



A New Clinical Classification for Gynecomastia Management and Predictive Outcome

Sudhanshu Punia¹ Amit Gupta¹

¹ Divine Cosmetic Surgery, New Delhi, India

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Address for correspondence Sudhanshu Punia, MBBS, DNB (General Surgery), MCh (Plastic Surgery), Consultant, Divine Cosmetic Surgery, New Delhi, India (e-mail: sudhanshupunia@gmail.com).

Abstract

Aim and objectives The aim of this study is to propose a new clinical classification for gynecomastia management based on our experience.

Introduction We believe that the prevalent gynecomastia classifications need to be more detailed. Several key aspects that we noticed have either been incompletely represented or not mentioned at all, leaving them unclassified.

Materials and Methods This study was conducted at the authors' center over 24 months from May 2020 to May 2022, and included 1,571 patients who were classified and treated as per our new classifications and small iterations were done to strengthen the classification.

Results We were able to better classify our patients and previously unclassified situations. Skin sagging or a potential for skin sagging and puffy nipples were managed better. This classification allowed recommendation of each step of the procedure, resulting in high patient satisfaction, as all problem areas were sorted and outcome that was explained to them preoperatively was clearly visible postoperatively.

Conclusion The new clinical classification for gynecomastia is a simple, clinical, straightforward, comprehensive, grading system, the use of which has helped the authors and the team in achieving precise and predictable results while ensuring patient satisfaction.

Keywords

- gynecomastia
- gynecomastia classification
- puffy nipple
- male breast enlargement

Introduction

Gynecomastia is a common aesthetic problem encountered¹ and is the most common benign condition to occur in the male breast.² A study showed that 36% of adult young men and 57% of older men have some form of gynecomastia³; therefore, this implies it to be as common as one in every three adult men and one in every two elderly men.³ In our practice, we consult close to 200 patients every month, and speak to almost 1,000 patients monthly via telephonic consultation.

The definition does not include the size, volume measurement of the gland, or the amount of fat. Patients can have

more than 1 L of fat in each breast and less than 100 g of gland tissue or 500 mL of fat and 400 g of gland tissue. Thus, the definition does not have a correlation with the composition of the male breast. Therefore, enlargement of the breast, whether it is due to fat or gland, that gives the appearance of a female breast is sufficient to call it a gynecomastia. Histopathology of gynecomastia specimens show fat and glandular elements in varying proportions.^{4,5}

Classifications like Simon's classification⁶ do not mention about puffy nipples, which are only glands, whereas Rohrich's classification⁷ includes ptosis in higher grades only. Hence, we believe that these classifications are incomplete

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and need to be more detailed to cater to the Indian population and possibly worldwide as well. A new classification should encompass the entire spectrum of the problem so that apt managements can be done for them all.

Materials and Methods

The authors conducted this study at their Aesthetic Surgery Center in India over a period of 24 months from May 2020 to May 2022, and included 1,571 patients whose age ranged from 15 to 56 years. All patients were classified with the existing most commonly used Rohrich's⁷ classification along with our proposed classification. Similarities were noted in different cases with the same proposed grade. Some parameters were used to iterate the new classification:

- Patient demographics were recorded and divided into various age groups and subsequent grades as per the proposed classification.
- Infiltration volumes were recorded in each grade in the first 500 cases, and then a proposal to infiltrate calculated "X" amount of fluid for each stage was made.
- Volume of lipoaspirate was recorded in each case in the first 500 cases to authenticate the predicted lipoaspirate in each grade.
- The skin lift procedure was assessed for its efficacy in reducing postoperative sagging and healing delay. This was done in the first 25 cases of skin lift and then it became a standard practice for grades IIb, IIIb, and IVb. Skin lift was also used to correct minor asymmetries. The procedure involved marking the new position of the areola, de-epithelizing the skin from the marked segment, removing the gland from there, and re-suturing the areola in its elevated position in two layers.

We assessed the classification on the following parameters: ability to correctly predict the infiltration amount for each grade, the predictability of results, how much lipoaspirate can be expected in each grade, and the ability to predict the need for skin ptosis correction with the "U lift" procedure.

