

## Benefits of Abdominoplasty Associated with the Repair of Abdominal Hernias

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### Abstract

**Background and Aim:** The aim of our work is to present the outcomes and complications that occurred to a group of 49 consecutive patients affected by a severe musculoaponeurotic laxity and or different abdominal wall defects, who underwent prosthetic wall defect repair and abdominoplasty. Severe laxity was the end result of repeated pregnancies in most of the female patients. A further aim of the work is also to demonstrate the metabolic and aesthetic advantages that occur with the association between prosthetic hernias repair and abdominoplasty.

**Material and Methods:** All patients underwent a standard abdominoplasty (wide bispinoiliac incision with resection of the redundant tissue) plus a longitudinal midline fascia plication and a prosthetic parietal defect repair. 15 patients were affected by different comorbidities (8.3% heart diseases; 2.1% COBP; 8.3% diabetes; 4.2% hepatic cirrhosis; 2.1% obliterant arteritis; 6.3% others).

**Results:** The follow-up averaged 22.08 months. Two patients had a major complication (hemorrhage, infection), while 12 had minor ones (partial necrosis of the limb, seroma, suture dehiscence).

**Conclusions:** Hernias or recti abdominis diastasis repair, combined with abdominoplasty provides functional, metabolic and aesthetic benefits. This approach is safe owing to a low risk of complications and a low rate of recurrence. Moreover, it is particularly helpful in obese patients, improving the metabolic state outcomes. It is especially helpful in patients who have multiple hernias, and those patients with recurrent wall defects.

**Key Words:** abdominoplasty; abdominal hernias;

### Introduction

The aim of abdominal wall surgical repair is to rebuild the structural integrity of the wall while minimizing morbidity, by

employing primary closure or alloplastic materials [1, 2]. Abdominoplasty performed by a transverse lower abdominal incision and the resection of excess skin consent, succeeds, by incorporating these aspects into

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**Table 1: Major abdominal wall defects**

Abdominal Wall Pathology	Frequency	Percentage	Cumulative Percentage
diastase rectus muscle all	1	2.0%	2.0%
diastase rectus muscle subumbilical	16	32.7%	34.7%
diastase rectus muscle supraumbilical	5	10.2%	44.9%
epigastric hernia	2	4.1%	49.0%
incisional hernia	7	14.3%	63.3%
no defects	17	34.7%	98.0%
umbilical hernia	1	2.0%	100.0%
Total	49	100.0%	100.0%



**Figure 1: Double abdominal hernia before surgery.**

(8.3% cardiopathy; 2.1% COBP; 8.3% diabetes; 4.2% hepatic cirrhosis; 2.1% obliterant

hernial repairs, in achieving both a safe procedure as well as improved outcomes [1]. The medical records of 49 consecutive patients who underwent abdominal wall repair and abdominoplasty were reviewed. Repair was carried out with primary fascial plication (19 pts.) or placement of permanent polypropylene mesh with or without fascial approximation (10 pts.) or placement of a double face mesh (GORE® DUALMESH®) in two cases, while 18 patients did not require any abdominal wall repairs. We investigated the correlation among obesity (63.26%), and comorbidities (36.58) and postoperative complications. In most cases, the complications were minor (12 pts) and could be managed with local wound care alone. Major complications included one hemorrhage and one infection that required higher cares.

**Materials and methods**

Our series consists of 49 patients (75.5% F) aged from 16 to 68 years (average 40.83) who were surgically treated from January 2013 to January 2014. 31 patients were obese (28.6% I gr.; 24.5% II gr.; 4.1% III gr.; 6.1% IV gr;). In 15 cases, there were different comorbidities



**Figure 2: Surgery.**

arteritis; 6.3% others). The types of abdominal defects are shown in table 1. Table 2 shows abdominal wall comorbidities in cases where the defect was multiple. We rated the defects showed in Table 1 as major and those in Table 2 as minor. Wall defect repairs and types of wall defects are shown in table 3.

With regard to the abdominoplasty, we used

**Table 2: Minor Abdominal wall defects**

Associates Abdominals Wall Pathology	Frequency	Percentage	Cumulative Percentage
incisional hernia	2	4.1%	4.1%
no defects	42	85.7%	89.8%
umbilical hernia	5	10.2%	100.0%
Total	49	100.0%	100.0%

