

Histopathological changes in subcutaneous tissue of post bariatric patients, a possible cause of defective healing

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Background

After bariatric surgery, many patients are contented with the progress in losing weight; but on the other hand, they become frustrated by the developing fat apron. At this point, patients should perform body contouring and to work out a proper treatment plan. The most common body contouring surgical procedure after massive weight loss is abdominoplasty.

Methods

The study started from January 2014 to January 2015 in Elfayoum University hospital, this study included 25 post bariatric consecutive patients. We presented data on patient demographics, operative procedures, wound complications and revision surgeries. All excised specimen was sent for histopathology. The aim of the study is to detect the histopathological changes in subcutaneous fatty layer and its correlation with post bariatric wound healing complications.

Results

Wound complications occurred in 15 abdominoplasty patients, surgical revision was necessary in 9 of these patients. These problems were associated with microscopic findings, applied on the cutaneous and subcutaneous tissue taken from the horizontal scar during abdominoplasty.

Conclusions

With the increasing number of high weight loss patients, the need for body-contouring surgeries increases. Surgeons operating on post bariatric patients should be concerned that they are not handling healthy structures, therefore, accurate knowledge of microscopic changes in these patients is necessary for a better choice of reconstructive procedure and avoidance of complications.

Key words:

body contouring, microscopic changes, post bariatric, wound healing

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Introduction

Obesity is one of the leading health problems in our country. After bariatric surgery, many patients are content with the progress in weight loss, but they become frustrated with the developing fat apron. At this point, patients should undergo body contouring and work out a proper treatment plan. The most common body-contouring surgical procedure after massive weight loss is abdominoplasty [1–14]. Fracalvieri *et al.* [4] found that the complication rate in the postobese patient is higher than the complication rate in cosmetic patients in their 4-year clinical experience with abdominoplasties.

The aim of the study was to detect the histopathological changes in the subcutaneous fatty layer and its correlation with postbariatric wound-healing complications.

Patients and methods

This study was conducted on 25 consecutive post bariatric patients (20 Laparoscopic Sleeve Gastrectomy (LSG) and 5 Laparoscopic Greater Curvature Plication (LGCP)) from January 2014 to January 2015 in El Fayoum University Hospital. Informed

consent was taken from all patients. The time interval between bariatric and body-contouring surgeries was 6 months (Figs. 1–3). The preoperative laboratory tests of three patients revealed only mild anemia, which was treated with iron supplements before surgery, but there was no disturbance of liver and kidney function tests and albumin levels were normal. Five patients had controlled diabetes.

All excised specimens were sent for histopathology after abdominoplasty.

Results

Wound complications occurred in 15 abdominoplasty patients, surgical revision was necessary in 9 of these patients (Fig. 4a and b). These problems were associated with microscopic findings, applied on the tissues taken from the horizontal scar during abdominoplasty, we documented anomalies of the dermal elastic

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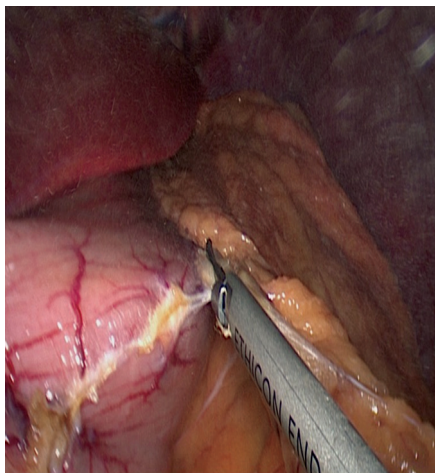
(overgrowth, and polyfragmented aspect) and collagen (degenerated and sclerosed) fibers (Figs. 5 and 6) with collapsed adipocytes (Fig. 7).

All these results were compared by a study which was done with non post bariatric patients undergoing abdominoplasty which included 20 patients. Abdominoplasty was done successfully in all patients (Fig. 8). Complication rate was 20% in the form of seromas, but no major complications were recorded.

