

## A New Suggested Comprehensive Classification for Breast Asymmetry

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### ABSTRACT

**Background:** Minimal breast asymmetry is a normal finding in 88% of women, however considerable breast asymmetries constitute a major concern for patients. These asymmetries can be classified according to their etiology into three types, primary, secondary and tertiary. In the literature there is no definite classification that can gather all breast asymmetries and correlate them with the patients' presentation.

**Objective:** The authors are going to present their experience in management of breast asymmetry. They are going to suggest a new classification for this deformity based on the patients' presentation and the decision making for the management protocol respecting the patient's aesthetic goals.

**Patients and Methods:** All women who had breast asymmetry were reviewed and analyzed. The different etiological factors, the patients' presentation, and the impact of this on the decision making were studied.

**Results:** Four groups of patients were identified: First group, included patients having evident asymmetries due to definite causes. Second group, included patients having variable degrees of asymmetry without a definite cause. Third group, included patients having minimal asymmetries that were discovered accidentally during consultation for aesthetic breast surgery. The fourth group included patients having asymmetries secondary to aesthetic breast surgery.

**Conclusion:** A new comprehensive classification is suggested for breast asymmetry. The proposed classification is a reliable method for assessment and treatment of breast asymmetries.

**Key Words:** *Aesthetic breast surgery – breast asymmetry – classification.*

**Ethical Committee:** Ethical approval for the study was granted from the institutional review board of Ain Shams Faculty of Medicine.

**Disclosure:** No conflict of interest.

### INTRODUCTION

Breast asymmetry is a very confusing term that includes a wide range of deformities. Eighty eight percent of women have natural breast asymmetries.

This asymmetry may be in the size, shape, nipple-areola complex, inframammary fold or in the chest wall and associated musculoskeletal anatomy. Ninety-two percent have at least two parameters of asymmetry and 72 percent have at least three parameters of asymmetry [1].

Reviewing the literature showed that there are many classifications for breast asymmetry [2-4]. Most of them are mainly based on etiological or morphological characteristics of the deformity [5]. In these classifications, the asymmetry is divided into three groups: Primary breast asymmetry due to congenital causes, secondary breast asymmetry due to developmental causes and tertiary breast asymmetry due to acquired causes.

The most recent classification for breast asymmetry was proposed by Vita et al., [6]. This classification is different from the other classifications in three aspects. The first one is that it considered developmental breast asymmetries as the only and the real type of asymmetry. Other types of asymmetries due to congenital, acquired or tuberous breasts were not considered real asymmetry and were excluded from this classification. The second aspect classified patients into three groups based on the degree of awareness of their asymmetry. The first group included patients without preoperative awareness of the difference and this was the first referral for asymptomatic breast asymmetry accidentally discovered in aesthetic breast surgery patients. The third aspect suggested a specific treatment algorithm according to breast size, grade of ptosis, and patient's desire and reported the satisfaction rate among the different three groups.

However, there are some asymmetries that did not fit into any of these classifications like those seen in aesthetic breast surgery patients. Most of the classifications are relying on the etiological causes and not considering the severity of the

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problem or the need of the other breast for a concomitant surgery. The impact of the different types of asymmetries on the decision making for surgery is not well documented.

For these reasons we try to put a more global classification for breast asymmetry which correlates the patient's presentation with the decision making to correct the deformity.

**PATIENTS AND METHODS**

This is a retrospective study including all patients presented for aesthetic or reconstructive breast surgery in the last 5 years. The data were collected from the records of Ain Shams University Hospitals, Nasr City Insurance Hospital, Nasr institute and a private clinic. Ethical approval for the study was granted from the institutional review board of Ain Shams Faculty of Medicine.

*The most important points to be reviewed were the following:*

- Age of the patient.
- The marital status.
- The timing of presentation.
- The main concern of the patient.
- If the patient had a history of any prior breast surgery.
- The symmetry of both breasts.
- If there was any asymmetry; the cause (etiology), duration and the degree of this asymmetry.
- Whether the patient came for aesthetic or reconstructive procedure.
- If the patient came for aesthetic procedure.

