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Reversed Abdominoplasty for Correction of Abdominal Contour Deformities with Supraumbilical Scar Post Bariatric Surgery

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ABSTRACT

Background: Classic abdominoplasty leads to disappointing aesthetic results in patients with preexisting supraumbilical scars, and various techniques involving vertical, horizontal or both incisions have been described. The presence of supraumbilical scar implies significant concern when planning an abdominoplasty.

Methods: Thirty five patients with abdominal wall contour deformities post bariatric surgery with supraumbilical scarred abdominal wall were corrected over the last 6 years with reversed abdominoplasty, excision of most of the present scars and progressive tension sutures between Scarpa's fascia and the abdominal wall myofascial system with a final inframammary suture line.

Results: Postoperatively we detected seroma in (5.7%), wound disruption with flap downward retraction (14.3%), minor flap necrosis (2.9%), while we did not record wound infection among the treated cases. On follow-up we noticed slight umbilical displacement (5.7%), flank deformities (14.3%) which were corrected either with scar revision (8.6%) or liposuction (5.7%), and hypertrophic scarring in (8.6%) of the corrected cases. The end result of the procedure was cosmetically accepted by (88.6%) of patients as the most of the scarred abdominal wall was excised with the resected excess tissues of the redundant abdominal wall (82.7%) with minor local wound complications.

Conclusions: We concluded that the reversed abdominoplasty is a versatile procedure for upper abdominal wall contouring in the presence of supraumbilical scarred abdominal wall that ended in a cosmetically accepted postoperative scar with less minor local complications and improved body silhouette.

INTRODUCTION

One of the challenges of cosmetic surgery is to determine the best way to treat different aesthetic deformities of the abdomen with suitable techniques. Historically, abdominoplasties were first described for the correction of large hernias and resection of severe lipodystrophies **[1,2]**. The classic abdominoplasty has been used for many years with several modifications intending to achieve better aesthetic contouring and to reduce complications. However, each modification solves problems only partially **[3,4]**. Many different incisions were proposed and with time the final scar was gradually situated in the lower abdomen **[5-7]**. Classic abdominoplasty leads to disappointing aesthetic results in patients with preexisting supraumbilical scars and various techniques involving vertical, horizontal or both incisions have been described **[8-12]**. When performing the classic abdominoplasty, advancement of the superior abdominal flap without excision of the supraumbilical scars is very limited and gives unfavorable aesthetic results as these scars act as a cord under tension **[13]**. The development of sophisticated bariatric surgical techniques has led to an increasing number of patients demanding complicated body contouring procedures **[14-16]**. In morbid obesity, contour deformities of the abdomen are common after bariatric surgery and considerable weight loss and in such cases, if open surgery-as a corrective procedure-was used, there was longitudinal supraumbilical scar **[8,11,17]**. Supraumbilical longitudinal, oblique or transverse scars imply significant concern when planning an abdominoplasty **[8,9,18]**. The aim of this study is to evaluate the reversed abdominoplasty for correction of abdominal wall deformities in patients with considerable weight loss after bariatric surgery.

MATERIAL AND METHODS

In the last 6 years, reversed abdominoplasties were performed in 35 cases who had abdominal wall deformities after open bariatric surgery with considerable weight loss and supraumbilical abdominal wall scarring.

Surgical technique:

General anesthesia with a prophylactic 1 gm of a third generation cephalosporin was our routine. The patient was put in supine position with the head slightly tilted upwards and the incisions were oriented at both inframammary creases and extended medially to meet the midline with a wide angle (Fig. 1). The dissection-helped with a curved blunted end scissor-started from the incision downwards while the assistant was elevating and advancing

the flap upwards toward the chest wall (Fig. 2). If the dissection was limited to supraumbilical area or just below it, we could preserve the paraumbilical perforators keeping more circulation into the flap, while laterally based perforators were secured when infraumbilical dissection was performed (Fig. 3). Musculofascial plication, both infraumbilical and supraumbilical if reversed full abdominoplasty, was performed using no. (0) Polypropylene (Proline) continuous sutures, or plication of the supraumbilical part if the contour deformity could be corrected with limited dissection of supraumbilical area. In cases where full or infraumbilical dissection was performed the umbilical stalk was circumcised and exteriorsed at the level corresponding to its natural position without tension to avoid its displacement (Fig. 3). Progressive tension sutures using (2/0) Polyglactin (Vicryl) were applied starting from the lower abdomen to fix the Scarpa's fascia to the musculofascial system of the abdominal wall and the last raw of the tension sutures was fixed at the level of inframammary crease just close to the suture line (Fig. 4). The progressive tension sutures were tied after proper hemostasis and fixation of the umbilical stalk in its new position with insertion of a vacuum drain through a separate stab. Excision of the excess tissues and closure of the wound in two layers [subcutaneous with 3/0 Polyglactin (Vicryl) while the skin was closed with continuous 3/0 Polypropylene (Proline) suture] (Fig. 5). Elastoplast was applied for two weeks and the patient was nursed in a semi setting position and was advised to have abdominal pressure garment for at least 3 months.

