Gynecomastia Treatment Should it be Individualized? A Prospective Study

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ABSTRACT:

BACKGROUND :

Gynecomastia is a benign enlargement of the male breast.

OBJECTIVE:

Was to analyze a 3 year period of gynecomastia patients in Al-Kindy Teaching Hospital and the surgical approach used and its outcome.

PATIENTS AND METHODS:

A prospective study of patients consulting Al-Kindy Teaching Hospital because of gynecomastia between October 2007and August 2010 was done. Data were analyzed for etiology, grade of gynecomastia, surgical technique, complications, and histological results.

RESULTS:

A total of 64 patients with 86 operations were included. Techniques included subcutaneous mastectomy alone, or subcutaneous mastectomy with wise pattern "inverted T incision". Atypical histological findings were found in 3.12% of the patients (papilloma, fibrolipoma). Surgical revision among all patients was 7%. Body mass index higher than 25kg/m^2 was found as significant risk factors for complications (p\0.043), and that higher grades of gynecomastia (grade IIb and III)had higher statistical incidence of complications p= 0.01

CONCLUSION:

The treatment of gynecomastia requires an individualized approach. Caution must be taken in high BMI and higher grades, which are associated with increased complication rates. Histological tissue diagnosis should be routinely performed in all true gynecomastia corrections, because histological results may reveal atypical cellular pathology.

***KEY WORDS*:** gynecomastia, subcutaneous mastectomy, histopathological study.

INTRODUCTION:

Gynecomastia is a benign glandular proliferation of the male breast causing enlargement and thus a feminine appearance[(1)]. In some patients, especially in the adolescent, gynecomastia may regress spontaneously [(2)].

There are no racial differences in the prevalence of this condition and its wide spread in men and boys [(3)]. It is well known that estrogens stimulate breast tissue whereas androgens antagonize these effects. Gynecomastia has long been considered as the result of this imbalance between these two hormones [(4,5)].

It had been found that decreased androgen secretion is commonly seen in older men as part of the normal aging process, in patients with primary or secondary hypogonadism, in patients with certain defects in testicular enzymes (3β-hydroxysteroid dehydrogenase or 17-ketosteroid reductase), or in the presence of drugs such as spironolactone and ketoconazole that inhibit the biosynthesis of testosterone [(6,7)].

In persistent cases, pain, galactorrhea, cancer phobia and other psychological effects, including embarrassment, may lead to the necessity of treatment.

Histologically, gynecomastia is characterized initially by ductal proliferation and the formation of vascular connective tissue. If present beyond 1 year, then chronic fibrous changes may occur associated with dilated ducts and increased stromal hyalinization [(8)]. There fore medical treatment may be effective at an early stage in which glandular tissue still proliferates [[1]]. However, with time, the tissue will become increasingly fibrotic and thus

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fail to respond to medical therapy [1]. In such cases surgery for gynecomastia would be accepted as the standard treatment.

Surgical approaches are numerous and include the removal of the excessive glandular tissue and skin by subcutaneous mastectomy, breast reduction, liposuction, or a combination of these techniques [9–15].

To date, male breast diseases, including gynecomastia, are not treated by one specialty of surgeons alone, but by general, thoracic, and plastic surgeons. The present literature on gynecomastia reflects a variety of approaches and describes multiple individual techniques and describe our technique in using simple subcutaneous mastectomy with added wise pattern inverted T incision of redundant skin exist . a standardized classification and etiology is necessary to improve accuracy in the appropriate choice of the surgical approach and to allow comparison with results from other studies. The present study was designed to provide systematic evaluation of the results of a 3-year period in surgical treatment of gynecomastia at Al-Kindy Teaching Hospital.

METHODS:

A prospective analysis of patients having gynecomastia between Octoberber 2007 and August 2010 was conducted at Al-Kindy Teaching Hospital. The preoperative grading was performed using the Simon classification for gynecomastia [16]: grade I, minor breast enlargement without skin redundancy; grade IIa, moderate breast enlargement without skin redundancy, grade IIb, moderate breast enlargement with minor skin redundancy; grade III, severe breast enlargement with skin redundancy simulating a female breast.

The clinical evaluation included the etiology and categorization of true gynecomastia (hypertrophy of stroma and glandular cells) into five groups: idiopathic (including adolescence/pubertal type), endocrine type, tumor-related type, metabolic type (e.g., cirrhosis, diabetes, starvation), and drug induced type.

