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Surgical Treatment of Gynecomastia: Experience of the Plastic and Reconstructive Surgery Department of the Ibn Sina Hospital in Rabat and Literature Review

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Summary: **Case Report**

Gynecomastia is defined as benign enlargement of the glandular breast tissue amongst men, resulting in significant physical and psychological impact. Surgical treatment is the standard approach for persistent, symptomatic, or cosmetically disabling forms. This study aims to evaluate the results of surgical management in our department. We present a descriptive retrospective study of 8 patients operated on for gynecomastia between May 2021 and March 2024, with an average age of 25 years old. Only male patients with clinically and imaging-confirmed gynecomastia, with a postoperative follow-up of at least 6 months, were included. Our evaluation focused on clinical data, type of gynecomastia, operative techniques used, observed complications, and degree of satisfaction. Bilateral gynecomastia with predominant glandular involvement was the most common form in our cohort. Accordingly, the most used surgical technique combined glandular excision via the inferior periareolar approach and liposuction. The results were considered satisfactory from an aesthetic and psychological perspective. Minor complications included one case of hematoma, one seroma, and one superficial infection. Our results were consistent with those reported in the literature, both in terms of indications and postoperative outcomes. Properly performed surgical treatment of gynecomastia achieves satisfactory aesthetic and functional results with a low complication rate. Adapting techniques to clinical grade and rigorous patient selection are essential, although mprovements can be achieved through the integration of minimally invasive techniques and standardized assessment tools.

Keywords: Gynecomastia, Subcutaneous mastectomy, Periareolar approach, Liposuccion.

INTRODUCTION

Gynecomastia refers to the benign hypertrophy of glandular mammary tissue in men, resulting from an imbalance between the hormonal effects of estrogens and androgens on the male mammary parenchyma [1]. It is the most common form of breast pathology in men, with an estimated incidence of between 32% and 65%, depending on age groups and diagnostic criteria [2, 3].

From a pathophysiological point of view, it can be classified into three categories: physiological (linked to the neonatal, pubertal or senile period), pathological (secondary to an endocrine, tumoral or drug-related condition), or idiopathic when no cause is identified [4, 5].

Its clinical presentation varies according to the stage of development, ranging from a simple retro-nipple swelling to diffuse hypertrophy that is sometimes painful and asymmetrical. In addition to functional discomfort, gynecomastia causes major psychological repercussions, particularly in adolescence, justifying appropriate management [6].

The treatment can be medical, particularly during the early proliferative phase (≤6 months), but surgical intervention remains the gold standard in persistent, aesthetically disabling or advanced forms [7]. According to Simon's classification, there are multiple surgical techniques, ranging from simple liposuction to subcutaneous mastectomy, with or without skin plasty [8, 9].

In this context, we present our experience of the plastic surgery department of Ibn Sina University Hospital through a series of cases operated on for gynecomastia between 2021 and 2024, analyzing the indications, the techniques chosen, the aesthetic results and the complications.

The main objective of this study is to evaluate the results of surgical treatment of gynecomastia in our department, highlighting the relevance of the operative indications, the surgical techniques used and their aesthetic and functional results, in order to propose recommendations adapted to our context to optimize the surgical management of gynecomastia.

Materials and Methods

We present a descriptive retrospective study conducted in the plastic and reconstructive surgery department of Ibn Sina Hospital in Rabat. The study covers a 3-year period from May 2021 to March 2024.

- **Inclusion criteria:**

- Male patients treated for gynecomastia confirmed clinically and by imagery.
- Patients who received surgical treatment in the department during the study period.
- Complete medical records with post-operative follow-up of at least 6 months.

- **Exclusion criteria:**

- Patients with isolated pseudogynecomastia (pure lipomastia).
- Cases of gynecomastia secondary to malignant pathology.
- Incomplete files or insufficient post-operative follow-up.

- **Preoperative assessment:**

Each patient benefited from:
- A detailed interrogation to the search for signs suggestive of secondary etiologies (endocrinopathies, medication intake, addiction, etc.).
- A complete clinical examination with modified Simon classification of gynecomastia.
- A standardized biological assessment: dosage of sex hormones, FSH, LH, prolactin, βHCG.
- Breast or testicular ultrasound depending on the case (Figure 1).