A- What was the type of this procedure, augmentation, reduction, mastopexy, augmentation mastopexy or breast symmetrization in asymmetric breasts.

B- For patients coming for symmetrization of asymmetric breasts, more additional information was required like which breast was the normal (sound) one; if there was any underlying chest wall deformities and the patient's psychology and expectations.

- If the patient came for reconstructive procedure.
  - The etiology of the patient's complaint.
  - The patient's concern about the contralateral breast.

The decision making for every patient was reviewed and analyzed. The impact of the suggested method of classification on this decision making was correlated.

**RESULTS**

The total number of patients was 592 with an average of 118 patients per year. Their ages ranged from 14 to 67 years. Seventy nine of them requested primary aesthetic breast surgery and they had no asymmetry. By excluding these 79 patients, the number of patients presented with asymmetry was 513 patients (Table 1).

Table (1): Showing the total numbers of the studied breast surgery patients.

Total number of patients in the study	Number of patients with no asymmetry	Number of patients with breast asymmetry
592 patients	79 patients	513 patients

These five hundred and thirteen patients were categorized into two categories; In the first category (243 patients), the asymmetry was due to underlying pathological breast deformities and the patients came for a definite reconstructive procedure to correct this asymmetry. In the second category (270 patients) the asymmetry was not due to any underlying pathological deformity and the patients came mainly for aesthetic purposes They were further subdivided into three subcategories; patients who had variable degree of frank asymmetry without a definite cause (48 patients), and patients who came for traditional aesthetic breast surgery (194 patients) but had minimal degree of asymmetry that was discovered by the examining surgeon. Patients who came with breast asymmetry after aesthetic breast surgery due to dissatisfaction with the primary procedure (28 patients), Table (2).

Table (2): Showing the categories and the numbers of breast asymmetry patients.

Patient Categories	No. of patients	Total No. of patients with asymmetry	Percentage of total
- Breast asymmetry due to definite pathological reasons.	243	513	47%
- Breast asymmetry without definite cause.	48	513	9%
- Primary aesthetic breast surgery patients with minimal asymmetry discovered by the examining surgeons.	194	513	38%
- Breast asymmetry secondary to aesthetic breast surgery.	28	513	6%
	513	513	100

According to the previous data four groups of patients could be identified:

*First group:*

Patients having evident asymmetries due to well defined cause identified by the patients. This group included 243 patients (47 %). Reconstruction of the affected breast was the main patient's concern. The causes of asymmetry were mainly acquired (Tertiary) and may be congenital Table (3).

Table (3): Showing the causes of pathological asymmetries.

Causes of asymmetry	No. of patients
<i>Congenital:</i>	
Poland syndrome	8
Other congenital breast anomalies	7
Trauma	1
Infection	2
<i>Burns:</i>	
Unilateral	57
Bilateral	43
<i>Neoplastic:</i>	
Hamartomata's malformation	2
Benign tumours	17
Neglected malignant tumours	3
<i>Post-Surgical:</i>	
Excision of benign tumours	14
Post mastectomy	89

Post-burn breast deformities were the most common etiological cause. They account for 100 patients from the total number. They had variable degrees of asymmetry and may be unilateral (57 patients) or bilateral (43 patients). The severity of the deformities was more when they occur pre-pubertal especially with deep burns affecting the mammary buds. Different reconstructive procedures including release by skin grafts, local flaps, myocutaneous flaps including the Latissimus dorsi and TRAM, tissue expanders and breast reduction techniques were all applied to correct such deformities. One breast was managed in unilateral cases and both breasts were managed in bilateral cases. In unilateral cases, the other sound breast may be operated upon to get better symmetry.

In neoplastic cases the surgery aimed mainly for excision of the tumour (Fig. 1-A,B). Out of the 17 cases with benign breast tumours like fibroadenoma, ten patients asked for removal of the tumours only, while seven requested contralateral breast surgery for better breast symmetry. Four of them insisted to do the two procedures simultaneously.