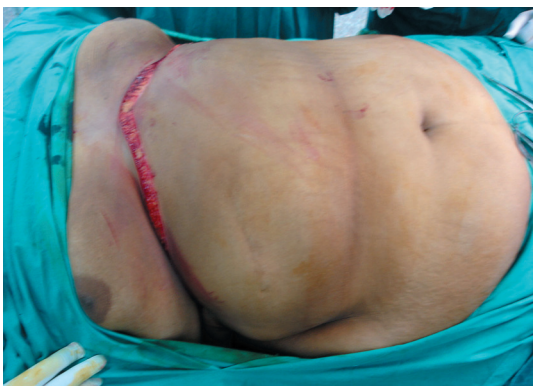

Fig. (1): Patient supine and the incisions were oriented at both inframammary creases.

Fig. (2): The dissection-started from the incision-down ward and limited to central area.

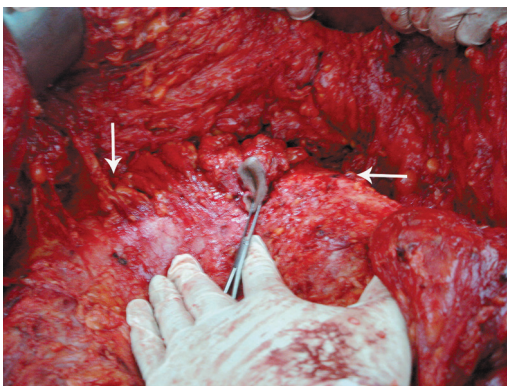

Fig. (3): The umbilical stalk was circumcised, to be exteriorized at its natural position. Paraumbilical perforators could be preserved.

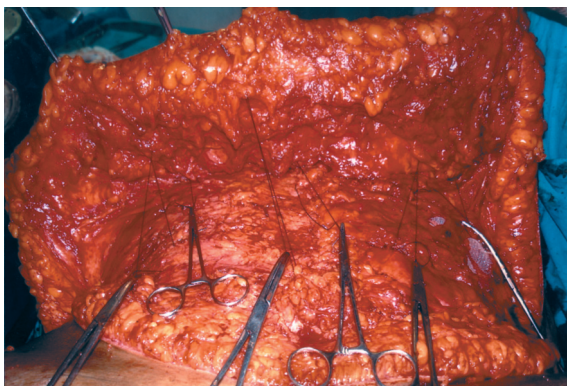

Fig. (4): Progressive tension sutures from Scarpa's fascia to myofascial system.

Fig. (5): Closure with continuous 3/0 polypropylene with a vacuum drainage.

Follow-up every two weeks for three months, then monthly for further three months was our regimen.

RESULTS

During the last 6 years, thirty five patients with deformed abdominal wall contour and supraumbilical scarring after bariatric open surgery and considerable weight loss were admitted to Plastic and Reconstructive Surgery Unit, Tanta University, Egypt. Reversed abdominoplasty with myofascial plication and progressive tension sutures were performed as a corrective procedure for abdominal wall deformities (Fig. 6: A,B). Females were the majority (91.4%) with body mass index of 38±6.71 and the ages of the patients ranged from 18 to 58 years.

Early postoperatively, we detected seroma in 2 cases (5.7%), wound disruption with flap downward retraction in 5 patients (14.3%), minor flap necrosis in (2.9%) while we did not report any wound infection. On follow-up we recorded slight umbilical displacement in 2 cases (5.7%), dog ear upper contour deformity that was corrected with scar revision in 3 patients (8.6%), lower flanks deformity which was managed by liposuction in (5.7%) while hypertrophic scar was reported in 3 cases (8.6%). We were able to excise most of the previous supraumbilical scar with the excised excess tissues in (82.7%) of the cases and the patients were satisfied with the postoperative cosmetic appearance in the majority of cases (88.6%) (Table 1).

