

Surgical Treatment for Moderate and Large-Sized Gynaecomastia

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ABSTRACT

Gynaecomastia is a benign enlargement of the male breast. The aim of this study was to assess certain surgical techniques for the treatment of medium and large sized gynaecomastia (Simon grade 2 and 3). The study included 36 patients, 28 cases (78%) were grade 2 and were treated mainly by liposuction, 10 cases of which needed an additional step of direct excision of residual glandular tissue, 8 cases (22%) were grade 3 and required breast amputation with free areola and nipple graft. The study has found that moderate sized gynaecomastia whether true or pseudogynaecomastia with mild to moderate breast redundancy can be managed easily and effectively by liposuction alone or combined with glandular resection with many advantages over the conventional subcutaneous mastectomy and with no need to remove extra skin. On the other hand, large gynaecomastia with severe breast redundancy can be treated effectively by the free areola and nipple technique.

INTRODUCTION

Gynecomastia is derived from the Greek words *gyne*, meaning woman, and *mastos*, meaning breast. Gynecomasty is a synonym, and gynaecomazia is an obsolete term. While there have been many definitions of gynaecomastia, the one that is most applicable today is: A benign enlargement of the male breast (*mamma masculina*) [1].

Gynaecomastia occurs physiologically in two-thirds of normal males at puberty and may persist into adolescence. This transient breast enlargement usually subsides spontaneously, but it may persist in adolescence or adulthood due to a real hypertrophy of breast tissue, fat excess, or a combination of both. Because of adolescent or idiopathic hypertrophy, considerable psychological problems may arise [2].

Gynaecomastia is of two types: 1- True gynaecomastia is due to proliferation of ducts and periductal tissues. 2- Pseudogynaecomastia is due to deposition of adipose tissue or to the presence of an excessive amount of skin [1].

True gynaecomastia is due to some form of endocrine imbalance [1]. This may be attributable to increased estrogen, decreased androgen, receptor defects, or an altered sensitivity of the breast to estrogen [3]. The endocrine imbalance may be divided into 3 groups:

- 1- *Physiologic endocrine imbalance:* This condition may become evident during various periods of a man's life: Neonatal, pubertal, or involutinal. It is unlikely that neonatal gynaecomastia would be treated surgically. If pubertal gynaecomastia is transient, there are no surgical implications. The permanent form is well known. Involutinal imbalance is a medical problem, and surgery is rarely indicated.
- 2- *Endogenous endocrine imbalance:* This condition may result from congenital or acquired hormonal abnormalities as Klinefelter's syndrome, male hypogonadism, testicular neoplasm, non-specific orchitis, mumps varicocele, testicular atrophy, adrenal cortex neoplasm, adrenal cortex hyperplasia, thyrotoxicosis, and pituitary tumour.
- 3- *Exogenous endocrine imbalance:* This situation may result from the administration of hormones, drugs whose molecular structure is similar to that of estrogen, or drugs with no known mechanism of causal relationship. These agents may be taken accidentally or therapeutically [1].

However, in most cases of gynaecomastia, a cause cannot be identified, and the problem usually is idiopathic [3].

In pseudogynaecomastia, the amount of breast tissue is normal, but there is an excess of fat present. This is often the result of excessive weight gain during childhood or puberty. Many of these men continue to maintain the excess fat in their breast even when the rest of the body has become slender [4].

The most common symptom of the patient with gynaecomastia is being self-conscious about the appearance of his enlarged breasts [5]. The common complaints are embarrassment, concern about outward appearance (body image), and occasionally tenderness or even pain [2].

Several classifications are used for gynaecomastia to define the choice of surgical technique. Among these, Simon's classification [6], based on breast size and degree of skin redundancy, is commonly used (Table 1) [3].

Successful medical management is directed at finding the underlying cause and treating the condition if possible. Treatment with various drugs has been tried, but serious side effects have limited the utility of drug therapy. The indication of surgery is the presence of a persistent mass that becomes embarrassing to the patient [7].

Most patients request treatment for psychological reasons. The goal in treating these patients is resection of the abnormal tissue that restores the normal male breast contour and minimizes scarring or residual deformity of the breast and nipple-areola complex [3].

Table (1): Simon's classification of gynecomastia.

