

**Outcome Analysis of Clinical Evaluation and Surgical Management of Different Grades of Gynecomastia**

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**Abstract**

**Background:** : Gynecomastia (GM) is the most common breast condition in males. The clinical evaluation and surgical management of different grades of Gynecomastia are described extensively throughout several previous literatures.

**Objectives:** The objective of our present study is to assess the epidemiological, clinical presentation, and the preferred type of surgical intervention along with evaluation of aesthetic outcomes of each procedure.

**Patients and methods:** This is a prospective descriptive case series study conducted on 30 patients who was presenting with different grades of true gynecomastia admitted to the Plastic Surgery department in Qena university hospital from the outpatient clinic and seeking surgical correction.

**Results:** Fifty eight breasts were operated upon in 30 patients; two cases (6.67%) had unilateral Gynecomastia and 28 cases (93.33%) had bilateral lesion. Based on surgical intervention, periareolar excision was performed in ten cases, liposuction was performed in six cases, periareolar excision combined with liposuction was done in 4 cases. While, circumareolar excision combined with liposuction was performed in two cases and, circumareolar concentric mastopexy without liposuction was performed in four cases. Four cases of grade III gynecomastia were treated with free nipple grafts.

**Conclusion:** Gynecomastia is a persistent growth of breast tissue in men and the most successful course of management is surgery. Liposuction and surgical resection and/or combined procedures are three main types for surgical alternatives.

**Keywords:** Male breast ; Gynecomastia; Liposuction; Surgical management.

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## Introduction

Gynecomastia (GM) or male breast hypertrophy is typically caused by hormonal imbalances seen in postnatal period, during adolescence and in older people. The majority of GM is idiopathic; however pathological aetiologies such as congenital, endocrine disorders, tumors and drugs must be ruled out. GM can be either bilateral or unilateral (**Lapid and Jolink, 2014**).

Simon grading is one of the commonly used classification systems for gynecomastia grading: Grade I is a mild breast enlargement with no skin excess, Grade IIa is a moderate enlargement of the gland without skin excess, Grade IIb is a moderate enlargement of the gland with skin excess, while Grade III means marked enlargement with skin excess (**Öztürk et al., 2020**).

Patients with gynecomastia always seek medical attention because of its psychological impacts; associated discomfort and fear of breast cancer. Early mild cases may regress on medical treatment; however, surgery is still the mainstay treatment of gynecomastia especially for long persistent cases more than 6 months or high grade gynecomastia (**Barros and Sampaio Mde, 2012**).

There are few reports in the literatures that discuss comprehensive management of different types and grades of GM. The objective of our present study is to assess the epidemiological, clinical presentation, and the preferred type of surgical intervention along with evaluation of aesthetic outcomes of each procedure.

## Patients and methods

This is a prospective descriptive case series study that was conducted at Qena University Hospitals, South Valley University from January 2022 to January 2023. This study was done on 30 cases complaining of true gynecomastia, which needed surgical correction. All patients recruited in our study, gave a written consent for participation.

**Inclusion criteria:** Patients with different grades of true gynecomastia, with compliance for follow up, and written informed consent.

**Exclusion criteria:** Patient refusal, patients with pseudo gynecomastia and medically unfit patients.

**Preoperative assessment:** All patients were subjected to complete history taking, general examination, laboratory investigations, local examination of the breast. Breast ultrasound was performed for all cases with true gynecomastia.

### *Operative technique*

Various surgical techniques were used based on the severity of each case. The operative technique section should be categorized into:

- 1-Liposuction
- 2-Periareolar Gynecomastia
- 3-Concentric Mastopexy
- 4-Free nipple graft

Prior to surgery, markings were made while the patient was standing. All surgeries were performed under general anesthesia in addition of a solution containing a very small amount of a concentration of 1/1000,000 epinephrine was used to decrease bleeding. This solution was injected through small incisions at the level of the anterior axillary line and at the lateral side of the on the

side of the inframammary fold. In situations when a second incision was necessary, one was made on the inframammary fold at the midclavicular line and liposuction was performed starting in the deep fatty plane and finishing in the superficial fat, using small tubes with different diameters (Murali et al., 2011; Weiaman et al., 2003).

