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Optimization of the Results in Abdominoplasty after Massive Weight Loss

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ABSTRACT

Objectives: Assess different modalities and techniques of abdominoplasty post weight loss and post bariatric patients to enhance the results and achieve more cosmetic contouring with less complications.

Subjects and Methods: This study included 21 patients by different modalities and trends abdominoplasties in post weight loss and bariatric surgery were performed in Plastic Surgery Department - Shebin El-Kom Teaching Hospital and Menoufia University from January 2017–September 2019.

Results: Patients' expectations and satisfaction were varied but in most of situations, patients find their expectation right. All those who think they 'might' have excellent outcome subjectively have an excellent outcome beside 3 patients thought the outcome may be 'very good'. Only one patient had unsatisfied outcome after 'very good' expectation. So the total number of constant impressions were 16/21 (76.1%) while 5/21 (23.9%) of impressions had different opinions.

Generally, comparing both outcomes by Wilcoxon ranked-sum test, there were no statistically significant difference between both groups of outcomes.

There were only 3/21 (14.28%) cases developed complications in our study. These complications were seroma (2 cases) and wound infection (one case).

Conclusion: After measuring patient's satisfaction, abdominal girths and complication rate, abdominoplasty was safe and effective maneuver for abdominal contouring with good patient selection.

Key Words: *Abdominoplasty – Contour surgery – Satisfaction.*

INTRODUCTION

It is now widely recognized that the rate of obesity has increased dramatically over the last few decades. Bariatric surgery are the best choice of treatment that have a high likelihood of success in engendering significant and lasting weight loss in extremely obese patients, the proliferation of bariatric surgery has also resulted in the increased use of body contouring surgery to address the hanging, redundant skin that is often seen after dramatic weight loss **[1]**. Quality of life is often questioned both within the bariatric context and in cosmotic surgery, especially in women **[2]**. An abdominoplasty is usually mandatory for such patients. This desired goal of this surgical procedure is to reduce the redundancy of fat and skin, to recreate the competence of the abdominal wall and to correct pubic ptosis and reshape the mons pubis. Abdominoplasties are classified according to the type of incision used: Transverse, vertical, or combined **[3]**.

The aim of this study was to assess different modalities and techniques of abdominoplasty post weight loss and post bariatric patients to enhance the results and achieve more cosmetic contouring with less complications.

PATIENTS AND METHODS

This study included 21 patients by different modalities and trends abdominoplasties in post weight loss and bariatric surgery were performed in Plastic Surgery Department, Shebin El-Kom Teaching Hospital and Menoufia University from January 2017 – July 2019.

Data Input:

Inclusion criteria:

1- Post weight loss with BMI less than or equal 30.

2- Obesity in the patients (history with a BMI more than 35 or post weight loss of at least 30).

3- Age: 20 years to 55 years.

4- Sex: Equal.

Exclusion criteria:

1- BMI more than 30.

2- Patients more than 55 years.

3- Cases with uncontrolled DM and bleeding disorders.

4- Cases with un controlled hypertension.

5- Patients with over expectations.

Data processing:

Informed consent was taken including pre-operative photography for documentations. All patients were assessed through:

1- Full history taking.

2- Clinical evaluation.

In addition to the history of patient's weight gain and loss and to BMI, including complete history and physical examination, known presence of scars, where the bariatric surgery has been performed via laparoscopy or surgical opening to determine abdominal flaps whether procedure would be easier and safer or not.

3- Laboratory investigations: Laboratory investigations (complete blood picture, liver and kidney function tests, prothrombin time and activity, random blood sugar).

According to the case we decided the technical procedure with internal operative tricks as which types of abdominal wall muscle plication be fit to enhance the results.

Pre-operative evaluations:

- Patient expectation: This sector is classified similar to patients satisfaction as above.

- Choice of the technique:

a- classical abdominoplasty

b- Circumferential abdominoplasty.

c- Extended abdominoplasty

d- Fleur-de-Lis abdominoplasty.