Patients with pseudogynecomastia, a condition in which male breast enlargement is caused by adipose hypertrophy and obesity, were not included in the study. Patients underwent ultrasound imaging of enlarged breasts prior to surgery in all cases. If an endocrine etiology was suspected, the patient underwent an endocrinological evaluation first, including measurement of hormone serum levels. In these cases, surgery was performed only after completion of the appropriate medical therapy.

The operations performed included subcutaneous mastectomy alone and subcutaneous mastectomy with wise pattern "inverted T" incision. The operation was performed with either local or general anesthesia. Single shot antibiotic prophylaxis was administered routinely Cefoperazon 1.0 g i.v.(50mg/kg body weight) at the time of incision. The subcutaneous mastectomy was performed using a semicircular-periareolar inferior incision as described by Webster [17].

In those cases of grade III gynecomastia, a subcutaneous mastectomy with a wise pattern "inverted T" incision for resection of the excess skin was performed while all the other patients had only subcutaneous mastectomy alone. The resected specimens underwent histological analysis. A redivac drain was placed in the resulting epipectoral cavity and remained for 1–3 days until the drainage volume decreased under 20 ml/24 h. In all patients compression dressing was applied for 1–2 weeks following the operation. The patients were seen in an early (first 2 postoperative weeks) and a late follow-up visit after 3 months. The following data were analyzed: age, weight, height, medical history, histological findings, complications, and recurrence.

All results are given as percentage of the patients, except for analysis of the surgical procedures, which are expressed as percentage of the total procedures.

Statistical analysis of the data was performed using Mini tab vers. 13.

P value less than 0.05 is considered statistically significant.

RESULTS:

Patient data

Between 2007 and 2010, a total of 64 patients were collected on whom 86 operations were performed. (Unilateral, n = 42; bilateral, n =22). The mean patient age was 26.5±14.78 years (range of age: 13–70 years). The mean body mass index (BMI) was 26.05±3.074 kg/m2 (range of BMI values: 22.5–33.1 kg/m2). Also of note, 28 patients (43. 75%) were active smokers (10 cigarettes/ day).

Preoperative grading according to the Simon classification included patients with grade I (n = 2 (3.13%)), grade IIa (n = 26(40.62%)), grade IIb (n = 20(31.25)), and grade III (n = 16 (25%)) gynecomastia. (Figure 1)

Figure 2 shows patients with various grades of gynecomastia

The underlying cause included the following types: idiopathic/adolescence (n= 36(56.25%)), endocrine (n=22 (34.375%)), drug-induced (n=4 (6.25%) and metabolic (n=2(3.125%).

Mastodynia was present in 21 patients (32.8% of the patients) preoperatively.

Sixteen patients (25%) received preoperative medical therapy (systemic antiestrogen, tamoxifen therapy). The operation was carried out under general anesthesia in 61 patients (95.32%, grades I–III) or with local anesthesia in 3 patients (4.68%, grades I–IIa).

Surgical procedures

The operative techniques included subcutaneous mastectomy alone (n = 55 operations (63.95%), grades I–IIb), and subcutaneous mastectomy with wise pattern "inverted T" incision (n = 31 operations (36.05%), grade III).

Of the eighty six operations done, 31 operations were done for grade III, 20 for grade IIb, 3 for grade I and the remaining 32 operations for grade IIa (table 1).

The histological examination showed fibrotic gynecomastia in 50% of the patients, with ductal hyperplasia present in 23% of the patients. In one patient, ductal hyperplasia was combined with mild apocrine metaplasia .In two patients (3.12%) histological analysis revealed further pathology including fibrolipoma (n = 1), breast papilloma (n = 1), . The resection margins of the papilloma specimen were tumor-free, and no further intervention was necessary.

Complications

Complications occurred in a total of 19 patients (29.68%).

The complications involved postoperative bleeding and hematoma (n = 1), and seroma formation (n = 8) (Table 2). Surgical intervention was necessary in one patient (1.56%) while the others were successfully treated conservatively.

No complication was observed in grade I patients.

As regard to grade IIb and III , 14 out of the 51 operations suffered from complications while only 5 operations in grade IIa suffered complications which indicate increased statistical risk of complication with increasing grade of the disease P 0.01.