Discussion

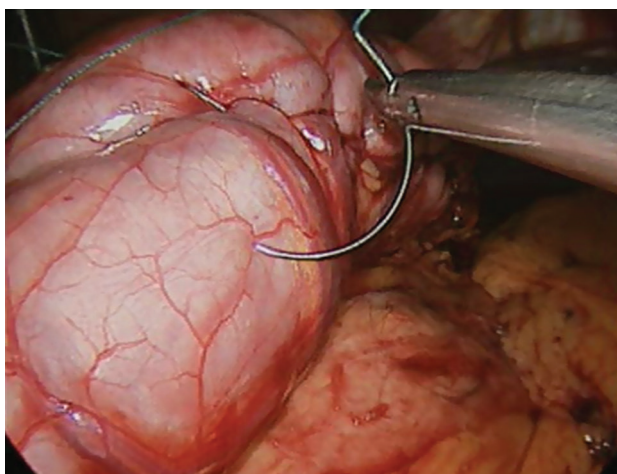
With the increasing rate of morbidly obese patients and the need for bariatric surgery, an increasingly larger number of patients are seeking extensive body-contouring procedures. Nowadays, relatively more lower body lift surgeries are performed instead of classic abdominoplasties alone. In our study

Figure 1



Division of the vascular supply of the greater curvature of the stomach.

Figure 3



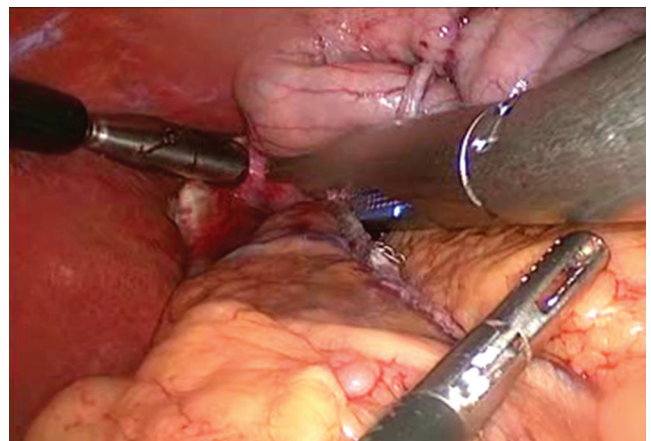
Plicated stomach.

wound complications occurred in 15 abdominoplasty patients (3.75%), and surgical revision was necessary in nine of these patients. These problems were associated with microscopic findings from tissues taken from the horizontal scar during abdominoplasty. We documented anomalies in the dermal elastic (overgrowth, serpiginous, and polyfragmented) and collagen (degenerated and sclerosed) fibers.

Furthermore, Fracalvieri and other authors found seroma as the most frequent complication of abdominoplasties [2,4,5,12,15]. Walgenbach *et al.* [16] found a new approach to decrease seroma formation using TissueGlu (Cohera Medical, Inc., USA) Surgical Adhesive, which is used in the management of wound drainage following abdominoplasty.

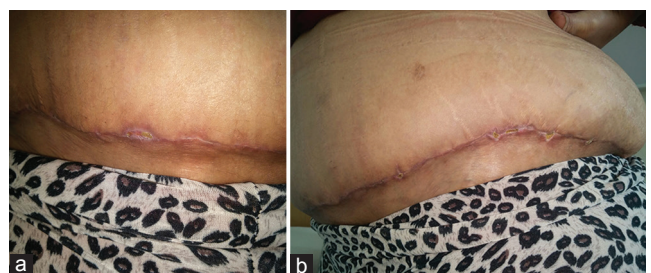
Fang *et al.* [17] found that flap elevation in a plane superficial to the standard suprafascial approach during abdominoplasty may decrease seroma formation. In my own surgical practice in a previous paper for abdominoplasty after bariatric surgeries, I preserved the costomarginal branch of the deep superior epigastric artery during undermining to ensure adequate vascular supply to the superior flap, and limited lateral undermining not extending past the anterior axillary line as well as limited the excision