Grade 1	Is minor but visible enlargement without skin redundancy
Grade 2A	Is moderate breast enlargement without skin redundancy
Grade 2B	Is moderate breast enlargement with minor skin redundancy
Grade 3	Is gross breast enlargement with skin redundancy that simulates a pendulous female breast

Gynaecomastia has a wide spectrum of clinical presentation. Treatment must be individualized. Some forms of gynecomastia are amenable to suction techniques alone; others require open procedures [8].

Many techniques are available for surgical correction of gynaecomastia. Surgery is planned depending on the grade and histopathology of gynecomastia. Webster's intraareolar incision, periareolar or circumareolar incisions, Letterman's technique, and suction-assisted lipectomy are commonly used in the treatment of grades 1 and 2A gynecomastia. Superiorly or inferiorly based pedicle areolar flaps and free nipple techniques are preferred for grades 2B and 3 gynecomastia [3].

PATIENTS AND METHODS

The study was conducted in Cairo University Hospitals in the period between June 2002 & March 2005. Thirty-six patients with gynaecomastia were operated upon.

Preoperative assessment:

The age of the patient and the onset of the condition were recorded. Adolescent cases and those above 40 years were excluded. Patients were examined clinically to define if true gynaecomastia or pseudogynaecomastia. This was determined by local examination of the breast. If the mass was firm, rather localized, this was considered glandular mass (true gynaecomastia). On the other hand if the mass was soft and rather diffuse, this was considered fatty mass (Pseudogynaecomastia).

Cases of true gynaecomastia were examined clinically and investigated to determine the aetiology. A detailed history, thorough physical examination, and laboratory assessment were performed to rule out any drug administration, neoplasm, hormonal imbalance, or liver disease. Cases with endocrinopathies were excluded and only idiopathic cases were included in the study.

The studied cases were evaluated as regards the size of the breast and the degree of skin redundancy and so to determine the Simon grade of the case.

Patients were subdivided into three groups according to the type and grade as follows:

Group I: Pseudogynaecomastia, Simon grade 2 (=soft fatty breast with moderate size and with no or mild skin excess).

Grade II: True gynaecomastia, Simon grade 2 (=firm glandular breast with moderate size and with no or mild skin excess).

Group III: Simon grade 3 gynecomastia (=gross breast enlargement with severe skin redundancy).

All the cases were photographed preoperatively. The patient was marked in the standing position.

The choice of the operation varied according to the group. In group I cases, liposuction was done. Cases belonging to group II were subjected to liposuction with the plan of excision of remaining glandular tissue after suction, if any, though a periareolar incision. Free areola and nipple graft technique was done for to group III cases.

Table (2): Composition of tumescence fluid used in the study.

1:1000 epinephrine	1ml
2% Lidocaine	25ml
Physiologic saline solution	1000cc

1000cc saline contain 400mg Lidocaine and 1:1,000,000 epinephrine.

Operative techniques:

1- Liposuction: After the patient is given an intravenous sedation, the entire area was infiltrated by tumescence fluid of saline containing lidocaine and epinephrine (Table 2). Enough solution was used to distend the tissues. Ten minutes after infiltration stab incisions were made. Liposuction of the breast was done from the lower axilla as well as from submammary approach. A 4mm Mercedes type cannula was used. A smaller cannula (3mm) was used to remove tissues in subareolar region. Suction was to be stopped when aspiration shows no fat coming out from the desired area. The chest skin is assessed by diminution in contour and by the pinch test.

After suctioning is completed, the area was palpated, if a firm glandular mass was still present, a periareolar incision was done at the inferior border of the areola from 3 to 9 o'clock positions. The nipple-areola complex and surrounding skin were undermined sharply 3-5mm beyond the areola, the extent depending on the extent of the glandular mass. A 10-15mm thickness of tissue was left on the undersurface of the flap especially directly beneath the nipple-areola. With the use of good retraction and head light, the glandular mass was excised, taking care to taper the edges of excision. The fascia over the pectoralis major muscle was left intact. Good haemostasis was done and wound was closed in two layers without drain. Elastic surgical vests were used to compress the liposuctioned areas postoperatively. The volume of the suctioned fat from each side was recorded.

Postoperatively, the patient was discharged from hospital in the same day after the relief of the effects of IV sedation. Broad spectrum antibiotic was given for one week. Sutures were removed after 5-7 days. Wearing of the support garment is a critical component of the postoperative care. Patients were instructed to wear the garment continuously for 6 weeks at which time they were examined. If still swollen, they continue to wear it until the swelling subsides. Postoperative visits were scheduled at 3 and 7 days to monitor the progress and to reassure the patient. Also postoperative visits at 2 weeks, 4 weeks, and 12 weeks were done at which time they were photographed.

