# A Management-Based Classification for Breast Asymmetries

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# ABSTRACT

Gross breast asymmetries of various etiologies were surgically treated in fourteen female patients. Patients were divided according to the surgical approach used into aesthetic and reconstructive groups. Surgical modalities done for the first group of patients were one-stage procedures in the form of asymmetric reduction or augmentation, with or without mastopexy in the contralateral side. The second group of patients required multiple-stages of reconstructive procedures ranging from skin graft to myocutaneous flaps, with or without reconstruction of the nipple-areola complex (NAC) and recreation of the inframammary fold (IMF), in addition to the aesthetic procedures. Patients of the aesthetic group were satisfied with the classic surgical scars but more critical about minor asymmetries, especially in the location of the NAC in patients with asymmetric hypoplasia. Results in the reconstructive group were less than perfect but were accepted by the patients because of the severity of the presenting deformities.

# **INTRODUCTION**

Asymmetric breasts represent an aesthetic and social problem. In late seventies, Edstrom et al., recognized that breast asymmetries are heterogenous disorders rather than a single disease entity [1]. The incidence of significant asymmetries among patients requesting esthetic breast surgeries was estimated as 4 or 10% [2,3]. Several classifications were put forward for breast asymmetries but none of them is totally satisfactory [4,5,6]. Although appropriate application of the principles of aesthetic breast surgery is necessary to improve the outcome of surgery, acquired asymmetries usually require additional reconstructive procedures [5,7]. In this study, we describe the authors experience in breast asymmetries with emphasis on the variations in the surgical approaches, complications and the aesthetic outcome.

### **PATIENTS AND METHODS**

Our patient population included 14 females with various types of breast asymmetries. Their ages ranged between 18 and 44 years (average 28.6 years). Based on the surgical requirements, patients were divided into two main groups, each consisting of 7 patients. The first aesthetic group included cases of unilateral hypoplasia (Amazon's disease) and developmental breast asymmetries while the second reconstructive group included cases of Poland's syndrome and acquired breast asymmetries.

Surgical procedures used is the first group included either asymmetric reduction mammaplasty by the modified central pedicle technique in 5 cases [8] and unilateral augmentation by subglandular, silicone implant via inframammary approach in 1 case and asymmetric augmentation via circumareolar approach, with unilateral mastopexy in another case [9].

In the second group, surgical procedures used included asymmetric reduction mammaplasty, augmentation mammaplasty, Lejour vertical scar mastopexy, split-thickness skin graft (STSG), latissimus dorsi muscle, transverse rectus abdominis myocutaneous (TRAM), reconstruction of the IMF and reconstruction of the NAC [8-15]. The patients were evaluated both subjectively and objectively as described by Farag et al. [16]. Based on the work of Farag, the following vertical and transverse measurments were used for evaluating symmetry. Distance A: The distance between the suprasternal notch and the upper border of the areola. Distance B: The distance between the anterior axillary line and the lateral border of the areola. Distance C: The distance between the mid-inframammary line and the lower border of the areola. Distance D: The distance between the midline and the medial border of the areola. The data of these patients are summarized in Tables (1,2).

Table (1): Causes and surgical procedures used in the aesthetic group.

Diagnosis	No. of cases	Surgical procedures
Amazon's disease	1	Unilateral augmentation
Asymmetric hypoplasia and ptosis	1	Asymmetric augmentation and unilateral mastopexy
Asymmetric macromasti	ia 5	Asymmetric reduction

Table (2): Causes and surgical procedures used in the reconstructive group.

Diagnosis	No. of cases	Surgical procedures
Polland's syndrome	1	Latissimus dorsi muscle flap with the overlying fat, Z-plasty, contralateral mastopexy
Post reduction mammaplasty	1	Asymmetric reduction, reconstruction of the NAC.
Post burn distorted breast	2	Release with Z plasty STSG, recreation of the IMF, contralateral mastopexy
Post excision of hemangioma	1	Augmentation by a submammary cohesive implant, contarlateral mastopexy
Post excision of giant fibroadenoma	1	Vertical scar mastopexy
Post radical mastectomy loss of the breast mound	1	TRAM flap, latissimus dorsi muscle flap, recreation of the IMF, reconstruction of the NAC

#### **RESULTS**

Breast asymmetries were surgically treated in 14 patients. These represent 14.6% of the 95 patients for whom we did breast surgery in the last 5 years.