Outcomes:

1- Esthetic results were assessed by separated plastic surgeons not involved in the study; assessment was based upon evaluation of the abdominal contour, the umbilicus, and the scar. A scoring system compiled by the candidate was developed for assessment of the abdominal contour and the umbilicus based on satisfaction level of patients can be done by scoring as follows:

(A) Excellent.

(B) Very good.

(C) Good.

(D) Unsatisfied.

2- Preoperative and 1-week postoperative measurement of subcostal, umbilical and suprapubic girths (in mm).

3- Description of complications (if found).

Data analysis:

Analysis of data was done by IBM computer using SPSS (statistical program for social science version 25), California. USA.

RESULTS

The mean and standard deviation of age was 37.5±4.12 years. The range of age was 22-52 years. The distribution of age was homogenous as the Kolmogorov-Smirnov test showed *p*-value of 0.07. Most of patients were female patients 19/21 (90.4%) as shown in the Fig. (1).

There were only 3/21 (14.28%) cases had previous diseases. One case had controlled DM, one case had controlled primary hypertension and one case had both diseases with no further illnesses.

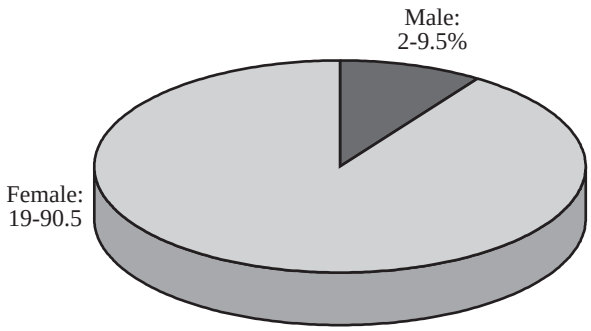

Fig. (1): Pie chart showed sex distribution.

Before intervention, mean and SD of BMI was 37.1±1.7kg/m^2. After induction of intervention for losing weight, mean and SD of BMI was 28.2± 1.1kg/m^2. By comparing BMI before and after by using paired *t*-test, there was statistically significant difference between both values ($p<0.0001$).

Operative time was ranging between 1.3-4.5 hours with mean and SD of 2.7 hr±0.75. There was no statistically significant difference between operations as regard operative time by using Kolmogorov-Smirnov test ($p=0.72$). As regard time left to remove the drain, minimum and maximum time was 48-120 hours. The mean daily drainage was 43.22mL.

The descriptive statistics of subcategories of abdominal girth are plotted in Table (1). It has been found that, comparing pre and post-operative mean and SD by using non-parametric *t*-test; there was statistically significant reduction in abdominal girth at all levels ($p<0.0001$) as shown in Table (1).

Table (1): Descriptive statistics of abdominal girths.

	Mean±SD	Min.	Max.	*p*-value
Preoperative subcostal G.	105±3	94	120	<0.0001
1-week subcostal G.	99±5	84	111	
Preoperative umbilical G.	127±5	119	141	<0.0001
1-week umbilical G.	116±8	101	125	
Preoperative suprapubic G.	115±6	97	118	<0.0001
1-week suprapubic G.	104±5	93	114	

When estimating percentage of girth change, subcostal, umbilical and suprapubic girths were found to decrease 1%, 8% and 9.5% respectively in the 1st week.

In Table (2), patients' expectations and satisfaction were varied but in most of situations, patients find their expectation right. All those who think they 'might' have excellent outcome subjectively have an excellent outcome beside 3 patients thought the outcome may be 'very good'. Only one patient had unsatisfied outcome after 'very good' expectation. So the total number of constant impressions were 16/21 (76.1%) while 5/21 (23.9%) of impressions had different opinions.

Generally, comparing both outcomes by Wilcoxon ranked-sum test, there were no statistically significant difference between both groups of outcomes.

Table (2): Frequency distribution of patients' expectations and satisfaction.

	N	%	*p*-value
Patients' expectations:			
Excellent	3	14.2	0.0014
Very good	10	47.6	
Good	8	38	
Unsatisfied	0	0	
Patients' satisfaction:			
Excellent	6	28.57	0.003
Very good	8	38	
Good	6	28.57	
Unsatisfied	1	4.7	

In Table (3), the types of abdominoplasties done in our study. Classical type was the prominent type (7/21) followed by extended type (6/21). The rest were equal (4/21) each.