- **Surgical technique:**

The choice of surgical technique was adapted to each case according to the grade of gynecomastia:
- For stages I and IIa: treatment by direct subareolar resection (lower periareolar crescent incision) (Figure 2).
- For stages IIb and III: resection combined with liposuction and, if necessary, skin plastic surgery (round block or omega type) (Figure 3 and 4).
- Use of systematic suction drains, removed on the 2nd postoperative day.

- **Post-operative follow-up:**

Patients were reviewed regularly at 1 week, 1 month, 3 months and 6 months postoperatively. The results were assessed on:
- The aesthetic aspect (symmetry, contour, scars).
- Patient satisfaction (simple visual scale).
- The existence or absence of complications (hematomas, sensory disorders, recurrence, etc.).

RESULTS

- The study involves a series of 8 patients, with an average age of 25 years (range: 18 to 38 years), 75% of whom were from an urban environment.
- The main reason for consultation was aesthetic and psychological discomfort linked to the prominence of breast tissue in men.

- Bilateral gynecomastia was observed in 85% of patients, with glandular predominance in 87.5% of cases. Simon grade IIb was the most common.
- Hormonal panels were normal in all patients.
- Ultrasound and mammography ruled out a suspicious lesion.
- According to the anatomical type:
  - ✓ Dendritic gynecomastia: 50% (Figure 1A)
  - ✓ Diffuse glandular gynecomastia: 37.5% (Figure 1B)
  - ✓ Nodular gynecomastia: 12.5% (Figure 1C)

- Regarding surgical treatment, the techniques used included:
  - ✓ Subcutaneous mastectomy alone
  - ✓ Liposuction alone
  - ✓ Combination of mastectomy and liposuction
  - ✓ Reduction mammoplasty

- The post-operative outcome was favorable in the majority of cases. However, we note:
  - ✓ 1 case of hematoma (12.5%)
  - ✓ 1 case of seroma (12.5%)
  - ✓ 1 case of wound infection (12.5%)
  - ✓ No recurrence observed during the follow-up

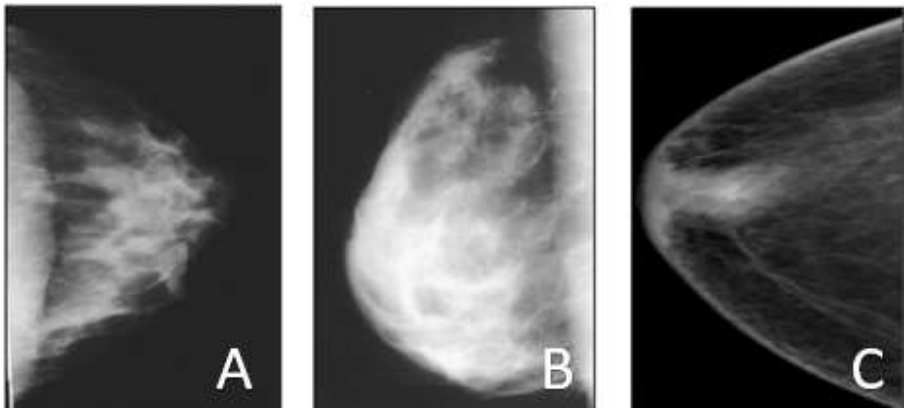

Figure 1: Exemples of our patient's mammographies. A: Dendritic gynecomastia; B: Diffuse glandular gynecomastia; C: Nodular gynecomastia

Figure 2: Pre-operative, per-operative and 3rd day post-operative pictures of a 30-year-old patient presenting with grade 2A gynecomastia of pure glandular consistency, treated by subcutaneous mastectomy using an inferior hemiperiareolar incision for the right breast and a round block technique for the left breast

Figure 3: Pre-operative, per-operative and immediate post-operative pictures of an 18-year-old patient presenting with grade 2B gynecomastia of purely glandular consistency, treated with bilateral subcutaneous mastectomy using a round block technique to correct the skin excess

