

Is Obesity A Restricting Factor for Abdominally Based Free Flaps in Breast Reconstruction?

Ashrf Abo-Elftooh Khalil, Ahmed F. AboRady, Ahmed Nawwar, Ahmed Ragab Morsi
Department of Surgery, Plastic Surgery Unit, Faculty of Medicine, Cairo University

ABSTRACT

Introduction: both the incidence of breast cancer and obesity are increasing among Egyptian females. This implies more challenge to plastic surgeons in their efforts to perform aesthetically pleasant breast reconstruction with the least possible complications. **Aim of the work:** to highlight the safety, morbidity and patient satisfaction of the use of free TRAM flap and its variations in breast reconstruction for obese patients. **Patients & Methods:** 30 female patients were enrolled in this study. All of them seeking delayed breast reconstruction using free autologous tissue from the lower abdomen, patients were classified into 2 groups according to their body mass index: obese and non-obese. **Results:** incidence of flap complications was slightly higher in the obese group. Donor site complications were comparable in both groups
Keywords: Obesity, Breast reconstruction, Free TRAM, DIEP flap

INTRODUCTION

Obesity is considered a surgical risk factor, not only in breast reconstruction, but also in most if not all surgical procedures. Obesity complicates any surgical procedure due to associated patient's comorbidities and the physical effects of obesity on the surgery itself.

Recent studies claim that more than 35% of adult population in the United States are obese. Although the exact incidence of obesity in Egypt is still underestimated, several studies claim that the incidence is rapidly increasing. This may be attributed to the change in the lifestyle and nutritional habits of the Egyptian people.

According to the results of the national population-based cancer registry program published in 2014, the commonest sites of cancer in Egyptian females are the breast (32.0%) followed by the liver (13.5%).³

Breast reconstruction is of paramount importance for the patient to restore her lost sense of femininity after mastectomy. For a long time, pedicled TRAM flap has been considered to be contraindicated in obese patients because of the associated high rate of complications. Since its first description by Holmstrom in 1979, free TRAM and its variations have been advocated to be used in breast reconstruction in obese patients because they have more robust blood supply, together with decreased donor site morbidity that may be attributed to limited abdominal flap

undermining together with less violation of the abdominal fascia and muscles.¹²

However, several studies have revealed that the use of free tissue transfer from the abdomen for breast reconstruction in obese patients is associated with increased incidence of complications in both the flap and the donor site together with the general complications.²

PATIENTS AND METHODS

This study was conducted at Kasr el-Aini hospital; plastic surgery department, during the period between January 2013 and September 2015. Thirty female patients were enrolled in the study, all the patients presented after unilateral mastectomy and after completion of the adjuvant therapy; seeking for delayed autologous breast reconstruction.

Exclusion criteria included vasospastic disorders, autoimmune disorders, significant thrombophilia, prior abdominoplasty and previous liposuction of the abdominal wall.

Patients were classified according to their body mass index into two groups; Group A: BMI > 30 (obese group), Group B: BMI < 30 (non-obese group) both groups were assessed regarding operative time, transfusion requirements, flap complications such as total flap loss, partial flap loss, vessel thrombosis, hematoma, infection, seroma or fat necrosis. Donor site complications were also assessed such as abdominal flap necrosis, hematoma formation, wound infection,

seroma formation, abdominal bulge or hernia formation.

Patients' comorbid conditions were documented and properly assessed. This included diabetes mellitus, hypertension, cerebrovascular diseases, arrhythmias, COPD, dyslipidemia and preoperative adjuvant therapy.

The comparison also entailed an essential item which patient's satisfaction. Patients were grouped into 3 grades regarding their satisfaction about both the reconstructed breast and the donor site: highly satisfied, fairly satisfied and unsatisfied.