While classifying the patients and analyzing data, the following lacunae were noted:

- A peculiar subset comprising nearly 8 to 10% of gynecomastia patients presented with, what they call, a puffy nipple, which is areolar enlargement without any major breast enlargement, which gives them the perception of gynecomastia. They have enlarged glands that cause an outward projection of the nipple areola complex. Such patients are commonly advised by the family/doctors to exercise expecting spontaneous reduction. However, there is a severe psychological impact on these patients due to their clinical condition, resulting in low self-esteem. This needs to be addressed in classification for gynecomastia. One article defined gynecomastia as the presence of greater than 2 cm of palpable, firm, subareolar gland and ductal breast tissue.⁸ This definition is controversial in our view, since in many patients, the

palpable firmness may be less than 1 cm and sometimes none at all.

- Patients with skin laxity/ptosis need to be addressed, even if the breast enlargement is not very severe. As per current classifications, these are categorized as grade III, where it is taken for granted that they have a large amount of fat and gland. This may not be true, and often grade II patients have severe laxity that needs surgical correction.
- As per current classifications, grade II patients cannot have ptosis, but this is not true. We have a large subset of patients who have less than 500 g of fat/gland, yet have reasonable ptosis to warrant intervention and correction.
- The differentiation of grade III and IV solely based on ptosis is not justified. There are patients who have 500 g of tissue and have severe ptosis, and there are patients with more than 1,500 g of tissue and yet have negligible ptosis. These patients do not need any special treatment for this ptosis. We have created a complete subclassification to address ptosis along with tissue proposed to be removed in an easy-to-follow manner. In our classification, we have clearly divided grade III into two parts: grade IIIa without a need to address ptosis and grade IIIb with a need for ptosis correction with the U lift procedure (supra-areolar skin lift).
- Grade IV as per current classification is severe hypertrophy, with grade II or III ptosis. This implies that ptosis can only occur in grade III or IV. We have seen severe ptosis in lower grades of gynecomastia and minimal or no ptosis in higher grades. Therefore, grade IV is redundant in its definition.
- In the classifications, emphasis is laid on the weight of tissue. But is it fat or gland? Has the fat been weighed? How much decantation or fat preparation was carried out to measure liposuctioned fat in grams? Or are the authors referring only to glands? In such a scenario, is the volume of fat not important in the classification? We have observed that defining the classification with the volume of fat is far easier and better quantifiable since in 80% of patients, the gland amount removed is usually less than 100 g. Only in patients with severe or moderate ptosis does the amount of gland exceed 200 g, and is rarely more than 750 g each side. In the last 2 years, during the study period, we have had only three patients who have had more than 500 g of gland apart from the huge amount of fat aspirated. We believe that the amount of gland in grams has no relevance except possibly an indicator of degree of ptosis.
- Difference between the breast and chest: In a large majority of grade III and IV cases, there is the presence of breast rolls or fat in the form of rolls below the axilla. There is no mention of this fact in any of the previous classifications. We believe that unless the side rolls are tackled with liposuction, the patient does not get a complete look, and in fact the chest appears broad when the breast has been liposuctioned. That is why the differentiation between volume of lipoaspirate and weight of tissue becomes more important.

Table 1 New proposed gynecomastia classification

Grade	Description of grade	Explanation	Infiltration volume + treatment plan
1a	Puffy nipple	No obvious problem visible except stretched areola with a button type feel	50 mL + excision in LA from infra-areolar incision
1b	Minor breast enlargement	The breast is visibly bigger, limited fat, 250 mL with higher amount of fibroglandular tissue	200 mL + suction and gland excision in LA from infra-areolar incision and stab in the inframammary area
2a	Moderate breast enlargement	The fat component is between 250 and 500g. No ptosis expected	500 mL + suction and stab incision in the axillary area and gland excision in GA from the infra-areolar incision
2b	Moderate breast enlargement with ptosis	The fat component is between 250 and 500 g. Large gland components in the form of a conical breast U lift needed for ptosis	500 mL + suction from stab incision in the axillary area and gland excision + U skin lift from the supra-areolar approach in GA
3a	Large chest enlargement with side rolls without ptosis	Chest is enlarged. Fat component is 500–750 g. Fat in breast rolls. No ptosis expected	1,000 mL (each side and axilla) + suction from stab incision in the axillary area and gland excision in GA
3b	Large severe chest enlargement with side rolls with ptosis expected	Chest is enlarged, fat component + axilla rolls + ptosis expected/present	1,000 mL (each side and axilla) + suction from stab incision in the axillary area and gland excision + U skin lift from the supra-areolar approach in GA
4a	Severe chest enlargement without significant ptosis	Chest is severely enlarged, >750 g fat component + axilla rolls without significant ptosis. No need for skin lift	1,500 mL (each side and axilla) + suction from stab incision in the axillary area and gland excision in GA
4b	Severe chest enlargement with significant ptosis. May need second stage for tackling excess skin or same stage axillary rolls excision	Chest is very big, large breast rolls, significant ptosis requiring skin lift procedure	1,500 mL (each side and axilla) + suction from stab incision in axillary area and gland excision + U skin lift from the supra-areolar approach in GA. Second stage O lift (circumferential skin mastopexy) may be needed

Abbreviations: LA, local anesthesia; GA, general anesthesia.