Figure 4: Pre-operative, per-operative and 1 yearpost-operative pictures of a 38-year-old patient presenting with grade 2B gynecomastia of mixed consistency. Correction was performed through a combination of liposuction and subcutaneous mastectomy using a round block technique, which yielded very good results

DISCUSSION

Gynecomastia is defined as a benign proliferation of glandular mammary tissue in men, resulting from an imbalance between the stimulatory effect of estrogens and the inhibitory effect of androgens on mammary cells [10]. It should be distinguished from pseudogynecomastia, which corresponds to excess fat without a glandular component, often associated with obesity [11].

Epidemiologically, gynecomastia is very common. It affects approximately 60 to 70% of adolescents due to transitory hormonal disturbances, and approximately 30 to 60% of elderly men, in whom it is linked to a progressive decline in androgen levels [12, 13]. In Morocco, although precise statistical data are limited, the frequency observed in hospital plastic surgery departments suggests an incidence comparable to that described in the international literature [14].

The etiopathogenesis is based on an imbalance between the production, peripheral conversion or action of estrogens and androgens. This imbalance may be due to an increase in estrogens (testicular tumors, adrenal tumors, liver cirrhosis), a decrease in androgens (primary or secondary hypogonadism), or drug causes (spironolactone, anti-androgens, 5α-reductase inhibitors, anti-ulcer drugs, etc) [15, 16].

Histologically, gynecomastia is characterized by dilated mammary ducts, stromal cell hyperplasia, and increased extracellular matrix.

Identified risk factors include obesity, adolescence, aging, drug use (cannabis,

alcohol), liver or kidney failure, endocrine disorders, and certain genetic conditions (notably Klinefelter syndrome) [17, 18].

Clinically, gynecomastia manifests as a firm swelling, centered on the areola, uni- or bilateral, often painful. Thoracic asymmetry, body image disturbances and social isolation can also be symptoms pushing the patient to consult [19, 23].

Gynecomastia can be classified according to Simon's classification:
- **Grade I**: moderate hypertrophy without excess skin;
- **Grade IIa**: moderate hypertrophy with minimal excess skin;
- **Grade IIb**: moderate hypertrophy with significant excess skin;
- **Grade III**: severe hypertrophy with marked ptosis [20].

Imaging plays a central role in the assessment. Breast ultrasound is the first-line imaging to confirm the glandular nature and exclude a suspicious mass. Testicular ultrasound is recommended to rule out any hormone-secreting tumor. In case of doubt, a mammography or breast MRI can be performed [21, 22].

Management depends on the etiology, duration, clinical grade and psychological impact. Medical treatment with tamoxifen, a selective estrogen receptor modulator, can be offered in recent and painful forms, but the results are modest [24]. When gynecomastia is old or large, surgical treatment remains the gold standard. Operative techniques include:
- Liposuction alone (pure fat forms);
- Subareolar resection (via a lower periareolar route);
- Subcutaneous mastectomy with or without areola transposition;
- The transaxillary approach, more discreet [25, 26].

Postoperative complications include hematoma, areolar necrosis, sensory disturbances, hypertrophic or depressed scars, skin irregularities, and recurrence in cases of incomplete resection [27, 28].

The results of our series, involving 8 patients operated on between 2021 and 2023, are in line with the overall trends observed in the literature, both epidemiologically and therapeutically. Regarding the average age of the patients, we observed an average of 23.6 years, which is consistent with the data published by Wolter *et al*., in a series of 1,055 cases, where the majority of patients were in the 20-30 age group, with a pubertal or post-pubertal predominance of gynecomastia [29].

In our series, 7 patients presented with bilateral gynecomastia, compared to a single patient who presented with a unilateral form, which is consistent with the conclusions of Mansour *et al*., who in their 30-year experience, reported a clear predominance of the bilateral form compared to the unilateral form [30].

The Simon classification was applied to all cases. This approach is also used as a reference in the majority of published series, notably that of Cordova and Moschella, who defined their surgical strategy based on the Simon grade and glandular volume [31].