2- Free areola and nipple graft technique the midline sternum was marked, as well as the inframammary crease lines. Vertical lines were drawn from the mid-clavicle and extended down to the inframammary crease. General anaesthesia was given. Operatively, a small stab incision was placed in the midline inframammary crease bilaterally. A tumescent fluid infiltration, similar to that used in liposuction, was injected subcutaneously in the desired area of dissection.

With a scalpel, the inframammary incision was made to the fascia of the muscle. Next, blunt digital dissection was performed. After complete elevation of the glandular tissue off the fascia, the flap was then pulled down in an inferior direction, in a vest-over-pants fashion in order to ascertain the exact amount of resection possible. Prior to resection, the areola was marked at a 4cm diameter and harvested as a full-thickness graft. It was important to avoid any undue tension with the planned amount of skin excision. The excess skin was then excised, with a resulting long horizontal incision.

Excess glandular tissue would be excised at this point if any thinning of the flap is necessary. Depending on the patient, small dog-ears might need to be corrected on the medial or lateral ends of the incision. Suction drainage was inserted and exited through a separate stab incision and secured to the skin. Closure of the incision was performed in layers. 3-0 Vicryl interrupted subcutaneous sutures were placed in the deep tissue and may even be secured through the fascial layer to alleviate the effects of tension which may result. A second layer of 4-0 Prolene running, intradermal suture was followed by 5-0 Prolene interrupted skin sutures where needed for final approximation of the skin.

The new nipple site with a 4cm areolar diameter was then marked on the skin at the level of the 4th intercostal space in the midclavicular line in an even and symmetrical fashion bilaterally. The free-nipple graft was then secured in the usual fashion and tied over a bolus dressing. Thick layer of cotton dressing was applied on the anterior thorax and then an elastic garment was dressed.

Postoperatively, the patient was discharged from hospital after 48 hours at which time the suction drains were to be removed. Broad spectrum antibiotic was given for one week. Tie over dressing over the areola was removed after 5 days. After that, twice weekly dressings were arranged. During these visits, the wounds were checked for gaping,

tension, infection or discharge, the dissected flap was examined to exclude seroma or haematoma, and the areola graft was examined for viability and cared of by washing with saline and tulle grass. Interrupted sutures were removed after 5-7 days, and the running subcuticular sutures after 14 days. Patients were instructed to wear the garment continuously for few weeks. After the last dressing, postoperative visits were scheduled at 4 weeks, 8 weeks and 12 weeks at which time patients were photographed.

RESULTS

Patients' age ranged between 21 and 40 years with a mean age 25 year. Out of the thirty six cases studied, 26 had true gynaecomastia and 10 cases had pseudogynaecomastia. Of the 26 cases of true gynaecomastia, 22 were grade 2, and 4 cases were grade 3. Out of the 10 cases of pseudogynaecomastia, 6 cases were grade 2 and 4 cases were grade 3. Table (3) shows the different groups of cases studied and types of operations done for each group and complications encountered.

All the 28 cases of grade 2 (22 true and 6 pseudo) were subjected to liposuction. 18 cases did not need any adjuvant resections (Figs. 1,2), while in remaining 10 cases; a considerable residual glandular lump necessitated open excision at the end of operation (Fig. 3). IV sedation + local tumescence were an efficient kind of anaesthesia in this group of cases even in those who underwent

glandular resection. None of the cases needed to be converted to general anaesthesia.

During liposuction in this study, the amount of tumescence needed varied between 300-500CCs on each side. The total amount of fat suction varied between 400CCs and 600CCs. All the cases showed a varying amount of bloody aspiration within the suction collector.

As regards complications of this technique, there was 1 case of haematoma, 1 case of seroma, 1 case of marginal superficial sloughing of areola, and 2 cases of contour deformity. All the complicated cases were among those who had glandular excision. Haematoma and seroma were treated by aspiration. Superficial areolar sloughing was treated by frequent dressing. Contour deformity necessitated secondary suctioning to taper the periphery.

All the 8 cases of grade 3 gynaecomastia were treated by free areola and nipple graft technique. The duration of procedure varied between 2-3 hours. The amount of tissue excised from both breasts varied between 200 to 350 grams. All the patients were satisfied about the results (Fig. 4).