- What is a small, moderate, or marked gland enlargement in terms of volume? Subjectivity was noted depending upon who classified the patient. Thus, we set out to correct this anomaly.

We included not only breast tissue but also side rolls, ptosis, skin laxity, and puffy nipple for classification as we are treating the chest and not the breasts alone. This is the main basis of our new clinical classification for gynecomastia (► **Table 1**).

A pictorial representation with front and side views are also added (► **Figs. 1–4**).

Results

The age range of the 1,571 patients who were included for data collection was 15 to 56 years. They were segregated into the following groups per their age: 15 to 18 years (adolescent), 19 to 40 years (young), and 41 to 60 years (older). The majority of the patients were in the young age group.

With the use of the proposed classification, the volume of infiltrate and lipoaspirate was correctly predicted, with all values having up to 95% positive prediction. A standardization was developed for all grades of gynecomastia and as the chest was treated and not the breast, patient satisfaction was

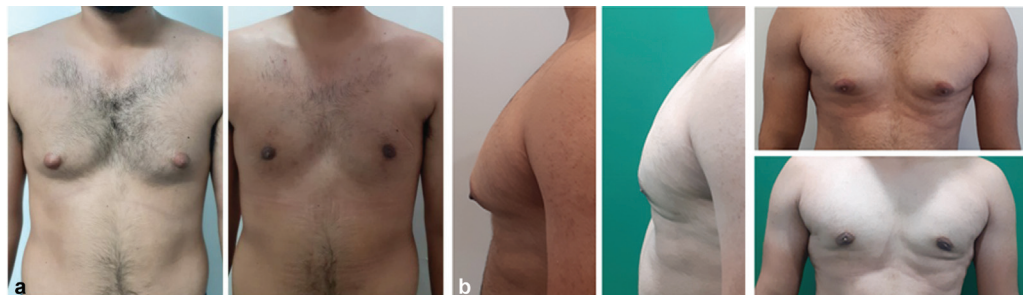


Fig. 1 (a) Grade 1a - anterior view showing only subareolar fullness i.e., puffy nipple, pre and postoperative view. (b) Grade 1b - lateral and anterior pre and post operative view with minor breast enlargement.



Fig. 2 (a) Grade 2a - lateral and anterior pre and post operative views of moderate breast enlargement. (b) Grade 2b - lateral and anterior pre and post operative views of moderate breast enlargement with ptosis.



Fig. 3 (a) Grade 3a - lateral and anterior pre and post operative views of large chest enlargement. (b) Grade 3b - lateral and anterior pre and post operative views of large chest enlargement with ptosis.



Fig. 4 (a) Grade 4a - lateral and anterior views of pre and post operative severe chest enlargement. (b) Grade 4b - lateral and anterior views of pre and post operative severe chest enlargement with ptosis.

high as all problem areas were taken care of and the outcome that was explained to them preoperatively was clearly visible postoperatively.

Discussion

A widely used classification is Simon's classification system,⁶ which uses the physical criteria for classification. The classi-

fication is based on the amount of tissue and skin redundancy. In 1973, they identified four grades of gynecomastia:

- Grade I: small enlargement without skin excess.
- Grade IIa: moderate enlargement without skin excess.
- Grade IIb: moderate enlargement with minor skin excess.
- Grade III: marked enlargement with excess skin and mimicking female breast ptosis.

Clinically, it has several grades that range from simple areolar protrusion to breasts with a feminine appearance.

The classification by Rohrich⁷ is based on tissue hypertrophy and nature of tissue, i.e., glandular or fibrous. They have proposed a similar classification of gynecomastia with four grades of severity:

- Grade I: minimal hypertrophy (<250 g) without ptosis.
- Grade II: moderate hypertrophy (250–500 g) without ptosis.
- Grade III: severe hypertrophy (>500 g) with grade I ptosis.
- Grade IV: severe hypertrophy with grade II or III ptosis.

