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Case Report,

Dermolipectomy of the Anterior Abdominal Wall a Patient Satisfaction Survey among 234 Patients

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Introduction:

Dermolipectomy of the anterior abdominal wall also called abdominoplasty (or « Tummy Tuck surgery ») is one of the most demanded cosmetic surgeries in Morocco and worldwide. Whether the surgery is an aesthetic success depends on the patient's expectations and their subjective perception of the final result.
This survey aims to:

- Assess the level of satisfaction/dissatisfaction among the patients who underwent an Abdominoplasty.
- Determine the criteria that influence the patients' perception of the result.
- Assess the efficiency of our standards of care.

Materials and methodes:

We conducted a four-year monocentric retrospective and descriptive study of all patients who underwent an Abdominoplasty in the Department of Plastic and Maxillofacial Surgery of the Mohammed V Military Teaching Hospital in Rabat, between the years 2015 and 2018. A physician from outside the Department called all the patients who benefited from a surgery for their abdominal wall lipodystrophy, at least six months earlier. They were asked the same questions from a validated questionnaire and their medical charts were analyzed.

SPSS 20.0 was used for statistical analysis.
The same surgical technique was used by all the surgeons. Before the surgery, a marking (fig1) is on the patient awake and standing on their feet. The rule of 7 cm is always respected for the marking. The marking starts by a vertical medial line drawn from the xiphoid process to the symphysis pubis. The skin is then retracted and the inferior pubic landmark is traced 7 cm above the upper aspect of the vulva in female and the radix penis in male. We trace then a landmark at a distance of 7 cm on each side of the previous. The incision will be made between the anterior superior Iliac spines through the three landmarks as described previously. Liposuction areas are marked as well.

Figure 1: marking.

Once the patient is put asleep in supine position, the surgeon will start by infiltrating the areas of liposuction using normal saline with epinephrine 1mg/1000ml. The liposuction of the supra-umbilical region and the flanks can then be performed. Next, incision is made following the tracing as previously described. In the sub-umbilical area, underskin fat tissues are respected at the level of the medial maximal tension area. Dissection is carried out just above the aponeurosis.

Using a number 11 blade, a circular incision is made around the umbilic. Dissection is then carried out deeply to skeletize the umbilic in full length. Next, dissection is carried out in the supra-umbilical area. It starts medially and extends laterally until meeting the inferior ribs laterally and the xiphoid process medially. When necessary, diastasis recti abdominis is cured at this level.
Then, the surgeon proceeds to the resection of the exceeding supra-umbilical tissues. Neoumbilicoplasty can then take place by exteriorizing the umbilic through a vertically oriented fusiform or an inverted-v shape incision placed in the middle of the xiphoid-pubis line. Next, quilting sutures are placed between the aponeurosis and the superficialis fascia in a staged manner as to reduce dead spaces. Two REDON drainage tubes are placed and connected to a high-vacuum bottle. The wound is closed in two layers. Finally wound dressing is performed and an adapted tummy tuck compression garment is put.

Results:

234 patients were included in the study, among them 6 males.
The mean age was 44.9 yo +/- 8.8 (min: 18; max: 62). 31% of them were suffering from diabete mellitus.
Among female 92, 3% eperienced one pregnancy at least. 38.5% had a c-section.
Smokers represented 15.4% of the patients included in this series. (Tab 1)

Table 1: medical background.

Diabètes	**Yes**	**72**	**30,8%**
	No	**162**	**69,2%**
Prégnance	**Yes**	**216**	**92,3%**
	No	**18**	**7,7%**
Smoking	**Yes**	**36**	**15,4%**
	No	**188**	**84,6%**

Before the surgery, the average Body Mass Index was 29.56 +/- 3.1 (Maximum weight: 102 kg; minimum weight: 63 kg)
Skin elasticity was assessed good in 92.3%. 54% of them had a thick skin. 46% had a thin skin. Subcutaneous fat was found to be thick in 94.9% of the patients. In 89% of the patients, the subcutaneous fat was prevalent in the supra-umbilical area. Skin stretch marks were found in 84.6% of the patients. 48.7% had a scar, among them 6 had a right subcostal (Kocher's) incision scar? The remaining were C-section scars. Diastasis recti abdominis was clinically found in 28.8% of the patients. Hernia was found in 15.4%. (Tab 2)
Abdominal CT-scan was prescribed to 30.6% of the patients.