As regards complications reported in this group, 1 case had full thickness necrosis of a part (about 1/3) of the areola graft which was treated by repeated dressings until healed by scar tissue. 2 cases had dog-ear deformity at the lateral and medial ends of the wounds which needed revision but the patients refused to do any further operations.

Table (3): Distribution of the studied gynaecomastia cases and types of operations done for them.

Group	Clinical type and Simon grade	Number of cases	Operation done	Complications
Group I	Pseudogynaecomastia, Simon grade 2	6 cases	Liposuction	None
		12 cases	Liposuction	None
Group II	True gynaecomastia, Simon grade 2	10 cases	Liposuction + glandular resection	1 case of seroma 1 case of haematoma 1 case of marginal areola necrosis 2 cases of contour deformity
		8 cases	Free areola and nipple graft technique	1 case of partial necrosis of areolar graft 2 cases of dog ear deformity

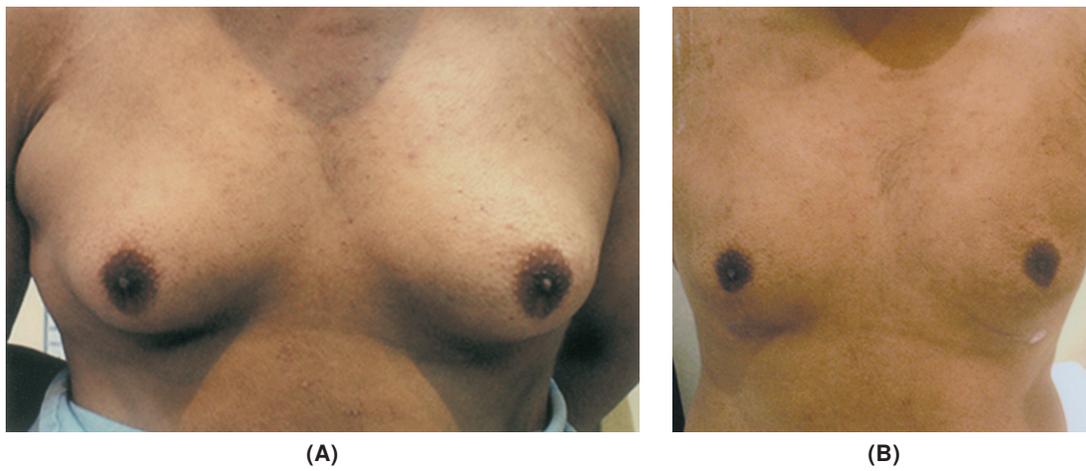


Fig. (1-A,B): Preoperative and 1 month postoperative front views of a 26 years old patient with true gynaecomastia who was treated by liposuction alone.

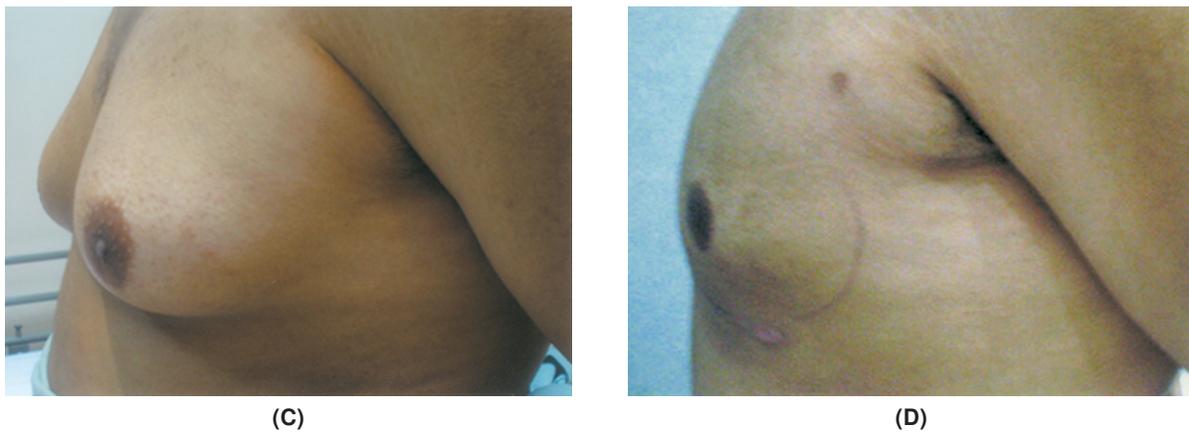


Fig. (1-C,D): Preoperative and 1 month postoperative lateral views of a 26 years old patient with true gynaecomastia who was treated by liposuction alone.



