

Combination of Liposuction and Excisional Surgery as a Standardized Minimal Scarring Technique for Gynecomastia: Experience with 150 Cases

MOHAMMED FARAG, M.D.; AHMED ALI, M.D.; KHALID SAFE, M.D. and MOHAMMED D. ELEIWI, M.D.

The Department of Plastic Surgery, Faculty of Medicine, Ain Shams University.

ABSTRACT

There are three pathological components in gynecomastia to be corrected; glandular hyperplasia, excess fat, and excess skin with variable degrees of ptosis. The choice of the proper technique for treatment of gynecomastia depends on the likelihood of skin redundancy after surgical excision of breast tissue. The nature of that enlarged breast tissue also has a role. This may be predominantly fatty, or glandular, or fatty glandular. So, breast tissue may be removed with a good result either by liposuction alone, surgical resection alone, or combination of both. When there is skin redundancy, a technique for skin resection and nipple transposition is planned.

A retrospective study, aiming to put guidelines for surgical treatment of gynecomastia was done. In a series of 150 cases of different grades of gynecomastia, the authors did combination of liposuction and glandular resection. Surgery was done with or without skin excision, through only circum-areolar incisions, which helped greatly to minimize scarring. Follow-up reached up to two years. The data of all patients were revised. The outcome of surgery was good in all cases. The overall complication rate was 8%, and only 2% required secondary correction. The authors finally suggested an algorithm for management of different grades of gynecomastia.

INTRODUCTION

Gynecomastia is the growth of glandular tissue in male breasts [1]. It is a benign condition that accounts for more than 65% of male breast abnormalities [2]. Gynecomastia should be differentiated from pseudogynecomastia, which is an accumulation of excess fat in a male breast [3]. Many etiological factors are associated with an alteration in normal estrogen to androgen ratio, which has been found in patients of gynecomastia [3,4,5].

In 1934, Webster classified gynecomastia into 3 types. The first is glandular, the second is fatty glandular, and the third is simple fatty.

Another classification was described by Simon in 1973, according to the size of the gynecomastia [7]. Three grades were defined. Grade I is minor

but visible breast enlargement without skin redundancy. Grade IIA is moderate breast enlargement without skin redundancy. Grade IIB is moderate breast enlargement with minor skin redundancy. Grade III is gross breast enlargement with skin redundancy that simulates a pendulous female breast.

Rohrich [6] advised that patients in grades I and II require no skin excision. Patients with a predominant glandular component require surgical removal of the gland. When it is fatty-glandular, surgery combined with liposuction allows good contouring. In cases that are primarily fatty in nature, liposuction alone provides good results. In grade III, the excess skin must be removed. The surgical technique of subcutaneous mastectomy for the treatment of gynecomastia was first developed by Thorek and then later by Webster [5]. Subcutaneous mastectomy was the treatment of choice until the early 1980s. Teimourian and Pearlman introduced liposuction-assisted mastectomy in 1984, and ultrasonic liposuction was developed in the late 1990s [6].

The choice of surgical technique depends on the likelihood of skin redundancy after surgery. Patients of grade III require skin excision. Generally, skin shrinkage is greater in younger individuals than in older individuals [9]. Young patients of grade IIB may not require this.

Different incisions are described for the excision of male breasts. The most common approach is the intra-areolar incision, or Webster incision. The Webster incision extends along the circumference of the areola, and the length of the incision varies. The Webster intra-areolar incision is placed in the inferior hemisphere. This incision may be enlarged by lateral and medial extensions. The transverse nipple-areola incision is quite popular, but it is

associated with limited exposure [10]. The triple-V incision appears to offer maximum exposure. The transaxillary incision has been recommended because of its advantage of scars on the chest wall, but its disadvantage is that glandular resection being more difficult [11].

In moderate gynecomastia, skin resection and nipple transposition techniques are necessary. The most common type is the Letterman technique. After the skin is resected, the nipple-areola complex is rotated superiorly and medially based on a single dermal pedicle. However, in massive gynecomastia, an en bloc resection of excessive skin and breast tissue and free nipple grafting can be performed [13].

Teimourian, Pearlman, and Courtiss [14] first introduced liposuction with surgical resection in the 1980s. Recently, the advent of ultrasonic liposuction has improved the results of gynecomastia correction. In liposuction-assisted mastectomy, less compromise of the blood supply, nipple distortion, saucer deformity, and areola slough occur. In addition, the postoperative complications such as hemorrhage, infection, hematoma, seroma, and necrosis are fewer with this technique than with open surgical resection. However, liposuction-assisted mastectomy is not always effective when correcting pure glandular gynecomastia.