Overweight patients with a BMI greater than 25 kg/m2 had a significantly higher complication rate (n=12(18.75% versus n=7(10.94%); p = 0.043). Complications in patients who were active smokers did not differ significantly from those in nonsmokers (10 patients active smokers (15.62% versus nine patients non smokers 14.06%; p = 0.432) as shown in table 3.

Minor complications were observed in ten patients (15.62% of all patients) and included areolar epidermolysis (n = 4 patients), prolonged hyposthesia of the nipple–areolar complex (n = 6 patients), No patients suffered from wound dehiscence/necrosis. All these were treated conservatively. The majority of patients (70%) experienced reversible hyposthesia of the nipples at the early postoperative control.

The patients were followed up in an early (first 2 postoperative weeks) and a late follow-up visit after 3 months

The mean follow up was 90 days (range: 27–425 days).

Figures 3 illustrate postoperative results.

There was no recurrence of gynecomastia following surgical subcutaneous mastectomy in all grades of gynecomastia.

An objective analysis of the late complications 3 months later revealed minimal persistence of excessive soft tissue (dog ear deformity) (n = 2 patients), hypertrophic scarring (n = 5 patients), and persisting nipple hyposthesia (n = 2 patients).

None of the late complications required corrective operative treatment.

DISCUSSION:

The surgical approach to the treatment of gynecomastia shows a wide variation in the literature, reflecting the lack of clear guidelines. Early publications focused on surgical excision of the glandular tissue, whereas more recent studies advocate the unique use of liposuction, emphasizing superior esthetic results and decreased complication rates[12,13,19,20]. This, however, bears the potential for overlooking atypical pathological findings in the male breast tissue.

Our series evaluate the results in a 3-year experience at one center in which open surgical excision and routine histological sampling was performed routinely without the use of liposuction for these reasons:

First the lack of histopathological analysis of the resected tissue: Even though it is technically possible to submit tissue pieces from liposuction to a histopathological analysis [20], this has been performed only rarely, and the results are difficult to interpret due to tissue damage and consistency. In our series, 3.12% of patients were diagnosed as having atypical cellular findings namely breast papilloma, which according to Agoff et al requires surgical excision in the co-presence of atypical

ductal hyperplasia due to the increased rate of associated neoplasia[21]. Bilateral atypical ductal hyperplasia in gynecomastia specimens has been described by other authors [22]. Nevertheless, it is important to emphasize, that there is no convincing evidence linking gynecomastia with increased incidence of male breast cancer [23]. In contrast to gynecomastia, male breast cancer has a peak at 71 years, and it usually presents as a painless lump or nipple retraction [23]. However, this does not eliminate the need for a histological examination of the resected tissue [24–28]. Voulliaume et al. report a case in which a patient received liposuction for ''gynecomastia,'' which later proved to be established male breast cancer. They point out the problem of dissemination of malignant cells into healthy tissue during the liposuction procedure [24]. Other authors have also described that breast enlargement in young men is not always benign gynecomastia: malignant tumors such as breast carcinoma may be present in the midst of florid gynecomastia, even in a young patient [25]. DeBree et al. describe a 22-year-old man initially diagnosed with unilateral gynecomastia, in which histological analysis revealed an invasive ductal carcinoma of the breast [26]. In a recent publication, Staerkle et al. report on synchronous bilateral ductal carcinoma in situ in a young man presenting with bilateral gynecomastia [27]. Wadie et al. describe a case of a 16-year-old boy with bilateral gynecomastia, in which the histological work-up revealed a ductal carcinoma in situ [28].

The second reason is that liposuction may leave residual breast tissue which may lead to recurrence or skin that needs later surgical revision . Hodgson et al. report on a small series of 13 patient with gynecomastia treated exclusively by ultrasonic liposuction[19]. They report no early postoperative complications of hematoma, seroma, infection, or thermal injuries, and they state that ''ultrasound-assisted liposuction can be attempted for all types of gynecomastia'' [19]. In another study, 61 patients with grade I–III gynecomastia were treated with liposuction only (suction assisted lipectomy and ultrasound-assisted liposuction) [13].

Although the authors describe no early postoperative complications, 13% of the patients required open excision of remaining breast tissue and redundant skin 6–9 months postoperatively [13].