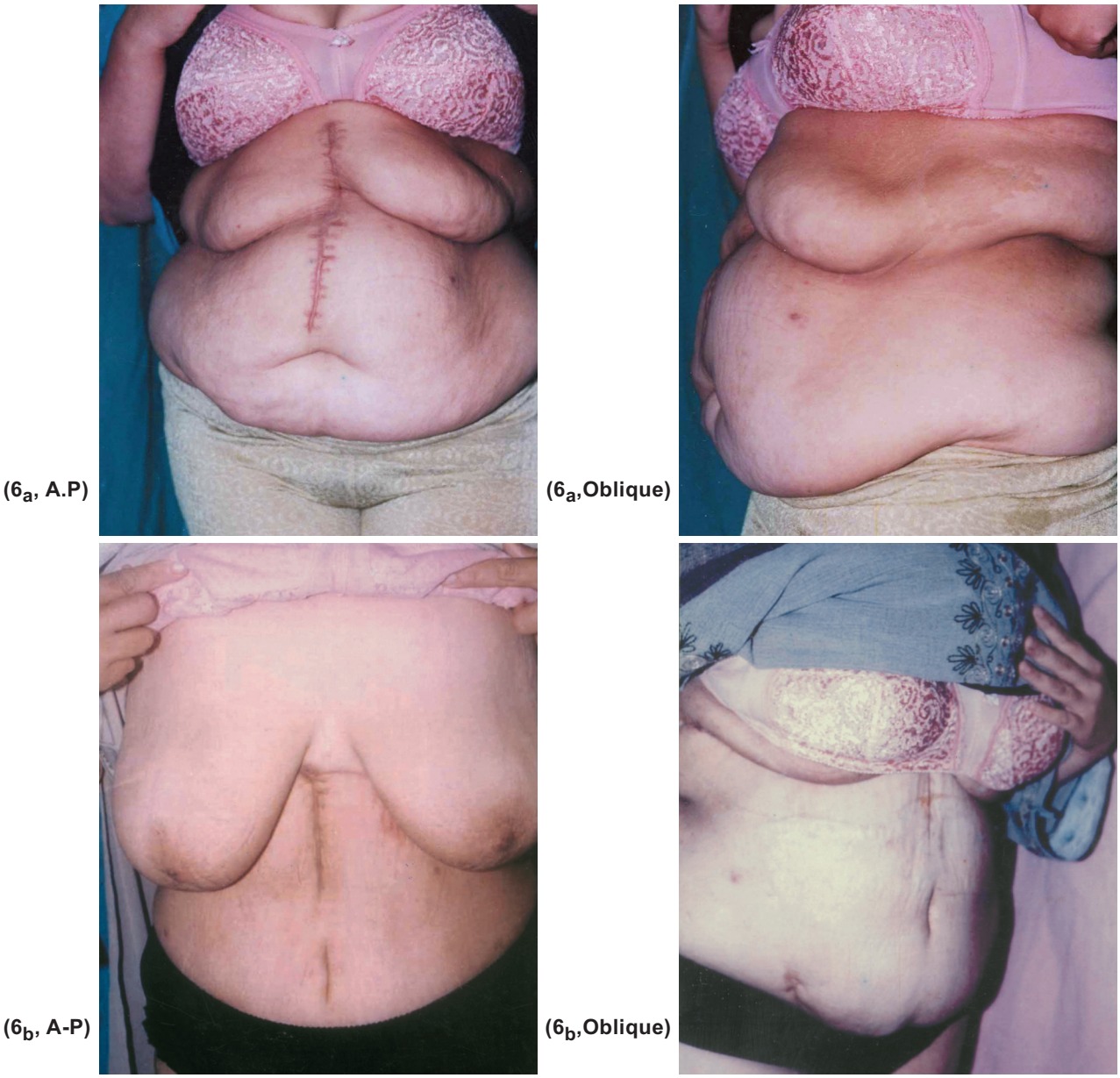

Fig. (6): Patient with considerable weight loss and abdominal contour deformity (6_a Preop. A.P-Oblique/6_b Postop. A-P-Oblique).

DISCUSSION

The safety of abdominoplasty in a surgically scarred abdominal wall depends on the vascular supply to the abdominal wall and the subsequent vascular zones designated by Huger [19]. Many studies were presented to describe the vascular supply of the abdominal wall and the safety of abdominoplasty in a surgically scarred abdomen and hence incision placement [20,21]. Reversed abdominoplasty as a sliding flap from the abdomen to the chest wall when tissue there is insufficient, scarred and/or damaged as post cancer ablation of the breast or chest wall, was declared since about fifty years [22].