Post-surgical breast asymmetry account for 103 cases, 89 of them were due to different types of

mastectomy for malignant breast tumours. These cases were managed by the traditional methods of breast reconstruction including autologous and prosthetic reconstruction. Only one third of these patients requested contralateral breast surgery for better symmetry after reconstruction. All patients needed at least two sessions, but the number reached up to 4 sessions in some patients.

In the other 14 patients, the asymmetry was mainly due to excision of a benign breast lesion at a very young age before puberty. It varied from simple difference in the breast volume (Fig. 2-A) to a more complicated presentation including areola nipple deformities and this was dependant on the pathology and depth of the lesion (Fig. 2-B).

*Second group:*

Patients having variable degrees of asymmetries without defined causes (Real or proper breast asymmetry). Breast asymmetry was the main patient's concern. This group included 48 patients (9%). They were presented after puberty after complete development of breast growth. In 22 of these patients (46%), the asymmetry was due to a classic tuberous breast deformity of variable degree (Fig. 3).

In the other 26 patients (54%) there was no apparent cause for the deformity (Fig. 4). Five categories were identified:

- One hypoplastic breast, one normal breast.
- Both breasts hypoplastic & unequal in size.
- One hypertrophic breast, one normal breast.
- Both breasts hypertrophic & unequal in size.
- One hypoplastic breast, one hypertrophic breast.

Every case was managed individually. Different surgical procedures like fat injection, reduction, augmentation, mastopexy or combination of more than one technique were done for one or both breasts (Fig. 5).

*Third Group:*

This group included a total number of 194 patients who came mainly for aesthetic breast procedures. They had minimal asymmetry but it was not the main patient's concern.

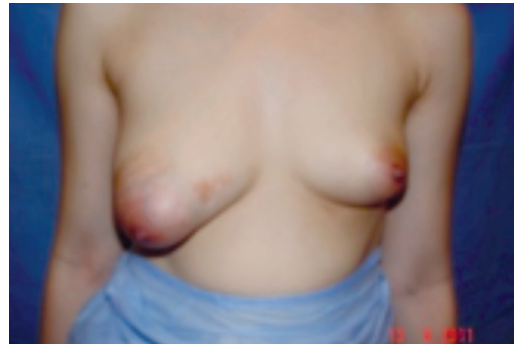
These asymmetries were discovered by the examining surgeons. Their number constituted 38% of the total number of asymmetries. These patients were distributed as follows; augmentation (99 patients), reduction (42 patients), mastopexy (29 patients) and augmentation mastopexy (24 patients) Fig. (6).

The overall number of patients who came for primary aesthetic procedures was 273 but 79 of them (29%) had symmetrical breast as already

mentioned and was excluded from the study and the remaining 194 (71%) were only included in the study.



(A): Due to Giant fibroadenoma of the left breast.



(B): Due to fibroadenoma of the right breast.

Fig. (1): Acquired breast asymmetry.



(A): Secondary to excision of left breast lipoma at puberty.



(B): Asymmetry in the breast volume and areola-nipple complex of the left breast secondary to excision of vascular lesion of the breast in infancy.

Fig. (2): Acquired breast asymmetry.

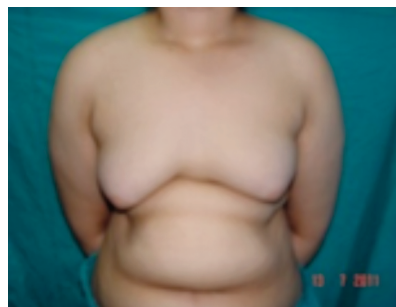


Fig. (3): Showing true breast asymmetry due to different presentations of tuberous breast deformities.



Fig. (4): Showing true breast asymmetry without apparent cause.



Fig. (5): Preoperative and postoperative front, oblique lateral and lateral views for patient having proper breast asymmetry.



(A): For augmentation mammoplasty. (B): For reduction mammoplasty. (C): For mastopexy.