Treatment in the aesthetic group whether congenital or developmental was asymmetric reduction, unilateral augmentation, or asymmetric augmentation with unilateral mastopexy. One stage surgery was done for all of them. According to the visual assessment proposed by Farag et al. [16] symmetry of the breast size was achieved. Objectively, the case of Amazon's disease and other case of asymmetric hypoplasia and ptosis had minor difference in the level of the NAC about 1cm. One case of asymmetric macromastia had marginal necrosis and loss of NAC sensibility. The classical surgical scars whether inverted T-shaped, vertical, circumareolar or inframammary were accepted by the patients.

The reconstructive group of patients required various aesthetic and reconstructive techniques. Reconstruction was achieved with one to three surgical procedures. The only complication encountered was seroma at the latissimus dorsi flap donor site in one case. Symmetry in size was achieved, with or without the standard surgical scars. There was 2cm difference in the level of the NAC in the case of post-mastectomy reconstruction which necessitated revision under local anesthesia. The final aesthetic outcome was less than perfect but accepted by the patients because of the severity of the presenting deformities.

# Case 1:

A 42 year-old female presented to us by asymmetric macromastia and ptosis. Bilateral asymmetric reduction mammaplasty was done by the modified central pedicle technique. The amounts of resected tissues were 950gm from the right breast and 800gm from the left breast. NAC were transposed up for 14cm in the right side and 11cm in the left side (Fig. 1).

## Case 2:

This is a 38 year-old female presented with asymmetric macromastia, necrosis of the left NAC and non-standard scarring after reduction mammaplasty. The patient was treated by secondary, asymmetric central pedicle reduction mammaplasty to maximize the vascularity of the skin flaps, the reduced pedicle and the remaining intact NAC. The lost NAC was reconstructed by turn-over local flaps and STSG (Fig. 2).

# Case 3:

22 yrs old female patient suffered a flame burn insult to the face, right chest and right groin and thigh when she was 4 yrs of age. She had a contracted inframammary fold and a contracting band extending to the groin. The breast was reshaped via a v shape flap and the breast tissue was dissected upward. The band was released by multiple Z plasties and the IMF was recreated by STSG and prolene suture was used to suture the lower border of the v flap to the periosteum of the fifth rib.

The second stage was a vertical scar mastopexy (Lejour technique) for the right breast. The NAC of the right breast was 28cm and was adjusted to 21cm. The patient refused NAC reconstruction on the right side (Fig. 3).

# Case 4:

This patient is a 44 year-old female presented to us with post-radical mastectomy deformity of the right breast. Reconstruction by contralateral TRAM was isnufficient to fill the infraclavicular area and to recreate the anterior axilary fold. Latissimus dorsi flap was done to correct these defects. Recreation of the infra-mammary fold (IMF) and reconstruction of the NAC were performed after restoration of a satisfactory breast mound. The contralateral breast was lifted by Lejour type mastopexy (Fig. 4).



Fig. (1-A): Preoperative view of asymmetric macromastia and ptosis.



Fig. (1-B): Postoperative view after asymmetric reduction mammaplasty by the modified central pedicle technique.



Fig. (2-A): Preoperative view of asymmetric macromastia and ptosis, with loss of the left NAC after previous reduction mammaplasty.



Fig. (2-B): Intraoperative view showing the central pedicle.



Fig. (2-C): Postoperative view after asymmetric reduction mammaplasty by the modified central pedicle technique and reconstruction of the left NAC.



Fig. (3-A): Preoperative view of a female patient with loss of the left inframammary fold, contracted band extending from the breast skin to the groin and scarring of the abdomen.



Fig. (3-B): Patient after release of the band by skin graft and Z plasties and recreation of the inframammary fold.



Fig. (3-C): Patient after vertical scar mastopexy on the right breast with good symmetry in shape and volume.



Fig. (4-A): Preoperative view of loss of the right breast mound and the NAC after radical mastectomy.