For these two reasons taken together, and because these data emphasize the need for a histological analysis because gynecomastia may be harboring a neoplasia and the high possibility of the later need for surgical revision of the operative site for remaining breast or redundant skin , added to these reasons the cosmetic results using the semicircular-periareolar inferior incision as described by Webster[17] gives good results as seen in Fig 3 , For all these reasons liposuction was not used in our series but we recommend the use of liposuction in gynecomastia as additional to surgery to improve the postoperative results, especially if the excision of an enlarged gland results in a concave deformity of the site of surgery.

The classic semicircular-periareolar inferior incision proved to be a valid access in grade I–IIb gynecomastia in this study. Aslan et al. suggest a modified surgical access that uses a W-shaped periareolar-transareolar-perithelial incision to provide wide exposure of the resection area and to facilitate nipple–areolar reduction in advanced grades [29]. In cases with redundant skin (IIb–III), the resultant redundant breast skin excision with the "wise pattern inverted T incision" was used.

The most frequent complication of subcutaneous mastectomy in the present study was postoperative bleeding and hematoma or seroma formation. This finding is consistent with the results of other series, which have described an overall complication rate of up to 28% in all patients [10,14]. The statistically significant increase of complications in resections in patients with BMI exceeding 25Kg/m2 and in patients with grade IIb and III disease is of clinical consequence to the postoperative treatment.

The larger wound area and in overweight patients (BMI >25 kg/m2) and in higher grade disease (grade IIb and III) may explain the higher complication rates in this group. Based on the analysis of our prospective data, we have now extended the duration of the compressive dressing to a 3-week period following surgery, especially in overweight patients and larger resections.

To prevent hematoma and seroma formation, we advise patients to refrain from physical activities for a period of 4–6 weeks postoperatively. So far, we have observed no further hematoma or seroma in these patients. In overweight patients and in cases of large resections, surgeons should consider leaving compressive dressings beyond hospital stay, thus maintaining prolonged wound compression.

In our study, unilateral gynecomastia was found in 42 patients (65.62% of the patients). In other large studies the incidence of unilateral involvement varies from 14% to 51% [9, 14].

However, unilateral gynecomastia may not be as

unique as anticipated by some authors. Diagnostic reports describe unilateral gynecomastia in about 40% of men who undergo mammography[30] or high-frequency color Doppler ultrasonography [31] for breast enlargement due to gynecomastia.

CONCLUSION:

The surgical treatment of gynecomastia requires an individual approach, depending on the grade of male breast hypertrophy. Based on the presented data, true glandular hypertrophy requires a meticulous surgical glandular tissue excision and subsequent histological examination, thus avoiding oncological pitfalls and decrease the incidence of complications that can occurs specially in overweight patients and larger resections. Liposuction can be used as an additional technique.

Massive skin redundancy (grade III) can be prevented by using the technique of "Wise pattern inverted T incision". The presented series indicate that subcutaneous mastectomy provides an excellent outcome with no recurrence.

Tabe 1 :The number and percentage of the different grades of the patients

Grade	No. of patients	Percentage	No. of operations
I	2	3.13%	3
IIa	26	40.62%	32
IIb	20	31.25%	20
III	16	25%	31

Table 2 :Number of complications in the various grades

	Grade I	Grade II-a	Grade II-b	Grade III	Total
No. of operations	3	32	20	31	86
Hematoma	0		1		1
Seroma	0	1	4	3	8
Epidermolysis	0	2	1	1	4
Nipple hyperesthesia	0	2	1	3	6

Table 3 :Number of complications in relations to BMI and smoking

	No	percentage	p value
Total complications	19		
Overweight BMI ≥ 25	11	17.18%	0.043
Active Smokers ≥ 10cig/day	10	15.625%	0.432

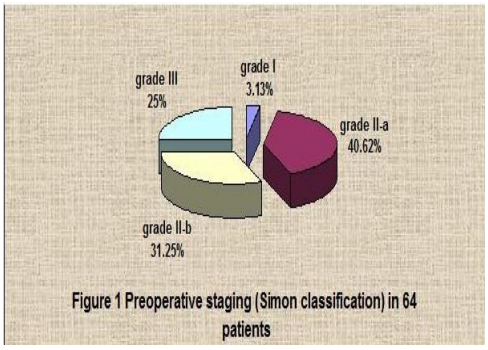

Figure 1 Preoperative staging (Simon classification) in 64 patients


Grade I


Grade IIa


Grade IIb

Grade III

Figure 2 The various grades of gynecomastia

Case 1 Case 2

Figure 3: Post operative results

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