Therapeutically, the combination of liposuction and glandular excision via the inferior periareolar approach was adopted for six patients in our series. This technique remains the most common option in recent publications, offering a good compromise between aesthetic efficacy and minimal morbidity [32].

No cases of major intra- or immediate postoperative complications were noted. This very low rate of complications is consistent with the data reported by Gusenoff *et al*., whose results show an overall rate of complications of less than 5%, particularly in the case of good patient selection and appropriate technique [33].

Regarding the aesthetic results, the follow-up of our series is still limited, but the first results are encouraging, with subjective satisfaction expressed by the patients. This data is corroborated by Fagerlund *et al*., who demonstrated a significant improvement in quality of life and body esteem after surgical treatment of gynecomastia [34].

Thus, our experience appears to be in line with current standards in the literature, both in terms of diagnostic and therapeutic management.

In our series, we favored subcutaneous mastectomy techniques via the lower hemi-periareolar approach, associated in some cases with gentle liposuction. This approach has the advantage of a discreet and well-hidden scar at the level of the areola, as well as a direct approach to the glandular tissue allowing a complete and controlled excision. The combination with liposuction also offers better modeling of the mammary cone, particularly in patients with an associated adipose component [35, 36].

However, this technique has certain limitations. The difficulty of peripheral defatting can lead to chest disharmony, especially in patients with significant skin excess. In addition, the absence of drains in certain cases can promote the occurrence of a postoperative hematoma. Finally, the risk of areolar depression or irregularity of the skin relief remains present if the excision is too aggressive or poorly symmetrical [37, 38].

Our study has some limitations. The main being the small sample size, with a series of only eight patients, which limits the statistical power and generalization of the results. In addition, the duration of postoperative follow-up, although allowing the evaluation of immediate and early results, remains insufficient to fully judge the long-term aesthetic result or possible glandular recurrences [39].

Furthermore, the lack of assessment of quality of life by validated scores (type SF-36 or BREAST-Q) constitutes a significant gap, particularly in the context of a pathology with marked psychological repercussions such as gynecomastia [40]. Finally, no standardized photographic protocol or objective measurement of the removed glandular volume has been established, limiting the scientific reproducibility of the study [41].

It is also important to mention that the prospects for improvement in the surgical management of gynecomastia involve the integration of minimally invasive techniques and modern technologies. The use of ultrasound-assisted liposuction (UAL) or radiofrequency allows for more effective emulsification of adipose tissue, greater skin retraction, and reduced tissue trauma [42]. Also netting, a technique consisting of creating a grid of dermal tunnels, improves the distribution of skin retraction forces, providing a better chest contour, especially in cases of moderate skin laxity [43].

Furthermore, new endoscopic or small lateral incision approaches have the advantage of minimizing visible scars, while allowing satisfactory glandular excision, particularly in persistent pubertal forms or moderate bilateral gynecomastia [44]. At last, the integration of long-term follow-up protocols and post-operative quality of life assessment tools is essential to improve standards of care [45].

CONCLUSION

Gynecomastia is a common condition in men, causing significant impairment in body image and quality of life, particularly in adolescents and young adults. Our study, conducted in the plastic and reconstructive surgery department of Ibn Sina Hospital in Rabat, confirms the value of surgical treatment in advanced, persistent, or psychologically disabling forms.

The therapeutic approach combining glandular excision via the lower periareolar route and targeted liposuction has proven

effective, with satisfactory aesthetic results and a low complication rate. However, certain methodological limitations, including the small sample size and the lack of long-term follow-up, limit the scope of the conclusions.

In the future, the integration of minimally invasive techniques, the adoption of standardized quality of life assessment tools, and the creation of multicenter cohorts will help optimize the management of this pathology. Better standardization of indications, surgical protocols, and evaluation criteria is also desirable to improve the reproducibility and comparability of results nationally and internationally.

Consent

Written Informed consent was obtained from the patient for the publication of her case as a report and was documented in the patient's medical notes. A copy of the written informed consent would be available for review by the editor-in-chief of the journal on request.

Conflicts of Interest: The authors declare that there are no conflicts of interest regarding the publication of this case report.

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