Fig. (4-B): Postoperative view after reconstruction by contralateral TRAM ipsilateral latissimus dorsi flap, recreation of the IMF and reconstruction of the NAC. Lejour type mastopexy is done in the left side.

### DISCUSSION

The breast is the symbol of femininity. The attractive breast is characterized by proper symmetry, contour, softness, smoothness and sensitivity to touch, especially in the NAC [17]. Asymmetric breast is defined as an asymmetric morphology of the shape, volume, or position of the breast, nipple-areola complex, or both [6].

There is no practical way to estimate the true incidence of breast asymmetry. It is believed that more than half of the female-population is affected by minor degrees of asymmetry [5,18]. However, major variations may present significant physical, social and psychological concern [19]. The incidence of noticeable asymmetry ranges between 4% and 10% in the literature [2,3,20]. The incidence of significant asymmetry among our patients was 14.6%. This is probably because acquired asymmetries are included.

In the past, the diagnosis of every patient with asymmetric breasts was Amazon's disease, defined by unilateral hypoplasia or aplasia [6]. Simon, 1972, differentiated between simple augmentation of small-breasted women and breast augmentation for congenital or acquired breast deformities. He termed the first group (aesthetic augmentation) and the second group (non aesthetic augmentation) [4]. This classification ignored hyperplastic and acquired asymmetries. Edstrom et al., 1977, were the first authors to focus on breast asymmetry as a heterogenous entity and not a single disorder [1]. A classification of breast asymmetries into congenital and acquired was focused mainly on etiology [21], but this classification does not help in planning for surgical treatment [6]. A morphological classification depending in the breast size was proposed for pediatric breast anomalies [22]. Hoehn et al., 1992, proposed an anatomical classification for congenital and developmental breast asymmetries that was based on the missing or deformed structures combined with the etiological cause as a modifier [5]. Recently, Araco et al., suggested a morphologic 6 group classification for patients presenting with idiopathic breast asymmetries [6]. Even by omitting the acquired deformities, the authors admitted that their categories failed to include the asymmetries associated with tuberous deformity. In this study, we classified breast asymmetries into aesthetic and reconstructive. The goal in both is to create a psychologically acceptable breast with pleasing contour and texture. This classification is directed towards planning for the surgical management. Congenital hypoplasia in Amazon's disease is treated by aesthetic augmentation, while congenital hypoplasia in Poland's syndrome requires reconstructive procedures similar to those used to treat associated deformities in acquired asymmetries. Unlike the study conducted by Araco et al., 2006, we did not have cases of isolated unilateral or asymmetric ptosis that was always a feature of asymmetric macromastia or hypoplasia [6]. We also did not exclude cases of acquired asymmetries.

There is some degree of controversy as regards the time of surgical intervention especially for developmental anomalies. It had been proposed that surgery for unilateral hypomastia should be delayed for several years after cessation of growth of the normal breast because the small breast may develop fully on its own slightly later than the counterpart [4]. Others suggested that Amazon's disease or Poland's syndrome should be corrected at the earliest possible age (10-15 years), to mitigate the effect of the deformity on the patient's self image and social development [9]. The use of double-lumen gel/saline expandable prosthesis combines the advantages of both points of view. Correction of adolescent patients can be started at a much younger age and can be reversed by removal of the device if delayed breast development should occur [5]. In our patients, timing was important only for pre-pubertal patients with asymmetric hypoplasia. In this group of patients, reassurance and psychological support were provided to allow the patient to cope with psychological stress because double-lumen gel/saline expandable prosthesis is not used by the authors. Surgical correction of breast asymmetry was postponed to the age of 18 years, when the contralateral breast stops to grow.

Treatment of breast asymmetry requires accurate evaluation and diagnosis of the existing deformity. Appropriate application of the principles of breast reduction, augmentation and mastopexy, is necessary to improve the outcome of surgery [7]. Surgical management of acquired asymmetries and Poland's syndrome is more complicated.