Fig. (1-E,F): Preoperative and 1 month postoperative oblique views of a 26 years old patient with true gynaecomastia who was treated by liposuction alone.

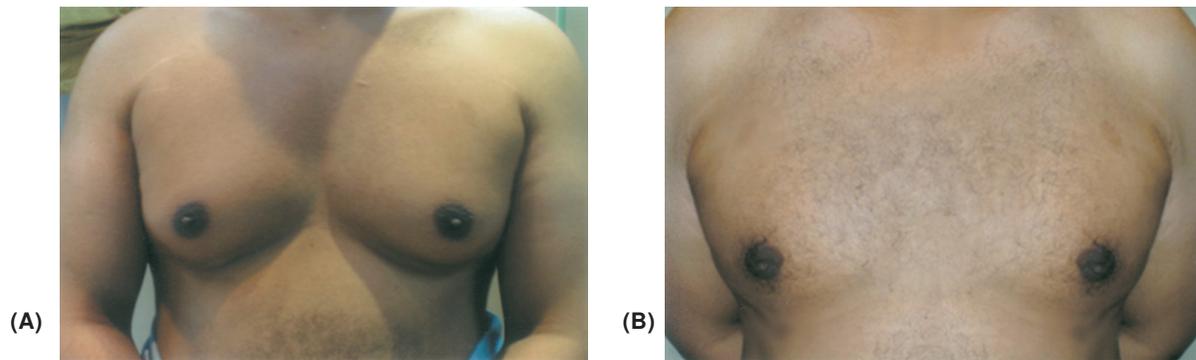


Fig. (2-A,B): Preoperative and 3 months postoperative front views of a 31 years old patient with pseudogynaecomastia treated by liposuction.

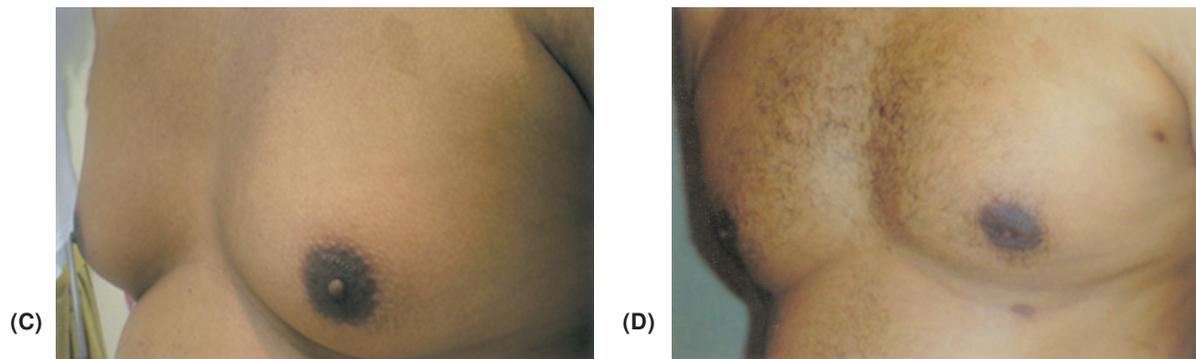


Fig. (2-C,D): Preoperative and 3 months postoperative oblique views of a 31 years old patient with pseudogynaecomastia treated by liposuction.

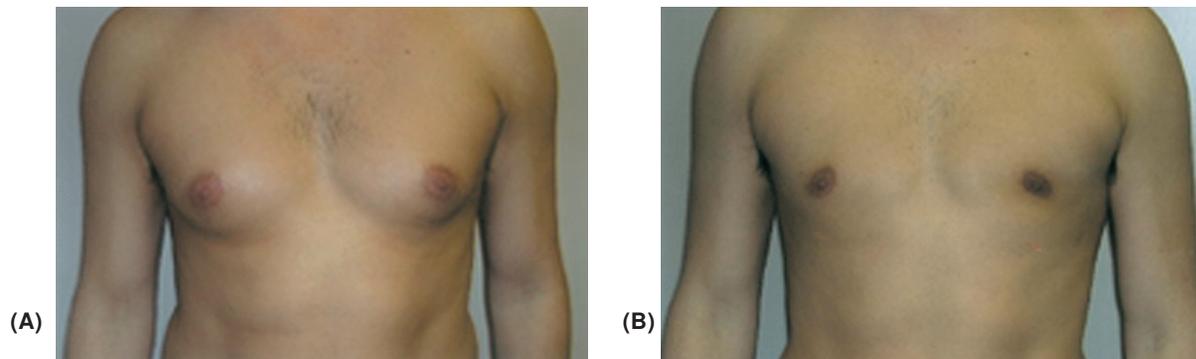


Fig. (3-A,B): Preoperative and 6 month postoperative front views of a 22 years old patient with true gynaecomastia who was treated by liposuction + glandular resection.

