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Breast Recontouring after Massive Weight Loss (MWL)

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ABSTRACT

Background: Evolution of methods that used for management of morbid obesity lead to increase the number of the patients presented by post massive weight loss deformities. Breast is one of the body regions that are affected by wide spectrum of deformities. It can't be addressed by traditional methods of breast contouring.

Methods: This study includes 25 patients presented after MWL requesting breast surgery. The patients' ages ranged between 20 and 42 years old with a mean age 35 year old.

Results: The patients were evaluated subjectively and objectively regarding aesthetic outcome and rate of complications.

Conclusion: Many options for management of breast deformities after MWL were mentioned in literature, yet it is important to use the proper option for the right indication.

Key Words: *Breast – Contouring – Massive weight loss.*

INTRODUCTION

Severe obesity is associated with multiple comorbiditieswhich reduce the life expectancy and markedly impair thequality of life **[1]**. Management of this problem includes several methods whether surgical or non-surgical **[2]**. These methods will succeed in achieving ideal body weight but eventually the patients will develop body contour deformities that involve almost all areas **[3]**.

The term massive weight loss (MWL) is defined as 50% or greater loss of excess weight, with patients often having lost 100 Ibs (45kg) or more **[3]**. There are many classification systems used to describe these contour deformities **[4]**.

Management of the breast following massive weight loss is done for both reconstructive and aesthetic reasons. In order to best manage these patients, it is crucial to understand the deformities affecting the breast **[5]**. Many articles focused on ways to improve shape, projection, and long-term results, using modifications of original techniques **[6]**. These techniques that are described for breast contouring after massive weight loss includes; breast reduction **[7,8]**, augmentation using either implants **[9]** or local tissues of the lateral chest wall (autoaugmentation) **[10,11]**, mastopexy **[12,13]** that are chosen based on the deformities that occur after massive weight loss.

The aim of this study is to address the aesthetically undesirable effects of massive weight loss on the size, shape, and contour of the female breast. Different modalities involving mastopexy, augmentation using different methods as implants or autoaugmentation, breast reduction as well as combination of two or more methods that will be used for each patient according to their individual deformity.

PATIENTS AND METHODS

This study involved 25 patients suffered from massive weight loss either by dieting & exercise or after bariatric surgery. They came at a certain point requesting breast contouring as a part of upper body lift or specific only for the breast.

Patients after massive weight loss with present BMI ≤32Kg/m^2, and have stable weight for at least 6 months were included in this study. While patients who presented with BMI >32kg/m^2, unstable weight, pregnant, lactating or planning on getting pregnant for the next coming couples of years were excluded from this study.

Demographic data of the patients:

The patients' ages ranged between 20 and 42 years old with a mean age 35 year old.Their BMI ranged from 24 to 32kg/m^2 with mean BMI of 28.9kg/m^2. Twenty of them (80%) of them lost

Abbreviations:

MWL : Massive weight loss.
BMI : Body mass index.
IMF : Inframammary fold.

weight through bariatric surgery while five (20%) patients lost weight by regulation of diet and exercise. All of them have stable weight for a period range from 12-24 months prior to surgical intervention.

Preoperative steps:

All patients underwent preoperative evaluation in the form of detailed history taking, thorough physical examination, laboratory investigations, photographic evaluation and documentation. Nutritional assessment and psychological evaluation was done prior to surgical intervention.

Preoperative assessment of the breast includes general breast examination to exclude the presence of breast masses or discharge. Aesthetic breast evaluation to assess the magnitude of deformity was done by assessing the following points: Quality of skin and amount of laxity, relation of the skin to parenchyma, volume of the breast, and degree of ptosis. The following measurements were included; distance from sternal notch to nipple, distance from IMF to nipple, distance from midline to nipple.

The Pittsburgh's classification was applied on the patients included in this study. Out of the 25 patients; 12 of them were Pittsburgh 1, 9 of them were classified as Pittsburgh 2 and 4 were Pittsburgh 3.

Investigations: Routine preoperative laboratory tests were done in addition to breast imaging using ultrasound and/or mammography.

Breast examination: Shows the following changes:

Table (1): Breast examination criteria present in patients of the study.