Amazon's disease refers strictly to unilateral hypoplasia or aplasia with no muscular defect [9]. Although treatment is straight forward augmentation, exact symmetry may be difficult to achieve without surgery on the contralateral breast, usually in the form of mastopexy or augmentation by smallsize prosthesis. If the contralateral breast is normalsized, non-ptosed, minor asymmetry in the level of the NAC may occur. This aesthetic problem may be difficult to correct if the patient refused scars on the otherwise normal breast, even with the use of Hester's elastic girdle that keeps the implant down at the level of the inframammary fold [23]. Among the two cases of hypoplasia included in this study, symmetry in the breast size could be achieved. Symmetry in the location of the NAC required Benelli's circumareolar scar in one patient but the other patient with Amazon's disease refused additional scar in contralateral nonptosed, normal-sized breast [11]. Farag et al., tried to achieve symmetry in the final scars in cases of asymmetric breasts [16]. However, this was done for selected cases of mammary hypoplasia with mild degrees of contraleteral hyperplasia or ptosis.

In Poland's syndrome the deformity is more severe involving not only the breast, but also the pectoralis major muscle and the thoracic cage. Cases of Poland's syndrome with chest wall deformity or absent pectoralis were treated by custommade or inflatable prosthesis [7]. Bony reconstruction of the rib cage and sternal defects is not indicated in absence of cardiopulmonary dysfunction [5]. Thoracic defect was reconstructed with RTV (room temperature vulcanized) silicone inserted via submammary incision and tissue expansion followed by gel-filled prosthesis later. Pectoralis defect at the anterior axillary fold is aesthetically corrected with gel-filled implant [9]. Hester and Bostwick, 1982, popularized breast reconstruction by latissimus dorsi muscle flap and prosthetic augmentation [24]. Cases of Poland's syndrome were preferred to be treated by TRAM flap because latissimus dorsi flap might be involved and produce an unacceptable scar [6]. The case of Poland's syndrome included in this study was treated by latissimus dorsi muscle flap with the overlying fat and contralateral mastopexy.

Acquired asymmetries required multiple reconstructive surgical modalities in the form of skin graft, myocutaneous flaps, creation of the IMF, and reconstruction of the NAC, in addition to the standard breast reduction, augmentation or mastopexy. We preferred the central pedicle technique for secondary reduction mammaplasty to maximize the vascularity of the skin flaps, the reduced pedicle and the remaining NAC [25]. Post-burn cases were treated according to the algorithm proposed in Ain Shams University Hospital, where release is done by Z-incision or scar excision within the confinements of an inverted key-hole pattern and reconstruction by skin graft and local or regional flap [12]. The case of post-mastectomy defect was treated by the classic TRAM flap. Infraclavicular deficiency required additional latissimus dorsi flap. The IMF was recreated and the NAC was reconstructed [15].

Complications of surgical correction of breast asymmetries are similar to those reported in the literature for standard augmentation or reduction mammaplasty, both in frequency and severity [6]. Possible complications after subcutaneous mastectomy are seroma, sloughing at the margin of the flap or at the site of previous biopsy [4]. We had marginal necrosis of the reduced NAC in one case of simple asymmetric macromastia. In this case, 1750gm were reduced from the right breast and 1250gm from the left breast, with concomitant transposition of the NAC for 28cm on the right side and 20cm on the left side. The two cases of Amazon's disease and asymmetric hypoplasia and ptosis had one cm asymmetry in the level of the NAC. Complications among the reconstructive group were limited to seroma at the latissimus dorsi flap donor in the dead space left after transposition of latissimus dorsi flap.

All esthetic cases were treated with one surgical operation and reconstructive cases with one to three surgical procedures. The final aesthetic results were less perfect in cases reconstructed by skin graft or flap because of the non standard surgical scar. However, the patients were satisfied because of the severity of the initial deformities and its effects on self confidence and body image.

### Summary:

Fourteen female patients with gross breast asymmetries of various aetiologies were surgically treated. Patients of the first group were treated with one-stage surgical procedures in the form of asymmetric reduction or augmentation, with or without mastopexy in the contralateral side. Patients of the second group required one to multiple-stages of reconstructive procedures ranging from skin graft to myocutaneous flaps, with or without reconstruction of the NAC and re-creation of the IMF, in addition to the aesthetic procedures. Complications were consistent with the surgical procedures. Patients of the aesthetic group were satisfied with standard surgical scars. Results in patients of the reconstructive group were less than perfect but accepted by the patients because of the severity of the presenting deformities.

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