Table 2: physical examination.

Skin élasticité	**Good**	***216***	***92,3%***
	Bad	***18***	***7,7%***
Skin thickness	**Thick**	***126***	***53,8%***
	Thin	***108***	***46,2%***
Fat thickness	**Thick**	***221***	***94,7%***
	Thin	***13***	***5,3%***
Fat area	**Supra-umbilical**	***211***	***89,9%***
	Infra-umbilical	***23***	***10,1%***
Skin stretch marks	**Yes**	***199***	***84,7%***
	No	***35***	***15,3%***
Scares	**Yes**	***114***	***48,7%***
	No	***120***	***51,3%***
Diastasis	**Yes**	***65***	***28,1%***
	No	***169***	***71,9%***
Hernia	**Yes**	***36***	***15,4%***
	No	***198***	***84,6%***

All the patients had a liposuction as the first step of the surgical technique. The average volume was 1651 ml (max: 8900 ml; min: 300 ml). The average weight of the tissues resected during the dermolipectomy was 1908 g (max: 4000 g; min: 920 g). Hernia was cured at the same time in 15.4% of the patients. Diastasis recti abdominis was treated in 94.9% of the patients.

Umbilical transposition was performed in 87.3% of the patients. Postoperative measures were:
Scar average length: 46.5 cm
Average distance between umbilic and pubis: 17.9 cm Average distance between umbilic and xiphoid process: 18.97 cm

Table 3: per operative data

	Mean	Median	Standard deviation	Minimum	Maximum
Liposuction	**1651 cc**	**1400cc**	**1372cc**	**300cc**	**8900 cc**
Dermo lipectomy	**1908 g**	**1900g**	**689g**	**920g**	**4000 g**
Scar length	**46,5cm**	**47cm**	**8,35cm**	**31cm**	**69cm**
Distance umbilic-pubis	**17,9cm**	**19cm**	**3,9cm**	**8cm**	**26cm**
Distance umbilic-xiphoid	**18,9 %**	**19cm**	**3,4cm**	**13cm**	**27cm**
Umbilical transposition	**Oui : 204**	**87,2 %**	**Non : 30**	**12,8%**	

The mean postoperative drainage collected a sum of 300 ml of serous fluid. Pain killers, blood thinners (anticoagulants) and antibiotics were given to all the patients during the postoperative course.
66.7% of the patients reported a high level of pain while 33.3% of them reported low pain. 94% of the patients deambulated the next day after their surgery. Bowel movements returned in day 1 postop for 76.9% of the patients, in day 2 for 15.4%, in day 3 for 5.1% and in day 4 for 2.6%. No blood transfusion was needed. Average inpatient stay length was 5.92 days +/- 1.57 (max: 10 days; min: 3 days). 82% of the patients sought physiotherapy treatment and manual lymphatic drainage after they were discharged home. All patients had a tummy tuck compression garment for an average of 93 days +/- 56 (max: 365 days; min: 15 days).
Postoperative complications were (tab 4):

- Hematoma in 5 patients
- Periumbilical and medial necrosis was reported in 2.6% of the patients
- Surgical site infection was reported in 8.3% after the patient was discharged from the hospital
- Skin allergy symptoms related to the wound dressing was described in 22%
- All patients reported temporary periumbilical hypoesthesia/anesthesia
- 5% presented a wound dehiscence
- Asymetry was reported by 7% of the patients
- 12.8% had a delayed wound healing
- Keloids were seen in 4.1%
- Partial / total revision of the wound was performed in 4.5%