Glandular and skin excision was performed as needed through a small incision of 2-4 cm in the inferior semi-areolar area (Webster, 1946). To extract glandular tissue, the anterior and posterior attachments of the glandular tissue were severed, detaching it from the pectoral fascia.

Those who underwent excision used hemovac drains. After the surgery, patients were advised to wear a compression garment and avoid heavy activity for a certain period of time (Colonna et al., 1999; Tolba and Nasr, 2015).

For concentric mastopexy, a small incision was made at the junction of the areola and the surrounding skin, and the breast tissue was separated from the surrounding tissues. The pre-pectoral fascia and subcutaneous tissue beneath the breast tissue were maintained in place while being separated. Some subcutaneous tissue about 1.5 cm was left beneath the nipple areola complex to prevent post-operative depression. The removed tissue was examined under a microscope to ensure proper diagnosis of a true Gynecomastia (Spear et al., 1990).

For free nipple grafting, markings were made while the patient was standing, and the breast tissue was removed with the covering skin. The eventual intended area is

reached by retracting the chest tissues downward, which establishes the superior incision line. The inferior margin of the excision is designed to maintain tension-free closure. The area is resected in its entirety. At the conclusion of the treatment, a 2.8 cm wide nipple areola complex (NAC) graft is positioned 14 cm from the mid-clavicular line (Campos, 1942; Wray et al., 1974).

**Postoperative follow-up schedule:** All patients have been examined in the outpatient clinic after 1 week of surgery, and once per month for the first 6 months postoperatively.

**Post-operative complication rate:** including seroma, hematoma, bruises, visible scarring, asymmetries and NAC necrosis.

**Ethical Approval:** The current study has been approved by the Ethics committee of faculty of Medicine, SVU, Qena, Egypt, with Ethical approval code: SVU-MED-PIS013 -1-22-3-378

### Statistical analysis

Statistical analysis was performed on all collected, tabulated, and assessed data using SPSS 26.0 for Windows (SPSS Inc., Chicago, IL, USA). Qualitative data were described in terms of percentages and numbers. Utilizing range (minimum and maximum), mean, standard deviation, & median, quantitative data were described.

### Results

Fifty eight breasts were operated upon in 30 patients; two cases (6.67%) had unilateral gynecomastia and 28 cases (93.33%) had bilateral lesion. (Table.1). According to Simon, Hoffman and Kahn categorization, the majority of patients presented with grade IIa (n=10, 33.33%), while there were (n=8, 26.67%) presented with grade I, (n=8, 26.67%) with grade IIb, and (n=4, 13.33%) with grade III. The underlying causes of

enlarged breasts were idiopathic (n=4, 13.33%), obesity (n=8, 26.67%), adolescence (n=18, 60%). Based on surgical intervention, periareolar excision was performed in ten cases (6 cases with grade IIa and 4 cases with grade I), liposuction was performed in six cases, (2 cases with grade IIa and 4 cases with grade I). periareolar excision combined with liposuction was done in 4 cases (2 cases with grade IIa and 2 cases with grade IIb). While, circumareolar

excision combined with liposuction was performed in two cases (one case with grade III and one case with grade IIb), and circumareolar concentric mastopexy without liposuction was performed in four cases with grade IIb. Four cases of grade III gynecomastia were treated with free nipple grafts following mastectomy using an infra mammary approach (Table.2).

**Table 1. Patient data**

Patients data	Number of patients	%
One-sided gynecomastia	2	6.67
Two-sided gynecomastia	28	93.33
Grades:		
I	6	20
IIa	12	40
IIb	7	23.33
III	5	16.67
Etiology:		
Idiopathic	4	13.33
Obesity	8	26.67
Adolescence	18	60

**Table 2. Operative data**

Procedure	Number of patients	%	complications	No of patients
Periareolar excision	10	33.33	hematoma	2 cases
Liposuction	6	20	asymmetry	2 case
Periareolar excision assisted with liposuction	4	13.33	hematoma	2 cases
circumareolar excision assisted with liposuction	2	6.67	NAC necrosis	1 cases
Circumareolar concentric mastopexy	4	13.33		
Mastectomy through inframammary approach with free nipple graft	4	13.33	Visible scarring	4 cases

Hematoma was the most common postoperative complication (4 cases (13.33%)), which was successfully treated with repeated aspiration and

compression garments. Other complication included asymmetry in (2 case ), NAC necrosis in (1 case) and visible scarring in (4 cases).