RESULTS

Table 1: Demographics and surgical interventions

	BMI > 30 (Obese group)	BMI < 30 (Non obese group)
No of patients	18	12
Age (mean)	32.4	30.2
Type of flap		
• Free TRAM	7	2
• Free MS-TRAM	9	6
• Free DIEP	2	4

Table 2: Intraoperative and postoperative course and complications

	BMI > 30	BMI < 30
Intraoperative		
Operative time (mean) mins.	396	370
Intraoperative blood transfusion*	3	1
Postoperative		
Hospital stay (mean)	7.3	7.2
Postoperative blood transfusion*	1	1
Flap complications		
Partial flap loss	1	0
Wound dehiscence	1	1
Fat necrosis	1	0
Abdominal complications		
Wound dehiscence	1	2
Seroma	1	0
Abdominal bulge	8	5
Abdominal hernia	1	0

* No. of patients received blood transfusion not the number of the blood units

Table 3: BMI range in obese group (BMI>30)

BMI range	Number of patients
30 - 35	5
35 - 40	11
More than 40	2

Table 4: Patient satisfaction

	BMI > 30			BMI < 30		
	Highly satisfied	Moderately satisfied	unsatisfied	Highly satisfied	Moderately satisfied	unsatisfied
Reconstructed breast	11	6	1	6	4	2
Abdomen	13	4	1	7	4	1



Fig. (1): A) preoperative B) postoperative case had muscle sparing free TRAM (MS-TRAM), BMI = 39.44



Fig. (2): A) Preoperative B) postoperative case had free DIEP, BMI = 40.25

DISCUSSION

Several studies, including this study, revealed increased risk of complications in autologous breast reconstruction using free abdominal flaps in obese patients. The problem with complications of immediate breast reconstruction surgery is not limited to the morbidity of the complication, but it entails hindering the start of the adjuvant therapy which is of paramount importance.

Preoperative assessment of the obese patients should include assessment of the cardiopulmonary status of the patient by proper history taking, thorough clinical examination and investigations in the form of echocardiography and pulmonary functions tests.

Intraoperatively; the use of pneumatic intermittent compression stockings together with subcutaneous injection of low molecular weight heparin and adequate hydration are extremely important to lower the risk of deep venous thrombosis, another factor is working in two teams to reduce the operative time.¹¹

Handling such a large flap should be done with great care during the flap elevation and the inseting. This may be facilitated by suturing the flap to the chest wall during performing the vascular anastomosis.

Chang et al., analyzed the results of 64 obese patients who underwent free TRAM flap and found that the incidence of total flap loss, mastectomy skin flap necrosis and donor site complications increases 3-4 times their counterpart in non-obese patients.⁴

Seidentuecker et al., recorded an increase in flap complications in obese patients however donor-site complications were not higher compared to the normal group.⁵

In this study the overall incidence of complications was higher in the obese group (55.6%) compared to the non-obese group (44.4%) several causes have been incriminated in the increased incidence of abdominal bulge and hernia in obese patients. These factors include poor tissue quality, increased intra-abdominal pressure and increased risk of postoperative respiratory complications.

However, in this study, the incidence of abdominal bulge was very near in the 2 groups (44.4% vs. 41.6%) this may be explained by the less violation of the anterior abdominal wall

during harvesting free TRAM flap and its variants.

Chang et al., reported an increased incidence of total flap loss in obese patients although the incidence of vessel thrombosis is similar in both obese and non-obese patients. This may be explained by the fact that the occlusion may not be at the anastomosis but at the level of the attenuated musculocutaneous perforators.⁴

Regarding patient satisfaction, Colakoglu et al reported an increased rate of patient dissatisfaction in those patients who developed complications following their breast reconstruction. This may even lead them to regret having reconstruction of their lost breasts. This highlights the importance of choice of the proper method of reconstruction for each individual patient.⁷

In this study, obese patients were more satisfied with results than non obese patients. This is due to the large volume of the reconstructed breast that is close to the normal breast. We found that a large number of our patients refused to have an operation in the normal breast for symmetrization. This may be a driving issue for autologous breast reconstruction with abdominal flaps especially in obese patients because we need to reconstruct a large breast trying to imitate the other large side. This option is difficult in implant-based reconstruction.