Table 4: post operative complications

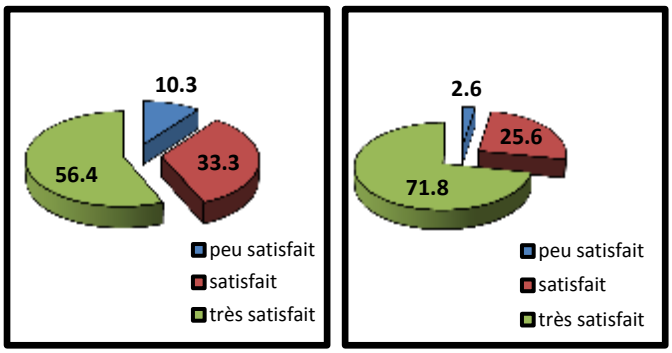
		Numbre	percentage
Wound dehisence	**Yes No**	**12 222**	**5.1% 94.9%**
Delayed wound healing	**Yes No**	**29 205**	**12.7% 87.3%**
Periumbilical necrosis	**Yes No**	**7 227**	**2.7% 97.3%**
Cheloid	**Yes No**	**12 222**	**5.1% 94 .9%**
Medial necrosis	**Yes No**	**6 228**	**2.6% 97.4%**
Surgical site infection	**Yes No**	**23 211**	**10.2% 89.8%**
Wound revision	**Yes No**	**21 213**	**8.9% 91.1%**
Hematome	**Yes No**	**5 229**	**2.1% 97.9%**
Seroma	**Yes No**	**18 216**	**7.7% 92.3%**
Hematome	**Yes No**	**5 229**	**2.1% 97.9%**
Seroma	**Yes No**	**18 216**	**7.7% 92.3%**

Table 5: patients and surgeons satisfaction

	Patients	Surgeons
Barely or not satisfied	10,3%	2,6%
Satisfied	33,3%	25,6%
Very satisfied	56,4%	71,8%

Complete satisfaction was reported by 56.4% of the patients. 33.3% were somehow satisfied and 10.3% were barely satisfied or not at all.
Independent surgeons were very pleased with the result in 71.8% of the cases. They were somehow pleased in 25.6% and unpleased in 2.6% of the

cases.



PATIENTS *SURGEONS*

Diagram 1 and 2: patients and surgeons satisfaction

Satisfaction among patients was different depending on their initial expectations (diag 3): bariatric, functional or purely cosmetic. Patients coming for a cosmetic procedure were more likely to express their dissatisfaction after surgery.

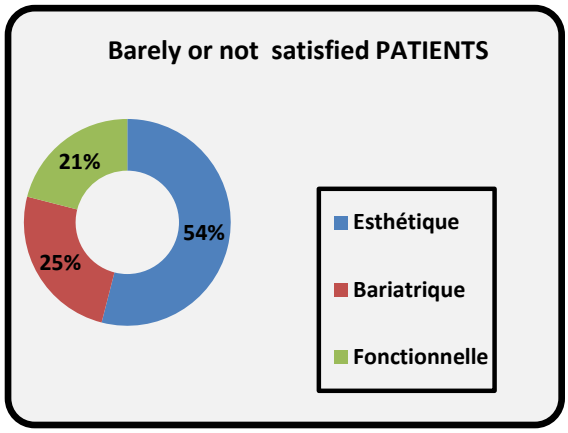


Diagram 3: expectations as expressed by the patients who were finally dissatisfied with their surgery

The most frequent cause of dissatisfaction was the scar (51%), followed by the location or the size of the neoumbilicus (22%). Diagram 4 shows the causes of dissatisfaction.

Among patients who complained about their surgical scar 48% had an enlarged scar while 42% had an asymetric scar and 6% had a keloid. 4% were insatisfied because of a dehiscence of the scar.Scar revision was performed in 24% of dissatisfied patients. Note that only female patients expressed dissatisfaction.

Discussion:

This study concludes that satisfaction for patients who underwent tummy tuck surgery is directly correlated with: 1) complications; 2) the psychological profile of the patient and 3) the cosmetic result. Because the self-assessment by the patients of their surgery is a subjective tool, we sought the opinion of independent plastic surgeons as an objective tool for assessing the final result. As shown in table 5 and diagram 1, the gap between the assessment made by the patients and the one made by the independent surgeons was important.