Table (3): Types of abdominoplasty surgeries.

Procedure	N	%
Classical	7	33.3
Circumferential	4	19.04
Extended	6	28.57
Fleur-de-Lis	4	19.04

There were only 3/21 (14.28%) cases developed complications in our study. These complications were seroma (2 cases) and wound infection (one case). The sole unsatisfied outcome was seen in the case with wound infection. One of the seroma cases had had hypertension as risk factor. There was high statistically significant association between having poor outcome and emerging of a complication (p<0.00001). In addition, there was no statistical relationship between having a complication and the exact type of weight loss (p=0.52) by using chi-square t-test.

DISCUSSION

Post-weight loss whatever the method, many of these patients find themselves plagued with the development of excess skin and abnormal body contour, specifically in the area of the abdomen. This skin is recognized as a displeasing consequence, resulting in dissatisfaction with personal appearance and significant desire to undergo body contouring procedures **[4]**.

The mean and standard deviation of age was 37.5±4.12 years. The range of age was 22-52 years. In Jabaiti (2009), the age mean and standard deviation was 40.8±7 years (range 17-75) **[5]**. Both groups of Ghnnam, Elrahawy and Moghazy, (2016) had mean of 35.71 and 36.26 respectively **[6]**. In contrast, Zammerilla and coworkers enrolled their study on 1006 patients with mean age 44 years **[4]**.

Most of patients were female patients 19/21 (90.4%) as shown in the Fig. (1). In Jabaiti study, females were 107/116 (90%) of the total participants. It was also found that, in Zammerilla and coworkers, the percentage of females were 90% as same as our study **[4]**. In Presman et al., (2015) study, 85% of participants were females **[7]**.

In a study done by Ahmed et al., (2018) they found that females are seeking body contouring surgeries 3 months earlier to surgery while male patients started to think about it more than a year earlier. As regard age, females were mostly requesting abdominoplasty at young age while males are coming older than 45 years old **[8]**.

Female patients are looking for body countering three months after surgery, while male patients more often than not request body shaping following one year after surgery, the age groups are invert in genders; female patients asking for body contouring in younger age group while male patients in older age group.

There were only 3/21 (14.28%) cases had previous diseases. One case had controlled DM, one case had controlled primary hypertension and one case had both diseases with no further illnesses. These risk factors are essential to be determined prior to surgery. Diabetes mellitus is a risk factor of wound dehiscence and malalignment **[9,10]**.

Operative time was ranging between 1.3-4.5 hours (with mean and SD of 2.7 hr±0.75 (162 minutes). This is going in contrast to similar group in Ghnnam, Elrahawy and Moghazy, (2016) study, which had operation time up to 90 minutes, while group with BMI over 30 had operative time mean 115 minutes **[6]**.

As regard time left to remove the drain, minimum and maximum time was 48-120 hours. The mean daily drainage was 43.22mL. This was going with Ghnnam (2016) study, the drain was left for 3-10 days with daily output of 50mL **[6]**.

When estimating percentage of girth change, subcostal, umbilical and suprapubic girths were found to decrease 1%, 8% and 9.5% respectively in the 1st week. Indeed, comparing pre and post-operative mean and SD by using non-parametric *t*-test; there was statistically significant reduction in abdominal girth at all levels ($p<0.0001$). mathematical grading of redundant skin after weight loss can be expressed by many methods, abdominal girths are one of them **[11]**. At all levels, whatever the method used, abdominoplasty decrease the measures known preoperatively and produces significant changes in grading of redundant skin flap **[4]**.

Patient satisfaction is a feedback toward surgery is a subjective impression **[12]**. However, in aesthetic surgery, patient's quality of life and feedback toward the final results are important. Patient feedback have been tested by several means other than 'excellent' and 'good' **[13]**. These measures were different and varied in testing several aspects of patient's (expectation-final impression) complex.