		No. of patients	Percentage %
Breast volume	Excess volume	7	28
	Sufficient volume	9	36
	Insufficient volume	9	36
Grade of Ptosis	I	3	12
	II	11	44
	III	11	44
Skin elasticity	Good	13	52
	Poor	12	48
IMF fold level	Normal	20	80
	Descent	5	20
Lateral breast, back roll	Present	18	72
	Absent	7	28

Markings: Was done 2-4 days before surgery to ensure choice of right plan.

Digital photography: Before and after the marking, photographs were taken of the standing patient, frontal view, 2 lateral views and 2 oblique views. They are helpful in planning the procedure and ensuring the correct choice of plan. Also they were crucial for documentation. Postoperative photographs were also taken mimicking the preoperative ones, they were a great tool for evaluate result compare it to preoperative photos.

Operative techniques:

A total of 25 procedures were performed; Reduction mammoplasty in 6 patients, autoaugmentation in 9 patients, augmentation mastopexy in 6 patients, and augmentation in 2 patients, vertical mastopexy in 2 patients.

Table (2): Different operative techniques used.

No.	%	Operative techniques	
3	12	Reduction mammoplasty	• Superomedial pedicle.
3	12		• With chest wall based flap.
3	12	Autoaugmentation	• Spiral flap.
6	24		• Dermal suspension.
1	4	Augmentation Using implant	• Transaxillary
1	4		• Inframammary
5	20	Augmentation mastopexy	• Wise pattern
1	4		• Circumareolar
2	8	Mastopexy	• Small T incision

RESULTS

The present study included 25 female patients. All patients fit the inclusion and exclusion criteria. Follow-up of the cases had been arranged as a short term after one week and long term after three months.

Short term results: (Assessment done after 1 week). For detection of early postoperative complications, Aesthetic results such as breast shape and size cannot be probably assessed due to tissue edema. Touch sensation of the nipple cannot be assessed precisely. One case developed mild wound infection that was managed with intravenous antibiotics. One case of areola necrosis two days postoperative due to venous congestion. Debridement of necrotic tissue was done followed by split thickness graft and the patient was scheduled to 2nd stage of nipple areola reconstruction. One case developed seroma who was managed conservatively.

Long term results: (Assessment done after 6 months): For detection of late complications and final assessment of aesthetic results, including patient's satisfaction.

Late postoperative complications: Two patients suffered from hypertrophic scars. They were managed using silicone sheets. One patient developed hypopigmented scar.

Patient's satisfaction: Regarding the shape, size, and scars.

Analysis of the outcome: Was done by assessment of two senior plastic surgeons not participate in the study as well as by means of patient's satisfaction and rate of complications. The plastic surgeons were asked to grade the postoperative outcome of the results according to the following categories: Size, contour and projection, symmetry and condition of nipple areola complex, and correction of ptosis.

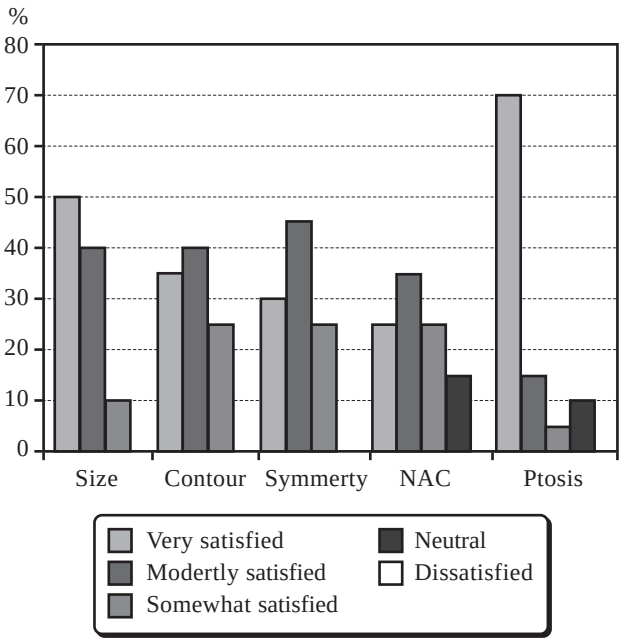

Fig. (1): Graphic demonstration of plastic surgeon assessment.