In morbid obesity, contour deformities of the abdomen are common after open bariatric surgery and considerable weight loss. Classic full abdominoplasty techniques often fail to give the best cosmetic body contouring in these cases because the presence of the previous supraumbilical abdominal scar.

To reshape upper abdominal wall deformities in the presence of the supraumbilical scar many authors described abdominoplasty with various scar orientation [10,13]. The surgeon is faced with the problem of raising abdominal skin and subcutaneous tissue flap, which may affect flap vascularization because of previous surgical procedure. In such situation the reversed abdominoplasty offers the opportunity to overcome these concerns. In a recent study classic abdominoplasty in supraumbillical scarred abdominal wall was tried and they reported that there was no limitation or contra indication for abdominal wall dermolipectomy with or without liposuction in the previously scarred abdomen as long as the vascular zones of the abdominal wall are respected [11]. But in their study, there was no concern to the supraumbilical scar and the abdominal wall dissection was limited to allow only the musculofascial plication. Other studies tried various procedures to manage the deformed abdominal contour after open bariatric surgeries and weight loss using circumferential [13], modified vertical [10] or anchor-line abdominoplasty [17] and reported good results regarding the improvement of body contour, posture, social and psychological integration and sexual performance with minor seroma and partial wound dehiscence in some patients. The resection design in these modified abdominoplasties offered simultaneous treatment of both vertical and transverse redundancies but the resulting scar was apparent as a long vertical, transverse or inverted T shaped one as it could not be concealed by the underwear or swimming suit especially in young females. In the present study, we performed reversed abdominoplasty for body contouring in 35 patients with supraumbilical scarred abdominal wall postbariatric surgery with abdominal contour deformities at the upper abdomen after considerable weight loss. The final scar was oriented to be hidden in the inframammary crease and a wide excised area of the abdominal wall including the old supraumbilical scar could be achieved without excessive lateral wall undermining that preserved a good blood supply to the remained abdominal wall flaps. By supraumbilical reversed abdominoplasty we avoided lower vertical or transverse abdominal scar that adds more scars in the already scarred abdominal wall as in many earlier studies [11,17,23,24]. By the present maneuver we detected minor wound local complications as seroma (5.7%), wound disruption with flap downward retraction (14.3%), with superficial flap necrosis in (2.9%). When our dissection was extended just below the umbilicus in some cases we could preserve paraumbilical perforators that insured good blood supply to the central part of the dissected flap which improved the end results of our procedure. In the light of earlier studies, we used progressive tension sutures between the Scarp's fascia and the myofascial layer to anchor the freely mobile dissected flap, transfer the tension to the fascial system and distribute it over the entire deep surface of the abdominal flap leaving minimal tension on the skin closure that reduced widening of the scar and downward displacement of the abdominal flap [25,26]. On follow-up we recorded slight umbilical displacement (5.7%), dog ear upper contour deformity that was corrected under local anesthesia (8.6%), lower flank deformity which was managed with liposuction (5.7%) while hypertrophic scarring was detected in (8.6%) (Table 1). We could preserve the umbilicus in its place when the dissection was supraumbilical or just below it in more than half of our patients (62.9%), while in (37.1%) the umbilical stalk was shifted to a new site corresponding to its natural position [27]. The end result of the procedure among our cases was cosmetically accepted as the most of the scarred abdominal wall was excised with the resected excess tissues (82.7%) and the final scar was hidden in the inframammary crease. The patients were satisfied with the cosmetic results of the procedure as there was a significant improvement of the anteroposterior and lateral silhouette in the vast majority of patients (88.6%) because the resection design offered simultaneous treatment of both vertical and transverse tissue redundancies in the abdomen and supraumbilical scar excision. We concluded that the reversed abdominoplasty is a versatile procedure in the deformed supraumbilical

scarred abdominal wall correction after bariatric surgeries and considerable weight loss with contour deformities. The postoperative scar was hidden and the addition of the progressive tension sutures diminished the incidence of fluid collection, wound dehiscence or widening of the resulting scar with improvement of body silhouette.

Table (1): Postoperative findings.

Post op. findings	No. of patients	%
Early findings:		
Seroma.	2	5.7
Wound disruption with flap downward retraction.	5	14.3
Minor flap necrosis.	1	2.9
Wound infection.	0	0.0
Late findings:		
Slight umbilical displacement.	2	5.7
Dog ear upper contour deformity.	3	8.6
Lower flanks deformity.	2	5.7
Hypertrophic scar.	3	8.6
Near total supraumbilical scar excision.	29	82.7
Patient was satisfied with cosmetic end results.	31	88.6

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