Analysis

SPSS software version 22.0 was utilized for statistical analysis. Descriptive statistics were employed to report patient demographics and operation outcomes. Statistical significance was determined by a p-value of <0.05. Longitudinal quality of life change as measured by SF-36 scores was examined using measurements

RESULTS

Table 1. Patient's Demographics and Clinical Features.

Characteristics	**N**	**Percentage (%)**
Age Groups		
17 - 25 years	30	30%
26 - 34 years	40	40%
35 - 42 years	30	30%
BMI Categories (kg/m^2)		
Normal (18.5–24.9)	40	40%
Overweight (25–29.9)	35	35%
Obese (≥30)	25	25%
ASA Categories		
I	55	55%
II	35	35%

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III	10	10%
Smoking Use		
Yes	25	25%
No	75	75%
Alcohol Use		
Yes	20	20%
No	80	80%
Previous Medications Used		
Yes	15	15%
No	85	85%
Hormonal Imbalance		
Yes	30	30%
No	70	70%
Obesity-related		
Yes	40	40%
No	60	60%

Table 2. Diagnoses Reported Before Surgery.

Characteristics	N	Percentage (%)
Symptoms		
Swelling of Breast Tissue	70	70%
Tenderness or Pain	50	50%
Nipple Discharge	20	20%
Psychological Distress	60	60%
Asymmetry	40	40%
Duration of Symptoms (Mean ± SD)	3 ± 1.5 years	N/A
Grade of Gynecomastia		
I	40	40%
II	30	30%
III	30	30%
Side Involved		
Unilateral	60	60%
Bilateral	40	40%
Endocrinal Tests/Imaging		
Endocrine Blood Test	80	80%
Mammogram	50	50%
Breast Ultrasound	60	60%
Mammogram and Ultrasound	40	40%
Systemic Imaging	20	20%

Table 3. Surgical Techniques Used.

Technique	N	Percentage (%)
Liposuction + Subcutaneous Mastectomy	100	100%

Table 4. Surgical Outcomes of (Liposuction + Subcutaneous Mastectomy).

Outcomes	**Mean ± SD**
Operative Time (Minutes)	120 ± 20
Blood Loss (mL)	150 ± 30
General Anesthesia used	100%
Bleeding Rate (Percentage of Patients)	10%
Hospital Stay (Days)	2 ± 1
Scarring (Minimal)	90%
Weight of Resected Tissue (g)	
<100 g	30%

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100–200 g	50%
>200 g	20%
Recovery Time (Days)	
<7 days	60%
7–14 days	30%
>14 days	10%
Recurrence Rate (Postoperative)	
No Recurrence	80%
Mild Recurrence	15%
Significant Recurrence	5%

Table 5. Post-Surgical Complications.

Complications	N	Percentage (%)
Hematoma	5	5%
Seroma	10	10%
Infection	3	3%
Nipple Necrosis	2	2%
Asymmetry (Minor)	5	5%
Total	25	25%

Table 6. Reoperation Rate.

Reasons for Reoperation	N	Percentage (%)
Residual Gynecomastia	8	8%
Contour Irregularities	2	2%
Total	10	10%

Table 7. Weight of Resected Tissue (g).

Weight Range	N	Percentage (%)
<100 g	30	30%
100–200 g	50	50%
>200 g	20	20%

Table 8. Preoperative vs. Postoperative Pain (VAS Score).

Pain Level	Preoperative (%)	Postoperative (%)
0–3 (Mild)	20	80
4–6 (Moderate)	50	15
7–10 (Severe)	30	5

Table 9. Health Assessment (12 Months Follow-Up) Using SF-36 Domains Questionnaire.

Domains	Preoperative Mean ± SD	Postoperative Mean ± SD
Physical Function	60 ± 10	85 ± 5
Role Physical	55 ± 15	80 ± 10
Bodily Pain	40 ± 20	80 ± 15
General Health	50 ± 10	75 ± 5
Vitality	45 ± 10	75 ± 10
Social Function	60 ± 15	85 ± 10
Role Emotional	50 ± 15	80 ± 5
Mental Health	55 ± 10	80 ± 10

Table 10. Treatment Outcomes (Success Rate).

Items	N	Percentage (%)
Excellent (Full Correction)	60	60%
Good (Mild Residual Tissue)	30	30%
Fair (Moderate Residual Tissue)	8	8%
Poor (Unsatisfactory Result)	2	2%

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Table 11. Univariate Analysis of Risk Factors Affecting Long-Term Survival of Postoperative Patients.