**Table 3: Wall defect repairs and types of wall defects.**

ABDOMINAL WALL PATHOLOGY								
WALL DEFECT REPAIR	diastase rectus muscle all	diastase rectus muscle subumbilical	diastase rectus muscle supraumbilical	epigastric hernia	incisional hernia	no defects	umbilical hernia	TOTAL
primary fascial closure and plication	1	15	2	0	1	0	0	19
Line %	5.3	78.9	10.5	0.0	5.3	0.0	0.0	100.0
%Column	100.0	93.8	40.0	0.0	14.3	0.0	0.0	38.8
no	0	0	0	0	0	17	1	18
Line %	0.0	0.0	0.0	0.0	0.0	94.4	5.6	100.0
%Column	0.0	0.0	0.0	0.0	0.0	100.0	100.0	36.7
Rives Technique	0	0	1	1	2	0	0	4
Line %	0.0	0.0	25.0	25.0	50.0	0.0	0.0	100.0
%Column	0.0	0.0	20.0	50.0	28.6	0.0	0.0	8.2
suprafascial prosthetic repair	0	1	2	0	1	0	0	4
Line %	0.0	25.0	50.0	0.0	25.0	0.0	0.0	100.0
%Column	0.0	6.3	40.0	0.0	14.3	0.0	0.0	8.2
supra-subfascial prosthetic repair	0	0	0	1	1	0	0	2
Line %	0.0	0.0	0.0	50.0	50.0	0.0	0.0	100.0
%Column	0.0	0.0	0.0	50.0	14.3	0.0	0.0	4.1
wall replacement	0	0	0	0	2	0	0	2
Line %	0.0	0.0	0.0	0.0	100.0	0.0	0.0	100.0
%Column	0.0	0.0	0.0	0.0	28.6	0.0	0.0	4.1
TOTAL	1	16	5	2	7	17	1	49
Line %	2.0	32.7	10.2	4.1	14.3	34.7	2.0	100.0
%Column	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0

a traditional “complete” technique in 98% of cases, performing a mini abdominoplasty in one case, associated with a plication of linea alba.

The technique used in most cases was a “complete abdominoplasty” well described in literature [3, 4], the full or complete abdominoplasty is the most commonly performed method in patients that present a combination of excess adiposity, significant soft-tissue laxity, diastasis recti, and abdominal striae. A full or complete abdominoplasty incision extends across the abdomen laterally to a point corresponding to each anterior superior iliac spine. The incision passing through the superior level of the pubic symphysis and continuing following the natural skin fold (figure 1, 2). This length is necessary to achieve the best results by facilitating complete removal of the infraumbilical skin and soft-tissue laxity

that bothers these patients. Undermining the abdominal soft-tissue apron to the xiphoid process allows for correction of rectus diastasis [3].

Human fibrin sealant was used to stimulate fibrotization so as to obtain a complete plication inner scar, in all cases of primary fascial closure and plication. All of the patients received antibiotic short-term prophylaxis by ceftriaxone 2 gm I.V., one hour before surgery [5]. We had no cases of mortality in our series.

**Table 4: Aesthetic results**

Aesthetic Outcome	Frequency	Percentage	Cumulative Percentage
Patient Satisfaction	44	89.8%	89.8%
Patient dissatisfaction	1	2.0%	91.8%
Partial Patient Satisfaction	4	8.2%	100.0%
Total	49	100.0%	100.0%

**Table 5: Correlation between comorbidities and complications**

Complications	Cardiopathy	COBP	diabetes	hepatic cirrhosis	no	Obliterating arteritis	other	Total
haemorrhage	0	0	0	0	1	0	0	1
Line %	0.0	0.0	0.0	0.0	100.0	0.0	0.0	100.0
%Column	0.0	0.0	0.0	0.0	3.0	0.0	0.0	2.1
infection	0	0	1	0	0	0	0	1
Line %	0.0	0.0	100.0	0.0	0.0	0.0	0.0	100.0
%Column	0.0	0.0	25.0	0.0	0.0	0.0	0.0	2.1
no	3	1	2	1	25	1	2	35
Line %	8.6	2.9	5.7	2.9	71.4	2.9	5.7	100.0
%Column	75.0	100.0	50.0	50.0	75.8	100.0	66.7	72.9
partial skin flap necrosis	0	0	0	0	3	0	0	3
Line %	0.0	0.0	0.0	0.0	100.0	0.0	0.0	100.0
%Column	0.0	0.0	0.0	0.0	6.1	0.0	0.0	4.2
seroma	0	0	0	1	2	0	0	3
Line %	0.0	0.0	0.0	33.3	66.7	0.0	0.0	100.0
%Column	0.0	0.0	0.0	50.0	6.1	0.0	0.0	6.3
suture dehiscence	1	0	1	0	3	0	1	6
Line %	16.7	0.0	16.7	0.0	50.0	0.0	16.7	100.0
%Column	25.0	0.0	25.0	0.0	9.1	0.0	33.3	12.5
TOTAL	4	1	4	2	33	1	3	49
Line %	8.3	2.1	8.3	4.2	68.8	2.1	6.3	100.0
%Column	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0

(p=0.8218)

Patient’s metabolic state (blood pressure, waist, glycaemia, cholesterol and triglycerides) was tested both preoperatively as well as postoperatively. The longest

follow-up (averaged 22.08 months) lasted 3 years (35 months), while the shortest lasted one month. Outcomes were studied correlating complications with obesity and other comorbidities as well as considering the patients’ aesthetic satisfaction. There were major complications in only two cases (haemorrhage, infection). Among the minor complications there were six cases of suture dehiscence, three of seromas without infections and three of partial skin flap necrosis.