Patient satisfaction was assessed regarding the size, shape, and scars. Their satisfaction was scored as follow 1; Dissatisfied 2; Neutral 3; Somewhat satisfied 4; Moderately satisfied 5; Very satisfied.

Shape: Thirteen patients were very satisfied (65%), four patients were moderately satisfied (20%), and three patients were somewhat satisfied (15%). Size: Eleven patients were very satisfied (55%), seven patients were moderately satisfied (35%), and two patients were somewhat satisfied (10%). No one was neutral or dissatisfied. Scars: Eight patients were very satisfied (40%), six patients were moderately satisfied (30%), five patients were somewhat satisfied (25%), one patient was neutral (10%). No one was dissatisfied.

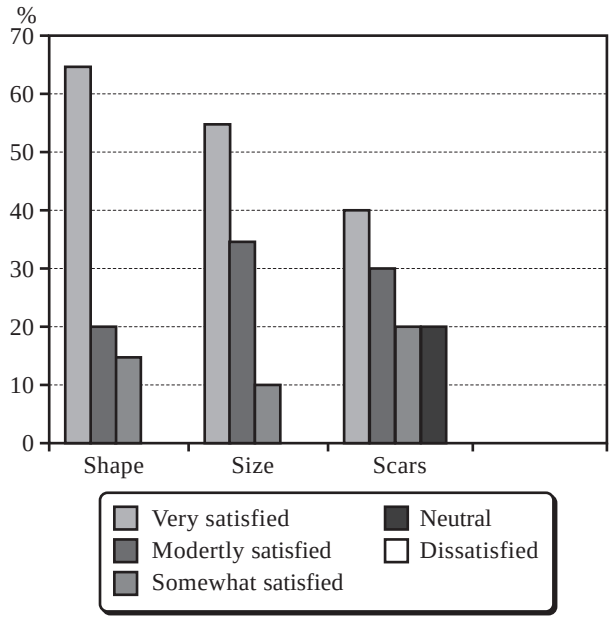

Fig. (2): Graphic demonstration of patient satisfaction.

Rate of complications: Two patients (8%) developed hypertrophic scar that was managed by silicone sheets. One patient (4%), developed postoperative wound infection that was managed with frequent dressing and antibiotics. One patient (4%), developed total loss of areola and nipple and she was managed with debridement and split thickness graft, and she prefer to delay the reconstruction of nipple and areola. One patient 4% developed postoperative seroma that was managed conservatively. One patient (4%) developed postoperative hypopigmented scar.

Table (3): Relationship between rate of complications and patient's age.

Age group	Total number		Complications	
	No.	%	No.	%
20-24 years	5	20	1	20
25-29 years	3	12	0	0
30-34 years	6	24	2	33
35-39 years	8	32	2	25
40-44 years	3	12	1	33

Table (4): Relationship between complication rate and patients' BMI.

BMI	Total number		Complications	
	No.	%	No.	%
Less than 26	8	32	1	12.5
26-30	12	48	3	25
31-32	5	20	2	40

Table (5): Relationship between method of weight loss and complication rate

Method of weight loss	Total number		Complications	
	No.	%	No.	%
Diet and exercise	5	25	1	20
Bariatric surgery	15	75	5	33

Table (6): Relationship between type of operation and complication rate.

Operation	Total number		Complications	
	No.	%	No.	%
Dermal suspension	6	24	2	33
Reduction	6	24	2	33
Augmentation mastopexy	6	24	1	16
Augmentation with implant	2	8	0	0
Autoaugmentation	3	12	1	33
Mastopexy	2	8	0	0

Fig. (3): Patient presented by insufficient breast volume with no nearby sufficient excess tissue grade II ptosis. Augmentation mastopexy was done (using silicone implant and mastopexy through vertical scar and short T).