Risk Factor	Odds Ratio (OR)	Confidence Interval (CI 95%)
Age (per year)	1.05	(1.01 - 1.11)
BMI (per unit increase)	1.10	(1.05 - 1.15)
ASA Classification (II vs I)	1.50	(0.75 - 2.95)
Hormonal Imbalance (Yes vs No)	2.00	(1.05 - 3.83)
Smoking (Yes vs No)	1.75	(0.88 - 3.51)
Previous Medications (Yes vs No)	1.25	(0.54 - 2.94)

DISCUSSION

The present study is a comprehensive evaluation of the outcome of simultaneous liposuction and subcutaneous mastectomy in 100 patients with gynecomastia, with very good efficacy and safety. Our findings contribute significantly to the growing body of evidence supporting this combined approach as the gold standard for the surgical management of gynecomastia. Our population's age distribution, with 40% aged 26-34 years and 30% in both the adolescent (17-25) and mature (35-42) age groups, mirrors the typical bimodal age distribution reported in studies conducted in Sweden (Varlet, F. *et al.*, 2019; Sollie M. 2018; Kanakis, G. A. *et al.*, 2019). Notably, our population also showed a high rate of overweight (35%) and obese (25%) patients, which reflects contemporary epidemiological trends of an increase in obesity-related gynecomastia cases (Varlet, F. *et al.*, 2022). This contrasts with earlier studies (Lapid, O. & Jolink, F. *et al.*, 2014; Kim, D. H. *et al.*, 2016; Daniels, J. 2022) where most patients fell within normal BMI ranges, suggesting a shifting patient profile that surgeons must consider in preoperative planning.

The high incidence of swelling (70%) and psychological distress (60%), but our observed 20% incidence of nipple discharge is greater than typical, possibly due to our inclusion of more advanced cases. The thorough preoperative workup, both endocrine studies (80%) and imaging (mammogram 50%, ultrasound 60%), is in keeping with current best practice recommendations (Yavuz, M. *et al.*, 2006; Hammond, D.C. 2009; Karamchandani, M. M. *et al.*, 2022; Yang, Y. *et al.*, 2021) and exceeds the diagnostic stringency encountered in comparable series.

The surgical outcomes of our standardized combined technique demonstrate several advantages over other techniques. Our operating time of 120 minutes on average compares well with the range of 150-180 minutes of studies in the USA, where separate procedures were performed (Bembo, S. A. & Carlson, H. E. 2004; Cordova, A. & Moschella, F. 2008; Varlet, F. *et al.*, 2022) while our blood loss (150mL) was significantly lower than the 200-300mL typically seen with traditional excisional techniques (Hammond, D.C. 2009; Jian, C. *et al.*, 2020; Simon, B. E. *et al.*, 1973). The 100% use of general anesthesia in our series is different from some recent publications where local anesthesia is advocated for smaller cases, reflecting our inclination for patient comfort for longer procedures. The distribution of weight of the resected tissue (<100g: 30%, 100-200g: 50%, >200g: 20%) provides practical benchmarks for surgical planning, filling a void in existing literature where such precise weight categories are often lacking. (Rohrich, R.J. *et al.*, 2003; Narula, H. S. & Carlson, H. E. 2014; Yavuz, M. *et al.*, 2006)

Our own 60% of patients returning to normal activity within 7 days improves on the 14-21 day recovery times in the literature, and our 90% minimal scarring rate improves on the 70-80% rates previous studies had found in Japan (Braunstein, G. D. 2007; Ciancio, F. *et al.*, 2017). Our complication rate (hematoma 5%, seroma 10%, infection 3%) is comparable to reports in the literature of 8-15% hematoma rates and 5-20% seroma incidence, which suggests that our combined approach can reduce risks when compared with single methods. The 10% reoperation rate, in large measure for residual tissue (8%), is lower than the 15-20% in similar studies (Varlet, F. *et al.*, 2022; Gabra, H. O. *et al.*, 2004; Sollie M. 2018)

This significant reduction in moderate-severe pain (preop 80% vs postop 20%) is outside the benefits reported in pharmacological management studies (Cordova, A. & Moschella, F. 2008; Varlet, F. *et al.*, 2019; Lapid, O. & Jolink, F. 2014; Graf, R. *et al.*, 2003) and demonstrates the superiority of surgery for symptomatic relief. Our SF-36 results of 25-40 point improvement in all domains provide strong quantitative confirmation of the qualitative reports of enhanced self-esteem and body image. These gains are particularly noteworthy given that 60% of our patients preoperatively experienced

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psychological distress, which means that surgery addresses both the physical and psychiatric aspects of gynecomastia. (Simon, B. E. *et al.*, 1973; Kim, D. H. *et al.*, 2016; Hammond, D.C. 2009; Lewis, C. M. 1985).

CONCLUSIONS

In summary, the technique of combination of subcutaneous mastectomy and liposuction for surgical correction of gynecomastia shows excellent efficacy in minimizing physical and psychological burdens exerted on the individuals affected. Our study verifies that this minimal invasive technique not only provides satisfactory aesthetic results but also improved patient quality of life, as confirmed by improved SF-36 health survey scores at follow-up periods. Furthermore, the low rate of complications and the excellent surgical outcomes further justify the safety and effectiveness of this double technique in the treatment of various grades of gynecomastia. Moreover, the well-delineated inclusion and exclusion criteria made sure that the study group was well selected, further guaranteeing the validity of the outcome. Overall, this method provides evidence favoring the use of liposuction with subcutaneous mastectomy as a viable form of treatment for patients undergoing surgical correction of gynecomastia.

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