Fig. (6): Patients coming for primary aesthetic breast surgery with minimal asymmetry.

**Fourth Group:**

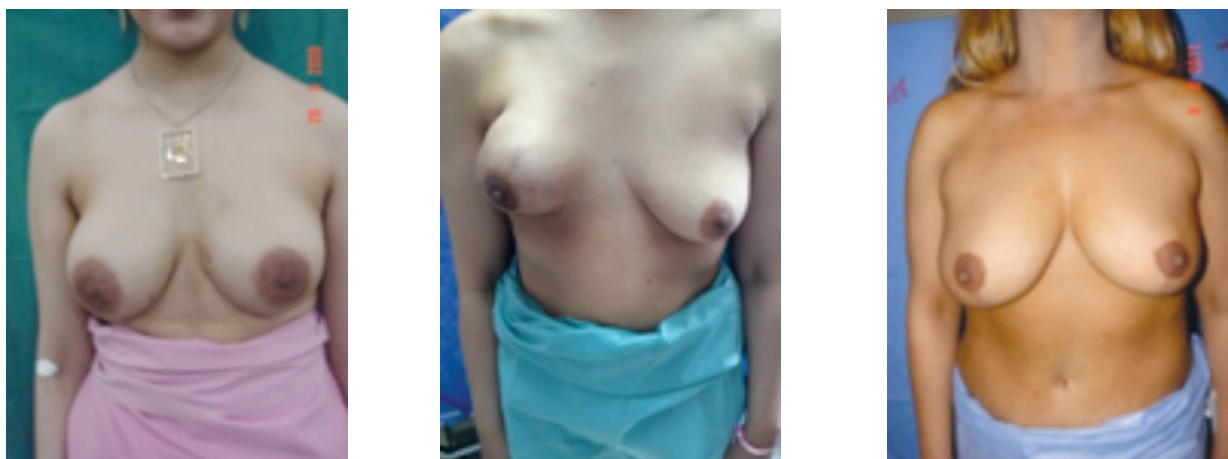
Patients developed breast asymmetries following aesthetic breast surgery. They gave history of the primary procedure and were not satisfied with the results. The total number of these asymmetries was 28 out of 194 patients (14%). These asymmetries varied from very minimal to well obvious deformities. In augmentation mammoplasty they occurred in 8 out of 99 patients (9%). In four of them this asymmetry was in the volume due to missing of an already present asymmetry that was aggravated by surgery. In the other 4 patients, it was due to late occurrence of capsular contracture. In reduction mammoplasty the asymmetries were in volume, shape and areola-nipple position. It occurred in 11 out of 42 patients (26%). In mastopexy it occurred in 3 out of 29 patients (10%). In augmentation mastopexy it occurred in 6 out of 24 patients (25%). The percentage of patients developing breast asymmetries after performing

different types of aesthetic breast surgery is shown in Table (4) and Fig. (7).

A summary for the four groups is shown in Table (5).

Table (4): Showing the number and percentage of patients developing secondary breast asymmetry after aesthetic breast surgery.

Type of aesthetic procedure	No. of patients	No of patients with 2ry asymmetry	%
Augmentation mammo-plasty	99	8	9
Reduction mammoplasty	42	11	26
Mastopexy	29	3	10
Augmentation mastopexy	24	6	25
	194	28	15



(A): Following augmentation mammo-plasty. (B): Following capsular contracture after augmentation mammoplasty. (C): Following reduction mammoplasty.

Fig. (7): Patients having secondary breast asymmetry following aesthetic breast surgery.

Table (5): Showing the data of the four groups of asymmetric breast patients.