Patients' expectations and satisfaction were varied but in most of situations, patients find their expectation right. Generally, comparing both outcomes by Wilcoxon ranked-sum test, there were no statistically significant difference between both groups of outcomes. In Brauman et al., study, The majority of patients reported experiencing a marked improvement in their appearance and function. Very few, mostly in the massive weight loss group, were hard to please and presented body image issues in addition to an increased frequency of seromas and scar contractures **[14]**.

In Saarimiemi et al., (2014) trial, they found that abdominoplasty results in significantly improved quality of life, body satisfaction, effectiveness, sexual functioning, self-esteem, and mental health **[15]**.

There were only 3/21 (14.28%) cases developed complications in our study. These complications were seroma (2 cases) and wound infection (one case). This is going with Jabaiti, (2009) study, he found that out of 29 cases underwent abdominoplasty, there was 25% complications and most of them were seroma followed by wound infection **[5]**. In Ghnnam, Elrahawy and Moghazy, (2016), eleven patients (16.4%) showed major complications that required surgical intervention or aspiration and 14.9% revealed minor complications that did not need any intervention **[6]**.

Recent studies found that wound complications are ranging between 14-32%. Hence, our rate is within the accepted level of complications. Vastine et al., (1999) in a review of 90 abdominoplasties, they found that obese patients are at risk of developing complications than borderline and non-obese patients by more than 80% **[16]**.

In contrast to previously mentioned studies, van Uchelen et al., (2001) and Duff et al., (2003) found no statistical linkage between BMI and wound complications **[17,18]**.

In our study, there was no statistical relationship between having a complication and exact type of weight loss prior to enrollment. This is exactly going with Jabaiti, (2009) study as he found no correlation between abdominoplasty complications and having previous gastrectomy **[16,18]**.

On searching the correlation factor beyond complications, Jabaiti found a correlation by BMI and smoking history. In our study, they were strongly associated with DM. The extent of abdominal pannus encountered in majority of these patients make them more susceptible to hematoma, seroma and wound infection. Therefore, it is better to left drain inside till the daily output to be below 20cc/day **[19]**.

In our study, there were no mortality or morbidity like thromboembolism as seen in other previous large study **[6]**. This can be emphasized by two reasons; first, most of our study participants were females, they have less hypercoagulative affinity than men. Second, obesity as stated by BMI was less severe and our inclusion criteria was (less than 30) which means less liability to stasis and thromboembolism.

In our study, there was no recorded case of neuropathic pain at site of abdominoplasty **[7]**.

In conclusion, after measuring patient's satisfaction, abdominal girths and complication rate, abdominoplasty was safe and effective maneuver for abdominal contouring with good patient selection.

Conflict of interest:

There is no conflict of interest.

REFERENCES

1- Gentileschi S., Stefanizzi G., Pino V. and Servillo M.: Abdominoplasty in massive weight loss patient: Modifying the technique to improve the safety. Vol. 72, Journal of plastic, reconstructive & aesthetic surgery: JPRAS. Netherlands, p. 1030-48, 2019.

2- Sterodimas A., Boriani F., Nicaretta B. and Pereira L.H.: Revision Abdominoplasty with Truncal Liposculpting: A 10-Year Experience. Aesthetic Plast Surg. Feb., 43 (1): 155-62, 2019.

3- Brauman D., van der Hulst R.R.W.J. and van der Lei B.: Abdominoplasty with Circumferential Liposuction. Plast. Reconstr. Surg. [Internet]. Aug., 144 (2): 328e-330e, 2019. Available from: http://insights.ovid.com/crossref?an=00006534-201908000-00067.

4- Zammerilla L.L., Zou R.H., Dong Z.M., Winger D.G., Rubin J.P. and Gusenoff J.A.: Classifying Severity of Abdominal Contour Deformities after Weight Loss to Aid in Patient Counseling. Plast. Reconstr. Surg. [Internet]. Dec., 134 (6): 888e-894e, 2014. Available from: http://content.wkhealth.com/linkback/openurl?sid=WKPTLP:landingpage&an=00006534-201412000-00015

5- Jabaiti S.K.: Risk factors for wound complications following abdominoplasty. Am. J. Appl. Sci., 6 (5): 897-901, 2009.