This study aims to put guidelines for the surgical management of gynecomastia.

PATIENTS AND METHODS

This is a retrospective study that investigated 150 cases of different grades of gynecomastia. The age of patients ranged from 17 to 47 years with an average of 24 years old. The cases were operated upon in the period from July 2004 to August 2006. Preoperative, postoperative data and photographs, and the follow-up notes were revised and analyzed. Among the 150 cases studied, 17 cases (11%) were grade I, 69 cases (46%) were grade IIa, 38 cases (25.5%) were grade IIb, and 26 cases (17.5%) were grade III.

Surgical technique:

I- *Planning:* The plan of surgery is dependant on whether skin reduction is required or not. This was determined preoperatively by clinical grading, while the patient is standing with arms down. In grades I & IIa, the selected technique was mainly liposuction combined with gland excision through a small lower hemi-circumareolar incision. In grades IIb & III, circumareolar skin reduction is additionally

planned, for excision of excess skin. The final scar never exceeds the circumareolar line.

II- *Operation:* The procedure was done under local infiltration anesthesia with sedation in 54 patients (36%), and under general anesthesia in 96 patients (64%). Tumescent infiltration of 1:500.000 adrenaline, with addition of 10 to 20ml of 5% xylocaine per 500ml, was routinely done. This was followed by liposuction from all of the breast area (Fig. 1). The puncture for liposuction was located 2cm under the infra-mammary fold at a line dropped from the nipple.

After completing suction, reassessment of thickness and consistency of skin fold at and around the areola was done, for further evaluation of the requirement of surgical resection of the residual glandular tissue.

In grades I, and IIa, a small incision was done just inside the lower half of the areolar border. The residual tissue was excised blindly by sharp dissection from the under surface of the areola. The incision was then closed using 4-0 few interrupted monocryl sutures. The punctures of liposuction were left open for drainage.

In grades IIb & III, a concentric circle was marked outside the areola to include all the area of excess skin to be excised. Pinching the excess skin to the areolar border from all directions helps in judgment of the amount of the excess skin. After finishing liposuction, a short incision was done at the lower pole of the outer circle for subcutaneous excision of the remaining glandular tissue. De epithelialization of the area between the outer circle and the areola was done followed by closure with 2-0 interrupted sutures. Punctures of liposuction were also left open for drainage. Compression garment was applied for two weeks.

RESULTS

Among the 150 cases studied, 26 cases (17.5%) were grade III, 38 cases (25.5%) were grade IIb, 69 cases (46%) were grade IIa, and 17 cases (11%) were grade I. All grade III cases underwent combined liposuction with gland excision and circumareolar skin excision. Thirty five cases of grade IIb (92.1%) underwent the same technique, while 3 cases (7.9%) underwent the technique without skin excision. Two of these three cases had an associated abdominoplasty which might helped to redistribute the excess skin. 59 cases of grade IIa (86%), and 13 cases of grade I (77%), underwent combined liposuction and glandular excision. Liposuction only was done in 10 cases among 69

(14%) of grade IIa, and 4 patients among 17 (23%) of grade I.

In all cases, the outcome of surgery is good (Figs. 1,2). The unsatisfied patients were only 4 (2.7%), three of them were unhappy because of the scar. In two cases, there was hypertrophic scar that needed surgical revision, and in one case it was the corrugation of the circumareolar scar in the early postoperative period, that resolved spontaneously later on.

One patient was grade I, and underwent liposuction only. He was under-corrected, and needed another session of liposuction combined with gland excision. The overall complication rate is 8% (12 cases). These complications are shown in Table (1).

An algorithm for surgical treatment of all grades of gynecomastia is reached following retrospective analysis of the studied cases. This is shown in Table (2).

Table (1): Complications of surgery of the studied cases.

| Complication | No. | Grade | Management |
|--|-----|-----------|---|
| Superficial desquamation at the areola | 2 | III | Conservative |
| Seroma | 2 | IIa | Aspiration at office, and pressure garment |
| Hypertrophic scar | 4 | IIb | Conservative treatment of 2, and surgical revision of 2 |
| Broad scar | 2 | III | Surgical revision of one |
| Partial wound disruption | 2 | III & IIb | Conservative |

Table (2): An algorithm for surgical treatment of gynecomastia.

| Grades I & IIa | Grades IIb & III |
|----------------------------------|---|
| Liposuction + glandular excision | Suction + gland excision + circumareolar skin reduction |



Fig. (1-A): Preoperative view of 42-years old patient with grade IIa gynecomastia and it shows the markings for liposuction.