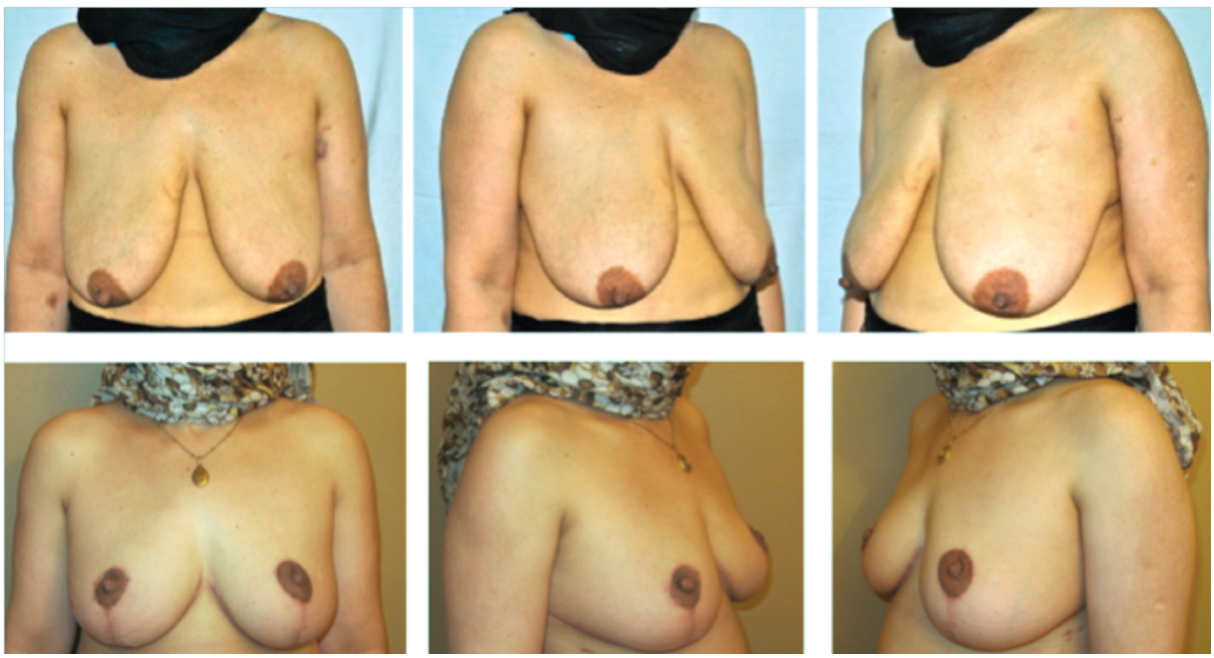

Fig. (4): Patient presented with sufficient breast volume, grade III ptosis. Dermal suspension was done to improve ptosis and to enhance breast volume using lateral flaps.

Fig. (5): Patient presented with excess breast volume, grade III ptosis. Reduction mammoplasty was done.

Fig. (6): Patient presented with insufficient breast volume, no nearby excess tissues, and enlarged areola. Augmentation mastopexy was done (using silicone implant with circumareolar mastopexy).