**Case presentation**

Case 1: Male patient , 22yrs, presented with adolescent bilateral gynecomastia,

categorized as Grade IIa simon gynecomastia, treated by liposuction (Fig.1A-C).



**Fig. (1A):** Pre-operative views AP, Lateral, Oblique view.



**Fig. (1B):**350cc lipoaspirate of each breast.



**Fig. (1C):** Early and late post-operative views.

Case 2: Male patient, 21yrs, presented with adolescent bilateral gynecomastia, categorized as Grade IIa

Simon gynecomastia , treated by periareolar excision (Fig.1A-F).



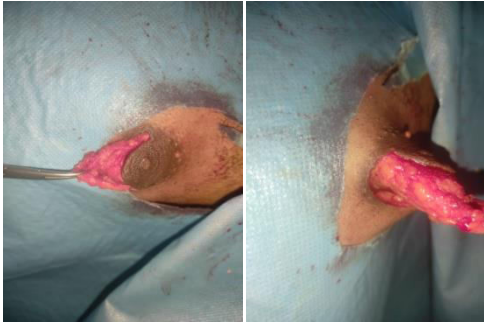
**Fig.(2A):** Pre-operative views AP , RT breast , Lt breast Oblique view .



**Fig.(2B):** Pre-operative markings defining along the inferior border of the areola, an incision from 3 to 9 o'clock.



**Fig.(2D):** Resected tissue note the white tissue is glandular tissue has higher density than the fat (adipose tissue ).



**Fig. (2C):** Intra-operative Glandular tissue being pulled through.



**Fig. (2E):** Immediately post-operative closure of the peri-areolar incision



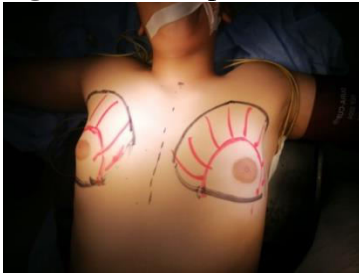
**Fig. (2F):** Early post-operative views.

Case 3: Male patient, 17yrs, presented with adolescent bilateral gynecomastia, categorized as Grade IIa

Simon gynecomastia, treated by liposuction with peri-areolar excision (**Fig.3.A-G**)



**Fig. (3A):** Pre-operative views AP, RT breast (oblique – lateral ), Lt breast lateral views .



**Fig. (3B):** pre-operative marking of breast boundaries.



**Fig. (3C):** 300cc lipoaspirate from each breast.



**Fig. (3D):** intra-operative Glandular tissue being pulled through.



**Fig. (3E):** excision of glandular tissue.



**Fig. (3F):** early post-operative bruises.



**Fig. (3G):** late post-operative views .

Case 4: Male patient , 23yrs, presented with adolescent bilateral gynecomastia , categorized as Grade III Simon

gynecomastia , treated by liposuction with circumareolar excision (**Fig.4A-G**).



**Fig. (4A):** pre-operative views AP , LT breast lateral , Rt breast lateral view .



**Fig. (4B):**Trans-areolar infra-nipple incision with peri-nipple area of de-epithelization was planned before surgery.



**Fig. (4C):** peri-nipple doughnut area de-epitheliazied.



**Fig. (4D):** gynecomastia tissue excision.



**Fig. (4E):** early post-operative hematoma .





**Fig. (4F):** late post-operative NAC necrosis.



**Fig. (4G):** repaired by excision of NAC and primary repair

Case 5: Male patient , 32yrs, presented with bilateral gynecomastia , categorized as Grade I Ib Simon

gynecomastia , treated by circumareolar concentric mastopexy (**Fig.5A,B**).



**Fig. (5A):** pre-operative views AP , Rt breast (lateral - oblique ) , Lt breast (lateral - oblique ) views .



**Fig.(5B):** early post-operative view .

Case 6: Male patient , 42yrs, presented with bilateral gynecomastia

after massive weight loss , categorized as Grade III Simon gynecomastia , treated

by total mastectomy and Free nipple grafting (Fig.6A-D)



**Fig. (6A):** pre-operative views AP , Rt breast (lateral - oblique ) , Lt breast (lateral - oblique ) views after massive weight loss .