Figure 2 a : before surgery

Figure 2b : after surgery

Figure 3a: before surgery

figure 3b: after surgery

This is a proof that the psychological profiles of the patient and the information they receive during their first consult have a huge impact on their perception of the final result. 48% of the surgeon's members of the American Society of Plastic Surgery declare that the satisfaction rate among their patients who had a tummy tuck surgery was 100%, while 43% declared this rate being 75% [1]. Our study found that 10.3% of our patients are dissatisfied versus 23% in Bragg study 2]. This can be related to the criteria we use to select candidates for abdominoplasties: BMI of no more than 30, no smoking is allowed during the last 2 months before surgery and psychological assessment by a specialist whenever the psychological status of the patient seems unclear. These criteria are thought to

have drastically diminished our complication rate during the last 5 years, thus enhancing patients' satisfaction. Another key element was the surgical indication. Among dissatisfied patients 54% underwent surgery for cosmetic reasons. These patients scrutinized every detail and were able to find small imperfections even when an independent surgeon was very pleased with the result. They were expecting no less than perfection. Moreover, these patients had probably already imagined the result they wanted to have based on what they are exposed to from advertisement, media and social media. Patients suffering from functional issues like low back pain, urinary issues, mycosis or maceration constituted only 21% among dissatisfied patients, probably because they were relieved from their symptoms which represented their main concern.

The same conclusion was reached by other authors [2, 3, 4]. The more the patient's concern is functional, the more they feel happy with their tummy tuck surgery. Among all the complications we reported in this study, patients most complained about their scar. It represented the major complaint in 51% of dissatisfied patients versus 36% in Bragg's study [2]. Dog ear scar at the lateral aspect of the incision was responsible for 19% of the complaints versus 60% found by Bragg [2]. We believe it is important to take enough time to inform patients that the quality of the scar is related to the surgical technique but also to individual physiological healing processes proper to each person. We use to show our patients photographs of good but also bad scars so they are well informed about the risks. We also explain how to enhance the quality of the healing process by means of silicone dressing, massage and creams. 22% of the patients were unhappy with their neoumbilicus. To avoid patients' dissatisfaction, surgeons should focus their attention on the neoumbilicoplasty avoid disposing of the umbilic unless necessary. Delperre et al studied the anatomical features of the umbilic [5]. They found that the height, the deepness and the position of the umbilic was directly related to the sex, the weight and the age of patients. We think that this study can be used as a reference in chosing how to position the neoumbilicus, diminishing thus patients' insatisfaction. Dissatisfaction was related to residual excess skin after tummy tuck procedure in 18% versus 35% in Bragg's study [2]. Surgical revision was performed in 8.9% versus 6% reported by Matarasso and 31% and 29.1% reported by Gliksman and Chaouat respectively [6, 7, 8]. The last two authors recommend that surgeons should inform their patients of the possible need of a second surgery to achieve a successful outcome. In our experience, when there was a need to redo the surgery, we performed a complementary liposuction or a revision of the scar completely or just the dog-ear scars or to redo the entière surgery using the same technique of high superior tension. Satisfaction was significantly higher in those patients after their second surgery. We agree that dissatisfaction among patients who underwent tummy tuck procedure is related to the post-operative complications, as stated by other authors [9]. Furthermore, we conclude that other factors are important as well: The psychological profile of the patient, the information provided by the surgeon, the impact of social media and advertissement, the kind of complaint expressed by the patient (functional or cosmetic) and the management of complications when they occur. All these factors influence the patients' perception of their result and thus influence their level of satisfaction.

Conclusion:

When properly performed tummy tuck surgery provides the patients with a high level of satisfaction. It corrects cosmetic and functional defects of the abdominal wall (skin, fat and muscles). It helps patients feel better and enhances their perception of themselves and their level of selfconfidence.

Among the few unhappy patients, scar remains the most frequent cause of dissatisfaction.

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