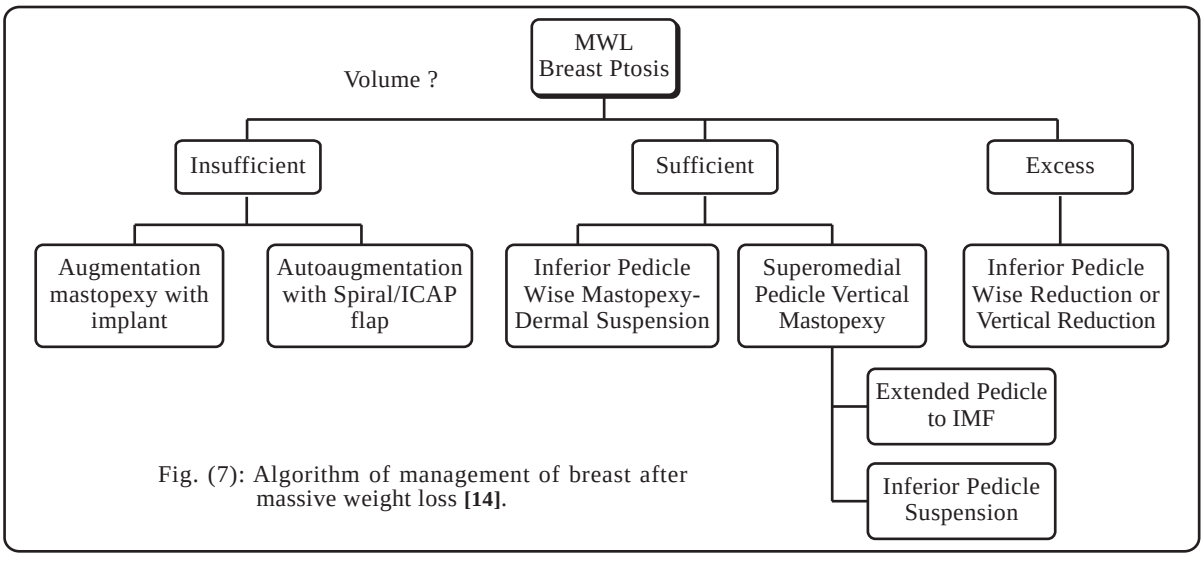

Fig. (7): Algorithm of management of breast after massive weight loss **[14]**.

DISCUSSION

Severe obesity is associated with multiple comorbidities that affect every organ in the body. Many methods have been developed to manage morbid obesity. Most of them are successful in reducing extra weight. But eventually all patients will develop post MWL contour deformities that affects many regions of the body with variable degrees. Breast deformities that develop after massive weight loss are variable depending on many factors, and affects breast parenchyma, the skin envelope, the adjacent tissues, lateral chest wall and the IMF position.

In this study 25 patients were included. Evaluation of their breast deformities was done. Some modification of Pittsburgh classification system as seen by the operating surgeon was done to enhance the aesthetic outcome from point of view. Factors on which the surgical techniques were chosen for breast reshaping: Volume of the breast:either excess volume, sufficient volume or insufficient volume. Skin elasticity and excess: Either good versus poor quality. For patient with poor skin, dermal suspension and mastopexy techniques were done to ensure the longevity of reshaping procedure. Their postoperative follow-up was strict to detect any postoperative wound healing problems. Presence or absence of prominent axillary skin fold: The presences of prominent axillary folds were used in two patients to enhance the insufficient breast volume using the spiral flap. Nipple areola complex position: All of these patients had variable grades of ptosis. Location of inframammary fold: The presence of descent in the location of the inframammary fold is an indication of need of addition of upper body lift. In our study 4 patients underwent upper body lift to correct IMF level.

After full assessment of the breast deformities, the proper surgical technique was chosen by plastic surgeon. By revising different opinions recommended by plastic surgeons in literatures, we found that there were many recommendations.

One of them was the algorithm that was proposed by Collwell et al., 2009 **[14]**. It was based on breast volume to help identify the appropriate technique needed to achieve the desired esthetic outcome in this complex patient population (Fig. 6). Although exceptions exist, we have found this algorithm to be a useful starting point in planning breast operations for the MWL patient, and a way to organize the current techniques.

In this study patients with macromastia were treated with reduction mammoplasty using superior and superomedial pedicles. Because of poor skin elasticity, short scar reduction was not sufficient to address and treat the skin problem. So, the inverted T incision was used to redrape the excess skin.

Patients with deficient upper pole fullness, a chest wall based flap was designed to aid in enhancement of the upper pole fullness. In this study a modification of the technique described by Graf **[16]** by addition of reduction of excess parenchyma.

In this study dermal suspension was done. Modification of the original technique that was described by Rubin **[13]** was done by including minimal excision of excess breast parenchyma to achieve skin closure without tension.

Augmentation mastopexy was done either by using Wise pattern with short horizontal incision or circumareolar mastopexy. Silicone implants were used. The spiral flap was used to reshape the breast using the same technique that was described by Hurwitz and Mohammadi, 2006 **[15]** but without using excess epigastric skin.

In this study the outcome analysis was done using three aspects: Plastic surgeon assessment, Patient's satisfaction, Rate of complication.

In the interpretation of complication rates involved in this study, it was found that complication rates correlated with the BMI of the patient. There was an increase in the complication rates with higher BMI and was also higher in patients who underwent post-bariatric surgeries more than patients wholost weight through regulation of diet and exercise.