**Fig. (6B):** pre-operative markings defining the amount of skin excess and relevant anatomical markings .



**Fig. (6C):** Harvest the nipple as a full-thickness graft .



**Fig. (6D):** late post-operative , with moderate scarring.

**Discussion**

Gynecomastia is the most common male breast pathology, affecting 32-65% of all men. The condition requires treatment as it can be physically and psychologically detrimental to the patient (Braunstein, 2007).

Surgical correction of gynecomastia is known as the gold standard management, but choosing the best surgery remains a challenge. The common goal of any surgical intervention is to provide an aesthetically male chest wall with minimal scarring. Despite a wide range of surgical techniques, surgeons still face

difficulties in selecting the appropriate procedure for each patient, as no single technique is suitable for all forms of gynecomastia. This study aimed to demonstrate a comprehensive collection of different surgical approaches to treat different grades of Gynecomastia.

The primary factors in the selection of surgical technique are breast size, ptosis of the gland, and excess skin. (Khater et al., 2020). In our study, the overall patient satisfaction was good with minimal complication rates.

In accordance with (Murali et al., 2011; Weiaman et al., 2003) studies, liposuction was performed in 6 cases in our study, 4 them were classified as grade I gynecomastia and the other 2 were grade II gynecomastia. The postoperative complication rate was minimal, which is in the form of breast asymmetry in only 2 case.

In this case series and in line with (Brown et al., 2015), there were 4 cases with grade I and 6 cases with grade II gynecomastia that were managed by direct excision through periareolar incision. This technique was firstly described by (Webster, in 1946), which become the mainstay treatment option for treatment of gynecomastia due to its simplicity and avoidance of additional instrumentation.

Furthermore, liposuction was used as an adjuvant procedure along with the standard periareolar technique in 4 cases. After liposuction, the breast tissue was then palpated to determine whether there was any considerable remaining glandular tissue, which was subsequently removed by periareolar incision. (Colonna et al., 1999 and Tolba and Nasr, 2015) showed in their studies that combined liposuction and periareolar excision of glandular breast tissue provide a good aesthetic outcome

with minimal and undetectable final scar.

Also, in our study we have used combined management of circumareolar skin excision and liposuction in two cases (grade IIb and III) We believe that simultaneous use of liposuction will reduce the breast volume, we can remove the breast disk through a very small incision (Lanitisa et al., 2008; Sarkar et al., 2014) recommended to combine these procedure in order to obtain a good result.

The circumareolar concentric mastopexy was described by (Spear et al., in 1990) to excise excess skin seen in moderate gynecomastia patients. We have used this procedure in 4 cases presented with grade IIb on Simon's grading of gynecomastia and this was in agreement with study carried out by (Michael et al., in 2020).

(Campos, 1942) described, the free NAC grafting to treat patients with severe Gynecomastia. Later, (Wray et al., 1974) modified this procedure and suggested that the scars should be placed near the base of the thorax to improve the final result. We performed free nipple grafts in 4 cases with grade III gynecomastia, this was in line with (Kamel, 2019).

The complications rate of our study are 13.33% for hematoma, 6.67% (2/30) for asymmetry, 3.33% (1/30) for NAC necrosis and 13.33% (4/30) for visible scarring. Our results are comparable with the complications rate reported by other previous studies (Cannistra et al., 2009; Li et al., 2012; Sarkar et al., 2014; Ibrahim, 2016; Fikry and Nasr, 2020).

The limitations of the study: It is one centre study with a small sample size, therefore we advise to expand the sample size, in order to draw a comprehensive and standardized

conclusion on the best surgical intervention to treat different grades of Gynecomastia.

### Conclusion

Gynecomastia is a persistent growth of breast tissue in men, and the most successful course of management is surgery. Liposuction, surgical resection, and combined procedures are three main types for surgical alternatives.

Different types of gynecomastia require different surgical strategies to treat. Size of the breasts, gland ptosis, and excess skin are crucial considerations when selecting appropriate surgical approach in order to obtain favorable aesthetic result.

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