6- Ghnnam W., Elrahawy A. and Moghazy M.El.: The Effect of Body Mass Index on Outcome of Abdominoplasty Operations. World J. Plast. Surg., 5 (3): 244-51, 2016.

7- Presman B., Finnerup K., Andresen S.R., Nikolajsen L. and Finnerup N.B.: Persistent pain and sensory abnormalities after abdominoplasty. Plast. Reconstr. Surg. - Glob Open., 3 (11): 1-7, 2015.

8- Ahmed H.O., Arif S.H., Abdulhakim S.A., Kakarash A., Ali Omer M.A., Nuri A.M., et al.: Gender difference in requesting abdominoplasty, after bariatric surgery: Based on five years of experience in two centers in Sulaimani Governorate, Kurdistan Region/Iraq. Int. J. Surg. [Internet], 56 (May): 155-60, 2018. Available from: https://doi.org/10.1016/j.ijsu.2018.06.017.

9- Brauman D., van der Hulst R.R.W.J. and van der Lei B.: Abdominoplasty with Circumferential Liposuction. Plast Reconstr Surg [Internet]. Aug., 144 (2): 328e-330e, 2019. Available from: http://insights.ovid.com/crossref?an=00006534-201908000-00067.

10- Pitanguy I. and Radwanski H.N.: Personal approach to aesthetic abdominal deformities. Aesthetic Surg. Abdom Wall., 102-14, 2005.

11- Papadopulos N.A., Meier A.C., Henrich G., Herschbach P., Kovacs L., Machens H-G., et al.: Aesthetic abdominoplasty has a positive impact on quality of life prospectively. J Plast Reconstr Aesthet Surg. May, 72 (5): 813-20, 2019.

12- Friedman T. and Wiser I.: Abdominal Contouring and Combining Procedures. Clin. Plast. Surg. Jan., 46 (1): 41-8, 2019.

13- Vallim M.G.B., Calderoni D.R., Bueno M.A.C., Motta M.M., Basso R. de C.F. and Kharmandayan P.: Patient Versus Surgeon Preferences Between Traditional and Neo-omphaloplasty in Post-bariatric Abdominoplasty. Aesthetic Plast. Surg. Feb., 41 (1): 102-7, 2017.

14- Brauman D., van der Hulst R.R.W.J. and van der Lei B.: Liposuction Assisted Abdominoplasty. Plast. Reconstr. Surg. - Glob Open., 6 (9): e1940, 2018.

15- Saariniemi K.M.M., Salmi A.M., Peltoniemi H.H., Helle M.H., Charpentier P. and Kuokkanen H.O.M.: Abdominoplasty Improves Quality of Life, Psychological Distress, and Eating Disorder Symptoms: A Prospective Study. Plast. Surg. Int., 2014: 1-4, 2014.

16- Vastine V.L., Morgan R.F., Williams G.S., Gampper T.J., Drake D.B., Knox L.K., et al.: Wound complications of abdominoplasty in obese patients. Ann Plast Surg [Internet]. Jan., 42 (1): 34-9, 1999. Available from: http://www.ncbi.nlm.nih.gov/pubmed/9972715.

17- van Uchelen J.H., Werker P.M. and Kon M.: Complications of abdominoplasty in 86 patients. Plast Reconstr Surg [Internet]. Jun., 107 (7): 1869-73, 2001. Available from: http://www.ncbi.nlm.nih.gov/pubmed/11391211.

18- Duff C., Aslam S. and Griffiths R.: Fleur-de-Lys abdominoplasty-a consecutive case series. Br J Plast Surg [Internet]. Sep., 56 (6): 557-66, 2003. Available from: https://linkinghub.elsevier.com/retrieve/pii/S0007122603001747.

19- Vico P.G., De Vooght A. and Nokerman B.: Circumferential body contouring in bariatric and non-bariatric patient. J. Plast. Reconstr. Aesthet Surg. [Internet]. May, 63 (5): 814-9, 2010. Available from: http://www.ncbi.nlm.nih.gov/pubmed/19345658.