Recommendations:

When approaching patient requesting breast contouring it is advisable to start by evaluation of breast volume whether; sufficient, insufficient, or excess. Patients with insufficient breast the next step is assessment of volume of nearby tissues. If there is adequate nearby excess tissues autaougmentation is recommended. Augmentation mammoplasty using implant is recommended for patients with insufficient nearby tissues. Patients with sufficient breast volume mastopexy are sufficient to achieve acceptable aesthetic results. Dermal suspension is recommended for them to achieve long lasting results by fixation of the breast tissue to the periosteum of ribs using permanent sutures.In addition the dermal suspension can enhances the breast volume by using the lateral flaps. Patients

with excess breast tissue reduction mammoplasty are advisable. Our recommendations for them is to avoid short scar reduction mammoplasty techniques as most of patient have poor skin quality and need three dimensional redraping of the skin which can.t be achieved by the short scar techniques.

REFERENCES

1- Surgeman H.: Pathophysiology of severe obesity and the effects of surgically induced weight loss. In: Pitombo C. Obesity surgery the principles and practice, McGraw Hill, Ch. 2 pp. 16-21, 2008.

2- Sebastian J.: Bariatric surgery and work up of the massive weight loss patients. Clinics in plastic surgery, Elesevier, 35: 11-26, 2008.

3- Shrivastava P., Aggarwal A. and Khazanchi R.: Body contouring surgery in a massive weight loss patient: An overview. Indian J. Plast. Surg. Oct., 114-125, 2008.

4- Gusenoff J., Coom D. and Rubin P.: Implication of weight method in body contouring outcomes. Plast. Reconst. Surg. Jan., 123 (1): 373-376, 2009.

5- Losken A.: Rotation advancement superomedial pedicle mastopexy following massive weight loss. In: Shifmann M. In body contouring. Springer, pp. 735-742. Ch. 73, 2010.

6- Colwell A.: Current concepts in postbariatric body contouring. OBES SURG, Springer, March, 20: pp. 1178-1182, 2010.

7- Huwitz D. and Golla D.: Breast reshaping after massive weight loss. Seminplast Surg., 18 (3): 179-187, 2004.

8- Akurek M.: Short scar reduction mammoplasty in the bariatric patients. Ann. Plas. Surg. June, 66: pp. 602-606, 2011.

9- Bitar G.: Transaxillary breast augmentation/Wise pattern mastopexy in massive weight loss patients. In: M. Shiffman. Body contouring art, science, and clinical practice. Springer. Vol. 2 Ch. 70, pp. 709-713, 2010.

10- Calvert J., Dickinson B., Patel A. and Kevin K.: Lateral breast flap with superomedial pedicle breast lift. Aesthe Surg. Journal SAGE. Aug., 31, pp. 656-666, 2011.

11- Hamdi M., Van Landuyt K. and Tonnared P.: Septum-based mammoplasty; a surgical technique based on wuringer's septum for the breast reduction. Plast. Reconstr. Surg. Feb., 123, pp. 443-454, 2009.

12- Kim K., Kim P. and Casas L.: Superomedial auto-augmentationmastopexy: A review of 34 consecutive patients. Aesthe. Surg. J. SAGE, Mar., 30 (2): pp. 201-10, 2010.

13- Rubin P.: Mastopexy after massive weight loss: Dermal suspension and total parenchymal reshaping. Aesthetic Surgery Journal SAGE March/April, 26: 214-222, 2006.

14- Colwell S., Driscoll D. and Breuing K.: Mastopexy techniques after massive weight loss. An algorithmic approach and review of the literature. Ann. Plast. Surg. July, 63 (1): 28-33, 2009.

15- Huwitz D. and Mohammadi A.: Postbariatric surgery breast reshaping: The spiral flap. Ann. Plast. Surg. May, 56 (5): 481-486, 2006.

16- Graf R. and Biggs T.: Mastopexy with chest wall based flap and pectoralis muscle loop. In: Scott L. Spear. Surgery of the breast principles and art. Third edition. Lippincott Wiliams and Wilkins, Ch. 84, pp. 927-930, 2006.