A drawback in this study is the limited number of patients, however our preliminary results can point out the way of choosing the method of breast reconstruction in obese patients. On the other hand, most of the studies done in this field use a review of databases which usually lacks the intraoperative details of each operation, so there is usual tendency to have very high rate of complications and dissatisfaction in obese groups.

The question remains: what is the ideal method of breast reconstruction in obese patients? Although breast reconstruction in obese patients using free abdominal tissue is associated with higher complication rates; yet it is associated with higher patient satisfaction rates than implant based reconstruction.⁹ So the decision of choosing either method should be individualized taking into consideration other comorbidities and patient's expectations.

Another question is: is it better to perform breast reconstruction in obese patients on delayed basis? The answer is: it is advisable to be on

delayed basis because this will decrease the operative time, transfusion requirements, in addition to avoiding complications that may postpone starting the adjuvant therapy.¹⁰

Another advantage is that in delayed reconstruction the surgeon has the chance to encourage the patient to lose weight prior to surgery, and to explain to them the hazards associated with performing the reconstruction while they are still obese.

CONCLUSION

Considering the increasing incidence of obesity among Egyptians together with the increasing incidence of breast cancer, more patients will present asking for breast reconstruction while they are still obese. Although autologous reconstruction using free TRAM flap and its variations is associated with higher complication rates, it is associated with more patient satisfaction. The choice of the method of reconstruction is better to be individualized.

REFERENCES

1. Fischer JP, Cleveland EC, Nelson JA, et al., breast reconstruction in the morbidly obese patient: assessment of 30-days complications using the 2005 to 2010 national surgical quality improvement program data sets. *Plast Reconstr Surg.* 2013; 132(4):750-761
2. Chen CL, Shore AD, Johns R, Clark JM, Manahan M, Makary MA. The impact of obesity on breast surgery complications. *Plast Reconstr Surg.* 2011;128:395e-402e.
3. Ibrahim AS, Khaled HN, Mikhail NH et al., Cancer incidence inEgypt: results of the national population -based cancer registry program, journal of cancer epidemiology 2014
4. Chang DW, Wang B, Robb GL, et al. Effect of obesity on flap and donor-site complications in free transverse rectus abdominis myocutaneous flap breast reconstruction. *Plast Reconstr Surg.* 2000;105:1640-1648.
5. Seidenstuecker K, Munder B, Mahajan A et al. morbidity of microsurgical breast reconstruction in patients with comorbid conditions. *Plast Reconstr Surg.* 2011;127(3): 1086 - 1092
6. Jandali S, Nelson JA, Sonnad SS, et al. Breast reconstruction with free tissue transfer from the abdomen in the morbidly obese. *Plast Reconstr Surg.* 2011;127:2206-2213.
7. Colakoglu S, Khansa I, Curtis MS et al (2011) Impact of complications on patient satisfaction in breast reconstruction. *Plast Reconstr Surg* 127:1428-1436
8. Garvey PB, Villa MT, Rozanski AT, Liu J, Robb GL, Beahm EK. The advantages of free abdominal-based flaps over implants for breast reconstruction in obese patients. *Plast Reconstr Surg.* 2012; 130:991 1000.
9. Atisha D, Alderman AK, Lowery JC, Kuhn LE, Davis J, Wilkins EG. Prospective analysis of long-term psychosocial outcomes in breast reconstruction: Two-year postoperative results from the Michigan Breast Reconstruction Outcomes Study. *Ann Surg.* 2008;247:1019-1028
10. Appleton SE, Ngan A, Kent B et al. Risk factors influencing transfusion rates in DIEP flap breast reconstruction. *Plast Reconstr Surg* 2011; 127: 1773 - 1782
11. Lemain V, McCarthy C, Kaplan K et al., venous thromboembolism following microsurgical breast reconstruction: an objective analysis in 225 consecutive patients using low molecular weight heparin prophylaxis. *Plast Reconstr Surg.* 2011; 127(4): 1399-1406
12. Bajaj AK, Chevray PM, Chang DW. Comparison of donor-site complications and functional outcomes in free muscle-sparing TRAM flap and free DIEP flap breast reconstruction. *Plast Reconstr Surg* 2006;117:737e46