Group	Aetiology	No.	%	Affected breast	Prior Surgery	Age of presentation	Decision making	No. of Required surgeries	No. of operated breasts
First Group (Evident Breast Asymmetry)	Acquired or Congenital	243	47	Unilateral	-/+	Any Age	Straight forward with some exceptions	One or more	One or occasionally two
Second Group (Real or proper Breast Asymmetry)	Developmental	48	9	Uni-or bilateral	-	Puberty	Very difficult	One or more	One or two
Third Group (Aesthetic Breast Asymmetry)	Physiological (Pregnancy, Delivery, Menopause)	194	38	Bilateral	-	Adult	Straightforward	One	Two
Fourth Group (Induced Breast Asymmetry)	Iatrogenic	28	6	Uni-or bilateral	+	Adult	Difficult	One or more	One or two

## DISCUSSION

Breast asymmetry is a very wide term that includes a wide spectrum of deformities. One of the earliest classification for breast asymmetries was suggested by Maliniac [2]. Vandebussche [4] reviewed 150 patients with breast asymmetry and classified them into four main groups with 3 sub-groups within each one; true malformities asymmetry of breast; precocious primary asymmetry of breast; secondary or progressive acquired breast asymmetry; and tertiary or induced breast asymmetry. In reviewing this classification, it added some items like presence of obesity in the sub-groups which actually has no impact on the decision making for managing the deformity. Though it included asymmetry secondary to asymmetrical breast reduction surgery. It did not mention any asymmetry occurring in other aesthetic procedures like augmentation, mastopexy or augmentation mastopexy. It did not also include asymmetry secondary to tuberous breast deformity which was not properly recognized at that time. It did not also refer to patients who come for aesthetic breast surgery and had minimal natural asymmetries.

Over time, several classifications of breast asymmetries and treatment protocols have been proposed which are mainly based on etiological or morphological characteristics of the deformity [2-5].

These asymmetries can be classified according to the etiology into three types; primary due to congenital causes, secondary due to developmental causes and tertiary due to acquired causes. The

nomenclature (terminology) is confusing and there is no sharp demarcation between the different groups. A second point was that some asymmetries like unilateral or bilateral asymmetrical capsular contractures occurring after augmentation or augmentation mastopexy were not included in any of these classifications. Lastly, there was no classification correlating the patient's presentation with the decision making for management of such a deformity.

For these reasons we tried to present a more global and comprehensive classification that depends mainly on the patient's presentation rather than on the morphological and etiological causes of the asymmetries. We suggested classification of breast asymmetry patients into four groups. We tried to demonstrate the etiological factor, the patient's presentation, the number, and the percentage of the patients in each group First group (Evident Breast Asymmetry EBA): This group included patients with well evident asymmetries. This was the largest group and constituted about 47% of breast asymmetry patients. The aetiology of the deformity is well recognized by the patient and it is mainly due to acquired causes like burn, tumour or surgery, etc. Rarely it may be due to congenital causes like Poland Syndrome if there is gross difference between the two-breast size. We don't prefer to specify a separate group for the congenital breast anomalies as described by Nahai [5] as in many of these deformities there is no obvious discrepancy between the breast volume and in congenital nipple deformities the difference was mostly trivial and even did not warrant surgical intervention. Though this group was the most

heterogeneous one due to the variability of the aetiological factors, yet the decision making was very simple and straightforward as the reconstruction was mainly for one breast which was evidently affected and easily recognized by the patient and the surgeon. Both breasts may be operated upon as in patients with bilateral burned breasts. Also, contralateral breast surgery may be optional as requested by some patients for better symmetry.

However, in few numbers of patients who had benign breast tumors and requested simultaneous excision of the tumors and contralateral breast surgery for more symmetrical breasts, the decision making may be extremely difficult. The reason is that the volume and shape of the pathological breast after tumor excision is unpredictable and the other breast should be fashioned to match this newly formed shape.