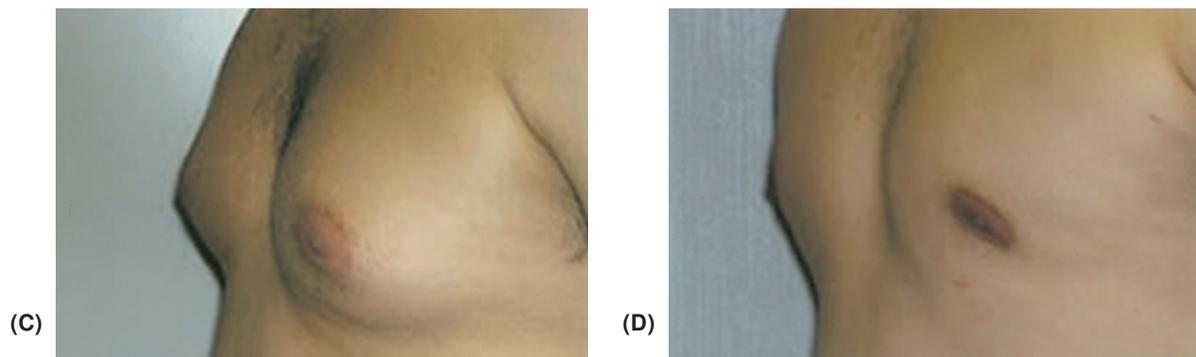


Fig. (3-C,D): Preoperative and 6 month postoperative oblique views of a 22 years old patient with true gynaecomastia who was treated by liposuction + glandular resection.



(A)



(B)

Fig. (4-A,B): Preoperative and 1 month postoperative front views of a 33 years old patient with true gynaecomastia grade 3 treated by free areola and nipple graft technique.



(C)



(D)

Fig. (4-C,D): Preoperative and 1 month postoperative lateral views of a 33 years old patient with true gynaecomastia grade 3 treated by free areola and nipple graft technique.



(E)



(F)

Fig. (4-E,F): Preoperative and 1 month postoperative front views of a 33 years old patient with true gynaecomastia grade 3 treated by free areola and nipple graft technique.

DISCUSSION

There are a number of aesthetic surgical techniques available for the correction of gynaecomastia [10], some forms of gynaecomastia are amenable to suction techniques alone; others require open

procedures using either intra-areolar or extra-areolar incisions [8].

Reviewing literature about the treatment of gynaecomastia Simon grade 1 and 2, it was found that liposuction is the technique of choice in non

glandular cases (pseudogynaecomastia) [3,11,12]. On the other hand, surgical techniques described for true gynaecomastia grade 1 and 2, include subcutaneous mastectomy alone, liposuction alone or liposuction combined with subcutaneous mastectomy.

Many surgeons prefer subcutaneous mastectomy for the treatment of true gynaecomastia [3,13,14,15]. Various incisions and techniques have been described for the treatment of gynaecomastia by subcutaneous mastectomy. Pitanguy [16] described a transareolar incision. Letterman and Schurter [17] described a superior semicircular, intra-areolar incision. Also among these incisions, Webster's intraareolar incision, the periareolar, and circumareolar incisions are the most commonly used techniques because the final scars are almost inconspicuous. Webster's intraareolar incision is placed inside the inferior border of the nipple-areola complex, whereas the periareolar incision is made along the inferior margin of the areola. Bilateral extensions can be added to both Webster's and the periareolar incisions to obtain additional exposure, but this may result in conspicuous scars. Through these incisions, the breast skin and nipple were undermined for breast tissue removal. It was important to leave enough tissue under the nipple to avoid distortion and depression of the areola as stated by Celebioglu and colleagues [3].

A transaxillary incision was also described because it offers the advantage of absent scars on the chest wall. However, the major disadvantage of the technique is a more difficult glandular resection [18]. Selim et al. [3] described a circumareolar incision with a central areolar pedicle for a better approach for subcutaneous mastectomy in cases of grade 1 and 2 gynaecomastia.