Similarly, Ratnam¹ proposed a classification based on skin elasticity and ptosis. Various classifications such as Cohen's, Barros's,⁹ Gusenoff's,¹⁰ etc., take into account the amount of tissue, volume of tissue, presence of lateral rolls, relationship with the nipple areola complex and inframammary crease, etc. Their approach is rather simplistic, and they do not address the myriad forms of gynecomastia that can exist in different patients or even the same patient.

Puffy nipples were treated with a simple local anesthesia procedure to only remove glandular tissue. As the majority of patients attempt weight loss to cure themselves of gynecomastia, there is reduction of their grade, and also results in variable amounts of sagging. Contrary to common belief, skin does not

Table 2 Comparison table

Grade	Rohrich's classification	New proposed classification
I	Minimal hypertrophy (<250 g) without ptosis	a: Puffy nipple b: Minor ranging up to <250 g enlargement
II	Moderate hypertrophy (250–500 g) without ptosis	a: 250–500 g without ptosis b: With ptosis
III	Severe hypertrophy (>500 g) with grade I ptosis	a: 500–750 g with side rolls b: With axilla rolls, side rolls, and ptosis
IV	Severe hypertrophy with grade II or III ptosis	a: >750 g with side rolls b: With ptosis

retract well in these situations, and they may be left with some sagging. U lift helps tighten the skin in these situations and further raise the level of the nipple–areola complex. We have further noticed a reduction in the redundancy of skin in the inframammary fold in such patients, as is very commonly observed in gynecomastia in weight loss patients.

Asymmetric gynecomastia treatment can be remarkably different for both sides.

A new classification for gynecomastia (►Table 1) was devised to make a practically relevant classification that systematically covers the mentioned lacunae and helps in outlining the management. It also has a suggested treatment plan for standardization.

Rohrich's classification and the proposed new classification were compared (►Table 2).

In the study, we were able to demonstrate that while using the proposed classification correct prediction of infiltration volume and lipoaspirate could be done (►Table 3). This assisted us in incorporating these values as standard in the classification. This was seen even when patients were grouped age wise (►Table 4).

On using the new classification for gynecomastia, the following advantages were noted:

- No need for sonography for assessment: Since a description of each grade is present, there was no need to quantify the gynecomastia volume with ultrasound.

Table 3 Grade-wise correct prediction

Grade	Correct prediction of infiltration volume (%)	Corrected prediction of lipoaspirate volume (%)
1a	94	96
1b	95.2	96.8
2a	97.1	96.9
2b	96.6	95.4
3a	91.5	95.8
3b	98.2	97.3
4a	97.7	96.3
4b	97.9	95.4

Table 4 Age-wise patient correct prediction

Age group (y)	No. of patients	Correct infiltration volume prediction	Correct lipoaspirate volume prediction
15–18	45	Yes	Yes
19–40	1224	Yes	Yes
40–56	302	Yes	Yes

- It is readily teachable: Communication with surgeons, nursing, and support staff became clearer and crisp. From preparation of infiltration fluid to plan of anesthesia, instrument requirements became more streamlined.
- Standardized protocols: This allowed less wastage of time and resources, as the whole team was aware of the protocol.
- Predictable results: After following the new grading system, estimated volume and aspirated volume of lipoaspirate were comparable. It was noted that the results were reproducible, predictable for new patients, and could be successfully used for visual reinforcement for patients' enquiries regarding outcomes.

Patients with ptosis or asymmetrical chests were also included, and predictable results could be obtained for them.

The only lacunae noted in the new classification, which has not been addressed in any previous classification as well, are clinical situations where the chest is composed of predominantly heavy glandular tissue. This is common in patients who take steroids for bodybuilding.¹¹ The chest can be very big, and more than 50% of the chest could be due to the gland element. Currently, we add that volume to the fat aspirated. We are working on incorporation of this in the classification, in terms of pre- and postsurgical classification of gynecomastia.

Conclusion

Our new classification for gynecomastia is a simple, straightforward, comprehensive grading system, the use of which has helped the authors and the team in achieving precise and

predictable results and ensuring patient satisfaction. This classification allowed us to recommend each step of the procedure, such as quantity of infiltration according to the grade, expected adipose component, and addressing skin excess. Therefore, we believe the use of this classification ensures great outcomes and functional ease.

Conflict of Interest

None declared.

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