Fig. (1-B): Postoperative view after one week. The patient underwent liposuction and glandular excision.



Fig. (1-C): Pre-operative side view.



Fig. (1-D): Post-operative side view.



Fig. (2-A): Preoperative view of 27-years old patient with grade III gynecomastia.

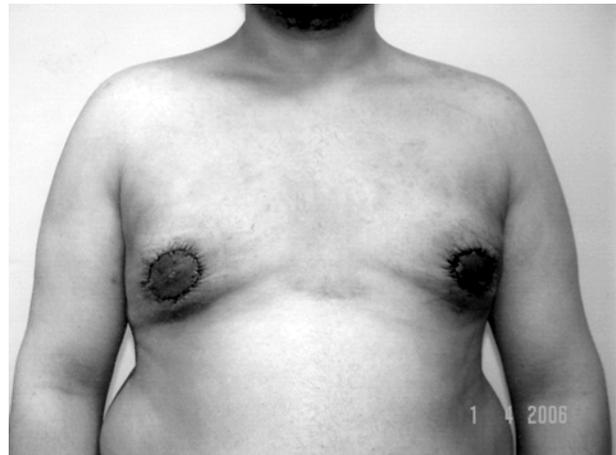


Fig. (2-B): Postoperative view after 2 weeks. The patient underwent a combination of liposuction, glandular excision and circumareolar skin reduction.



Fig. (2-C): Preoperative side view.



Fig. (2-D): Postoperative side view.

DISCUSSION

The main objectives of surgical treatment of gynecomastia are the restoration of a male chest shape, with good contouring, symmetry, and without leaving visible scars. There are three pathological components in gynecomastia that must be corrected; abnormally excessive glandular tissue (glandular hyperplasia), excessive fatty tissue, and excess skin with variable degree of ptosis. Negligence of one component will result in less optimum chest shape.

Excisional surgery in gynecomastia aimed at removal of glandular tissue and reduction of excess skin keeping the viability of nipple areola complex. Different techniques treated Simon grade II and III gynecomastia by transfer the nipple areola

complex to its proper position on different pedicles of glandular flaps [12,15]. Although effective, traditional excisional techniques subject patients to large, visible scars [16].

In an attempt to minimize scarring, Balch [17] introduced the trans-axillary approach for glandular excision. The technique is effective in removal of glandular tissue but still it can not be used in Simon grade II and III with much fat and skin excess. Circum-areolar technique for skin reduction has helped to reduce the scar. However, circumareolar skin reduction can restore the shape of the chest in lower grade of gynecomastia [16]. Teimourian and Perlman introduced the suction-assisted lipectomy as a tool in the treatment of gynecomastia [14]. The technique was effective in treatment of gynecomastia with much fatty tissue. Floride-type

with dense parenchyma that develops in gynecomastia of long duration is difficult to be removed by suction lipectomy. Rosenberg used smaller 2.4mm suction cannula that could remove both adipose tissue and dense parenchymal tissue in the breast [18].

It is now well accepted that low grades of gynecomastia are best treated with liposuction alone [18]. However, we used combination of liposuction and surgical excision, because of the mixed nature of the breast tissue (fat and glandular or fibrous components), that usually makes liposuction alone is not enough as it leaves a residual fibrous tissue component. So, combination of the techniques allows for taking the advantages of each. Suction before excision facilitates the excision through a smaller incision, which minimizes the scarring.

The surgical management of high-grade gynecomastia (Simon's grade III) has remained problematic because both liposuction and conventional subcutaneous mastectomy (without skin excision) have frequently resulted in significant residual skin redundancy, requiring a second operation for skin resection [19]. In these cases, we did circumareolar skin excision in the same session. The complications recorded with this technique are considered minimal, and accepted. Leaving the punctures of liposuction open had minimized the incidence of seroma. Interrupted sutures helped to avoid vascular compromise to the areola.

By retrospective analysis of the 150 cases of gynecomastia, the authors reached an algorithm for the management of different grades of gynecomastia. In grades I and IIa, liposuction combined with glandular excision through a small lower hemi-circumareolar incision is suggested. This is to be done in all cases, and not in selected cases as mentioned by Rohrich [6]. In grades IIb and III circumareolar skin reduction is additionally planned, for excision of excess skin in the same session, which is different from Tashkandi et al. [19] who used to reduce the skin in a later stage. This study concluded this algorithm, and recommended using combination of suction and excision as described. The entire three pathological components are dealt with to give satisfactory male-chest shape, leaving minimal scarring.

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