Complications of subcutaneous mastectomy include decreased or absent nipple sensation, necrosis of the nipple-areola complex and skin, haematoma, seroma, and infection. Cosmetic complications due to the limits of gland resection are contour deformity, distorted shape of the areola, retraction of the areola and skin, and extensive scars [12].

With the advent of liposuction, it became apparent that the fatty component of the breast could be reduced through miniscule incision. Tiemorian and Perlamm [9] were the first to publish their experience and others followed [7].

Great enthusiasm has greeted the introduction of suction assisted lipectomy to gynaecomastia

surgery because the technique is easy and does not impair areolar vascularity or sensation, and because the postoperative scars are excellent [3]. It permits more rapid, efficient and controlled tissue removal, facilitating consistently good results without some of the drawbacks of open surgical excision particularly contour irregularities. It also has decreased the incidence of haematoma [7]. So far the advantages of this technique justify its use in almost all gynaecomastia procedures. Visible scars are either avoided or reduced and there is a very low rate of complications and morbidity if used by a qualified surgeon [12].

Although established for lipomatous pseudogynaecomastia, value of liposuction for treating true glandular hypertrophy in male breasts is controversial [12]. Some authors believe that the use of suction assisted lipectomy alone for true gynaecomastia is a misnomer [3]. However, several other authors [4,11,12,19,20,21] have recommended liposuction for the treatment of true gynaecomastia but with the use of special suction cannulas or the use of ultrasound-assisted liposuction. Bjorn [12] found histologic evidence which justifies the term "tissue suction" because not only adipose tissue but also glandular tissue was included in their aspirate. They concluded that "Tissue suction" is a very valuable technique for correcting most gynaecomastias and that the advantages of this technique justify its use in almost all gynaecomastia procedures [12].

Ultrasound-assisted liposuction is an excellent method for the treatment of lipodystrophy, mainly in difficult fibrous areas, such as gynaecomastia [21].

In order to have the best results, many surgeons choose liposuction as the operation of choice for cases of true gynaecomastia but they prefer to add, if necessary, direct excision of residual glandular tissue after completing the suction, [5,7,9,15,22,23,24]. This concept was adopted in this study for all the presented cases of true gynaecomastia grade 2.

In this study, liposuction was done for 28 cases with grade 2 gynaecomastia, 6 cases of them were pseudogynaecomastia (fatty) and 22 were true (glandular) gynaecomastia. In all the cases of true gynaecomastia, liposuction was started then the breast was palpated for any significant residual glandular tissue, which is then removed through an inferior periareolar incision. This was needed in 10 (45%) out of the 22 cases of true gynaecomastia doing liposuction in this series. Considering the total number of cases undergoing liposuction

in this work, it was found that glandular excision was added in 10 out of the 28 cases. This means that 36% of cases of liposuction for grade 2 gynaecomastia needed additional glandular excision.

Suction in the non-glandular cases was found relatively easier than in the glandular cases in this study. All authors who recommended liposuction in true gynaecomastia [4,11,12,19,20,21] mentioned its difficulty because of the firm fibrous structure of the glandular breast enlargement. This study agrees with this finding.

Liposuction operations in this study were done under local anaesthesia together with intravenous sedation, and this is one of the advantages of liposuction over subcutaneous mastectomy which usually need general anaesthesia. This method of local anaesthesia by the tumescence technique supplemented by IV sedation has been recommended by a majority of liposuction surgeons [4]. The composition of tumescence fluid used in this study was the same as recommended by Pitman [7]. The addition of the step of glandular resection in some of the liposuction cases did not necessitate the change of anaesthesia given.

In this work, entrance sites for liposuction were chosen in lower axilla and submammary crease as was advised by Coelman and colleagues [4] to allow crisscross tunneling. A 4mm Mercedes type cannula was used then a smaller cannula (3mm) was used to remove tissues in subareolar region. These smaller cannulas can easily penetrate through the fibrous glandular tissue beneath the areola as recommended by Pitman [7].

Surgeons using liposuction relied on the principle of skin retrapping and retraction by intact connective tissue bands to reduce the skin envelope [7]. This was confirmed in this study, as it was noticed that none of the liposuctioned breasts had developed any postoperative skin redundancy even in the cases with mild to moderate skin excess.