Figure 2



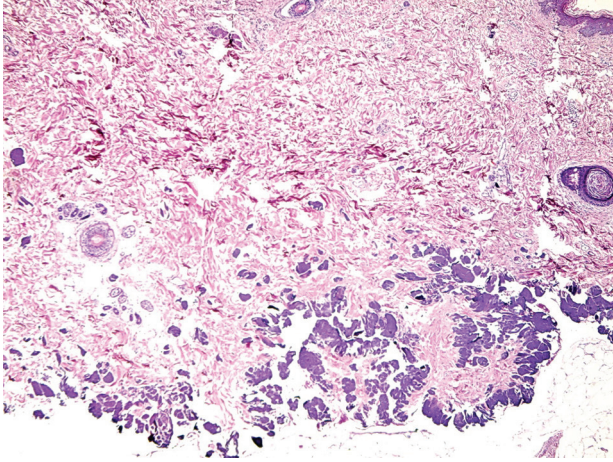
Gastrectomy using a stapler 6cm proximal to the pylorus LSG.

Figure 4



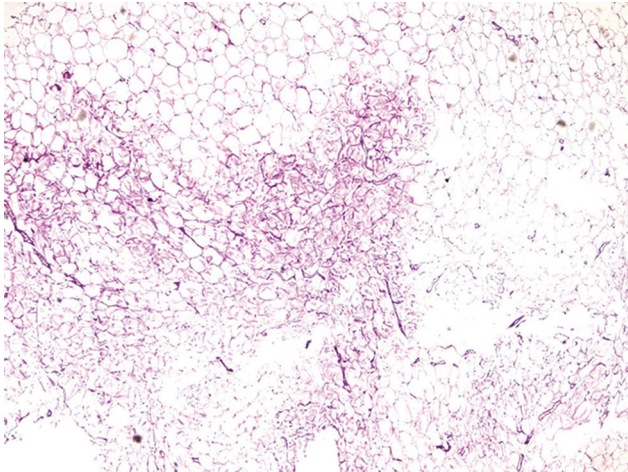
(a and b) Abdominoplasty after bariatric surgery.

Figure 5



Dermal elastic (overgrowth, and polyfragmented aspect) and collagen (degenerated and sclerosed) fibers.

Figure 7

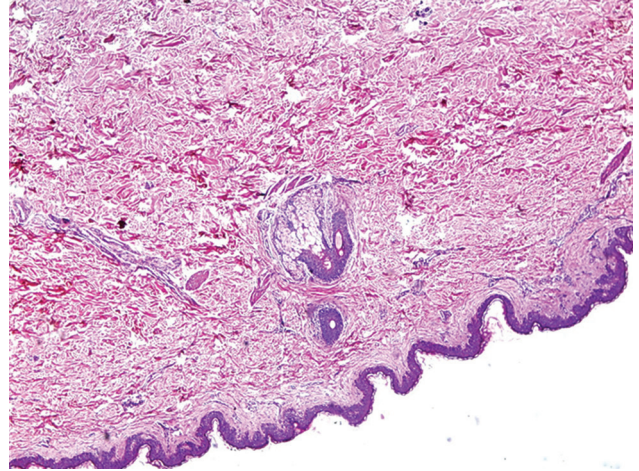


Collapsed adipocytes.

or suction in order to reduce the risk for flap necrosis; I also undermined the skin and subcutaneous tissue superficial to the suprafascial plane, thus decreasing the rate of seroma [18].

In contrast, several publications show higher rates for wound-healing deficits than seromas, which correspond with my personal findings. In their review of body contouring in super obese patients Mericli and Drake [1] found wound-healing deficits in 32% and seromas in 13%. Also, Taylor and Shermak [9] reported in their work on body contouring following massive weight loss a higher rate of wound breakdowns (20%) than seromas (16%). Vico *et al.* [10] showed in the study on circumferential body contouring in bariatric and nonbariatric patients similar low rates of 3.5–5% as ours for seromas.

Figure 6



Dermal elastic (overgrowth, and polyfragmented aspect) and collagen (degenerated and sclerosed) fibers.

Figure 8



Abdominoplasty Post Non bariatric surgery weight loss.

Conclusion

With the increasing number of high weight loss patients, the need for body-contouring surgeries has increased. Surgeons operating on postbariatric patients should take into consideration the fact that they are not handling healthy body structures, and therefore accurate knowledge of microscopic changes in these patients is necessary for a better choice of reconstructive procedures and for avoidance of complications.

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Nil.

Conflicts of interest

There are no conflicts of interest.

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