**Table 6: The correlation between complications and obesity**

Complications	OBESITY					TOTAL
	I grade	II grade	III grade	IV grade	no	
Haemorrhage	0	0	0	0	1	1
Line %	0.0	0.0	0.0	0.0	100.0	100.0
%Column	0.0	0.0	0.0	0.0	5.6	2.0
infection	0	1	0	0	0	1
Line %	0.0	100.0	0.0	0.0	0.0	100.0
%Column	0.0	8.3	0.0	0.0	0.0	2.0
no	14	6	1	1	13	35
Line %	40.0	17.1	2.9	2.9	37.1	100.0
%Column	100.0	50.0	50.0	33.3	72.2	71.4
partial skin flap necrosis	0	1	0	1	1	3
Line %	0.0	33.3	0.0	33.3	33.3	100.0
%Column	0.0	8.3	0.0	33.3	5.6	6.1
seroma	0	1	1	0	1	3
Line %	0.0	33.3	33.3	0.0	33.3	100.0
%Column	0.0	8.3	50.0	0.0	5.6	6.1
suture dehiscence	0	3	0	1	2	6
Line %	0.0	50.0	0.0	16.7	33.3	100.0
%Column	0.0	25.0	0.0	33.3	11.1	12.2
TOTAL	14	12	2	3	18	49
Line %	28.6	24.5	4.1	6.1	36.7	100.0
%Column	100.0	100.0	100.0	100.0	100.0	100.0

(p=0.2121)

The longest follow-up lasted almost three years (35 months), the shortest was of one month. There wasn’t any recurrence. Total follow-up of 49 patients was 1082 months with mean follow up of 22.08 months (SD 16.55). With regard to the aesthetic result (Figure 3) connected to the repair, data about patients are shown in table 4

**Results**

Supporting by data collected, we can assume that in our series, there was no

Table 7: Metabolic state of the patients.

Issues	Reduction (total)	Major reduction	Minor reduction	Stability
BP	51%			49%
Waist	71.4%	26.5% (>10cm)	30.6% (<10cm) - 14.3% (<5cm)	28.6%
Glycaemia	53.1%	10.2% (>10g/dl)	32.7% (<10g/dl) - 10.2% (<5g/dl)	46.9%
CHO	24.5%	24.5% (>20mg/dl)	75.5% (<20mg/dl)	75.5%
TG	22.4%	22.4% (>10mg/dl)		77.6%

correlation among complications and mass of tissue removed during abdominoplasty, complications and wall repair and complications and wall pathology. By relating complications to the use of prosthetic devices, we observed that three seromas developed in prosthetic repairs (2 polypropylene and 1 ePTFE + polypropylene). Co morbidities and Obesity were related with surgical complications. The correlation between co morbidities and complications is illustrated in Table 5. The correlation between complications and obesity are illustrated in Table 6.

Patients metabolic state (blood pressure, waist, glycaemia, cholesterol and triglycerides) has been preoperatively and postoperatively tested (Table 7). A reduction of all factors was observed.

## Discussion

It is reported that hernia repair combined with abdominoplasty provides functional and aesthetic benefits [6]. Wall defects can be safely repaired at the time of removal of redundant abdominal panniculus [7]. The contemporary abdominoplasty does not prolong the time of hospitalization [8]. In the literature, this technique is considered to be safe with a low risk of complications together with a low rate of recurrence, also when alloplastic materials implants [9] are involved. It is a good and simple method that is helpful in obese patients or in patients with multiple and recurrent hernias [9,10]. In

all cases of primary fascial closure and plication (19 patients), human fibrin sealant was used to stimulate fibrotization so as to obtain a complete inner scar [11-15].

Iljin has reported that infection is the most frequent complication of incisional hernia repair in obese patients [8]. In our series, one diabetic and obese patient (II grade) had a major infection that required a antibiotic therapy over a long period of time and a large number of medications; obese patients proved to have the largest number of complications (9/14) followed by diabetic patients (2/5) among those patients with comorbidities. We can conclude that comorbidities in our series, mainly obesity, but also diabetes, contributed to the development of complications. However the percentage of complications (28.57) in our series is represented by two major complications (1 hemorrhage and 1 infection) that required major efforts, while 14 were fast and healed easily.



Figure 3 : After Surgery.

## Conclusion

In conclusion, we can state that abdominal wall repair with contemporary abdominoplasty is a safe technique with good metabolic, functional and aesthetical outcomes.

## Authors' Contribution

GA: Participated substantially in conception, design, analysis and interpretation of data; also participated in the drafting and revising of the article and gave final approval.

FF: Participated substantially in conception, design, analysis and interpretation of data; also participated in the drafting and revising of the article and gave final approval.

FC: Participated substantially in acquisition of data and preparation of manuscript.

EA: Participated substantially in acquisition of data, drafting and revising of the article.

PP: Participated substantially in conception, design, analysis and interpretation of data; also participated in the drafting and revising of the article and gave final approval.

RR: Participated in the drafting and revising of the article and gave final approval.

DL: Participated in the drafting and revising of the article and gave final approval.

## Conflict of Interests

The authors declare that there are no conflicts of interests

## Ethical Considerations

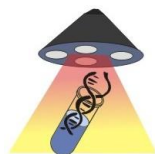
The study was approved by the Institute Ethics Committee and written consent was obtained from all study participants.

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