*Second Group (Developmental Breast Asymmetry DBA):* The alternative name suggested for this group is real or proper breast asymmetry. In this group there was no definite cause for the asymmetry. The patients were presented usually at the onset of puberty before getting married. This group was described as precocious primary asymmetry [4]. In another classification it was given the name of developmental or secondary asymmetry. Patients could not identify the difference between the abnormal and the sound breasts. For these reasons in this group the decision making was very difficult. The extreme patients concern about the scars also adds more difficulty for managing of these patients. Fortunately enough this group constituted only 9% of the total number of breast asymmetry though Vandebussche [4] reported an incidence of 43% (65 out of 150). This group can be further subdivided into two subgroups: The tuberous breast deformity and the non-tuberous breast deformity. Extreme effort should be done by the surgeon to detect the more sound breast. In most cases the two breasts should be addressed in one or two sessions. However, some patients refuse scarring of the more sound breast. There was also one more technical difficulty concerning which side to start when operating the two breasts simultaneously. We usually follow the recommendations of Reilley [7]. If asymmetric reduction will be required, the larger breast should be reduced first. This strategy prevents inadvertent overreduction of the smaller side with the possible scenario of being unable to reduce the larger side to match it without compromising nipple areola circulation. If the patient requires a different operation on each breast, the more difficult or less controllable side should be done first. For example, if the patient needs a

mastopexy and reduction, the mastopexy is done first to have a model to match with the reduction. The more similar the procedures (on each breast) the more long-lasting the result with acceptance of some deterioration of the result over time.

*Third Group (Natural Breast Asymmetry NBA):* In this group the asymmetry was minimal and accidentally discovered by the treating doctors. It was detected in 71% of women seeking aesthetic breast surgery. This incidence was relatively lower than that was reported by Nahai, [5], who found 88% of women having natural breast asymmetries. This lower incidence can be attributed to the lower number of patients seeking for aesthetic breast surgery in our community in comparison to more developed countries. Though the number of patients in our study constituted 38 % of the total number of asymmetries, yet this group was not mentioned in any classifications except in a recent classification suggested by Vita et al., [6]. The decision making is straight forward as both breasts should be addressed in one stage. These minimal asymmetries should be dealt with simultaneously, otherwise they may become more manifested after surgery. This was more liable to occur after augmentation mammoplasty and for this reason intra-operative breast sizer with un-identical implants [8-11] and the use of Becker prosthesis [12,13] are of paramount importance in asymmetrical augmentation. Fat injection is also very useful in correcting minimal asymmetries [14]. However, recently using identical implants with resection of deep parenchymal breast tissue from the larger breast to achieve symmetry in these patients was recommended [15,16]. Fourth group (Iatrogenic Breast Asymmetry IBA): It occurred in 14% of patients performing aesthetic breast surgery. It constituted a 6% of all cases of breast asymmetries. Their incidence was 9% in augmentation mammoplasty, 26% in reduction mammoplasty, 10% in mastopexy and 25% in augmentation mastopexy. Despite the presence of several reports discussing revisional breast surgery, yet none of them reported the incidence of secondary (Iatrogenic) breast asymmetry.

The different causes for this asymmetry included; improper primary decision making, inaccurate surgery, missing already present minimal asymmetry and post-operative sequelae like capsular contracture following augmentation or augmentation mastopexy. It is a difficult group as there is no precise pre-operative plan (management should be individualized for every patient). The decision making varies from simple to very sophisticated procedures with multiple sessions according to the present deformity.



**Conclusion:**

In this paper, a total number of 592 patients who underwent breast surgery were reviewed. The main objective was to put a more global classification for breast asymmetry to include all the possible etiological factors. As well as correlating the decision making in management of these patients with the patient's presentation and the condition of the contralateral breast. Four groups were identified with more descriptive nomenclature and percentage for each one. Of these groups, we consider the second group as the real or proper breast asymmetry. It constituted only 9% of all cases of breast asymmetries. It was due to developmental causes and half of it was due to tuberous breast deformity. The decision making for management of this group was very difficult as the patient could not differentiate the abnormal from the more sound breast. Thus, to get better results the two breasts should be addressed. This was not accepted by many patients to avoid scarring of the more sound breast. Further details for each group will be published in subsequent articles.

The authors declare that they have no conflicts of interest to disclose.

The article does not contain any studies with human participants or animals performed by any of the authors.

For this type of study informed consent is not required.

The authors have no financial interest to declare in relation to the content of this article.

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