The reported complications of liposuction in gynaecomastia, in literature, included contour deformity, residual skin, asymmetry and inadequate resection [7]. The incidence of these complications is much less than those of the conventional subcutaneous mastectomy, even in the studies where liposuction is associated with glandular resection [1,7,12,25]. In this study, incidence of complications after liposuction was 5 cases (18%), 3 of them were minor complications in the form of seroma, haematoma and marginal superficial sloughing of areola, and these were managed in the outpatient

clinic during the postoperative visits. The other two cases were contour deformities in the form of depression in the area of nipple and areola and surrounding area. The cause of this deformity was, as explained by Pitman [7], due to failure to leave adequate soft tissue on the nipple areolar flap and surrounding skin, in open cases. These two cases were treated by secondary suctioning to taper the periphery.

For cases of severe gynaecomastia with redundant skin, many techniques have been described in literature. Many authors suggested circumareolar skin excision. A concentric circle of periareolar skin is deepithelialized and breast tissue can be resected through an infraareolar incision [10,26,27]. Liposuction can be also combined with a concentric mastopexy [12].

The common techniques used for mastopexy and breast reduction for the female patient may also be used for the male, although these usually result in extensive scarring [10]. Superiorly or inferiorly based pedicle areolar flaps and free nipple techniques have been described for stage 3 gynaecomastia [3,8,10].

In cases of severe gynaecomastia of stages II to III, Brenner et al. [2] performed a closed series of subcutaneous mastectomies with either a single superiorly or inferiorly based nipple. The idea was to avoid the T-shaped breast reduction, which always leads to a cone like breast contour. On the contrary, they aimed to achieve a flat chest.

Free nipple technique has been also described for stage 3 gynaecomastia [3,8,10]. This was the technique chosen for the severe cases of gynaecomastia done in this study. The principle of their choice is that this procedure is easier, simpler and gives result to a flat chest rather than the cone like breast contour produced by the breast reduction techniques which are sophisticated and time consuming. Also, if compared to the concentric circumareolar skin excision, the latter does not give satisfactory skin excision in Simon grade 3 with marked skin redundancy in addition to the difficulty of excision of such a big breast tissue through an infraareolar incision. The main disadvantage of this procedure of free areola nipple graft technique which is the long transverse scar is comparable to the inverted T scar of other procedures. Another disadvantage is the loss or decreased sensation in nipple graft which is not a major problem in the male who only cares to remove the redundant protuberant female-like breast. All the cases done in this study were satisfied. They were all told

before the operation that they will have a long transverse scar, and they all agreed without hesitation.

The complications encountered in this study after this operation included 1 case of partial areola graft necrosis which was treated by repeated dressing until healed and 2 cases had dog-ear deformities but they refused any revision. Actually the deformity improved during the following weeks.

Conclusion:

- 1- When treating patients of grade 2 gynaecomastia, liposuction should be considered the operation of choice. All the cases of pseudogynaecomastia grade 2 can be easily managed by liposuction alone. Though more difficult, some of the cases of true gynaecomastia grade 2 can be treated by liposuction alone. Others will show a persistent lump after liposuction and will need an additional step of direct glandular excision.
- 2- The management of gynaecomastia Simon grade 2 by the technique of liposuction mentioned is an effective method of treatment because it is easy, does not impair areolar vascularity or sensation, and because the postoperative scars are excellent. It also permits rapid, efficient and controlled tissue removal, and gives good cosmetic results without some of the disadvantages of subcutaneous mastectomy particularly contour irregularities. It also has decreased incidence of haematoma. Visible scars are either avoided and there is a very low rate of complications and morbidity.
- 3- The free areola nipple graft technique for the management of gynaecomastia Simon grade 3 is a simple easy and satisfactory method for treatment of these severe cases and avoiding the difficulty and less satisfactory results of other breast reduction techniques and avoiding complications of subcutaneous mastectomy. Decreased or lost sensation of areolar graft is not a major concern in the male.
- 4- The use of IV sedation + local tumescent anaesthesia proved an excellent efficient and meanwhile safe method of anaesthesia in cases of liposuction even if combined with subcutaneous mastectomy.
- 5- Differentiation between fatty and glandular cases preoperative is not important since both cases can be treated by the same technique which is liposuction of grade I or II (with glandular resection in some cases with persistent glandular mass), or free nipple graft technique of grade III. So, the more important is to define the size of the breast and if there is redundant skin that would need excision.

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