

Evaluation of Skin Changes In Patients Undergoing Obesity Surgery; A Retrospective Observational Study

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ABSTRACT

Nowadays, Obesity surgery performed with increasing frequency. Some problems developed after these surgeries. Changes in the skin due to weight loss, vitamin, and element deficiencies are problems. In this study, we aimed to discuss how the skin changes that occur after the surgery affect the patients and their satisfaction.

Questionnaire forms were prepared to evaluate the changes in the skin who underwent bariatric surgery in the General Surgery clinic, We were recorded by questioning one year before and one year after the surgery. Their satisfaction with the skin changes before and after the surgery was evaluated.

A total of 51 patients, eight men (15.7%) and forty three (84.3%) women, included in the study. The mean age of the patients was 32.8 years. The preoperative mean body weight of the patients was 119.7 kg. The mean follow-up time was 15.4 months. During this follow-up period, the mean postoperative body weight of the patients was 82.8. While the rate of those who were satisfied with the changes in their skin during this period was 78.4 on average, the rate of those who were not satisfied was 21.6 on average.

Most of the patients included in the study stated that they had skin problems related to obesity on their skin. Despite this, patients stated that the changes in their skin after bariatric surgery were better than before the surgery.

Keywords: Obesity surgery, skin changes, patient satisfaction

Introduction

Obesity is a chronic condition that has a negative effect on the length and quality of life. The World Health Organization has defined obesity as an increase in the amount of fat in body components that adversely affect human health (1). The prevalence of obesity is increasing in our country and the world and is becoming a public health problem (2). 27% of the developed and industrialized American population, which constitutes approximately 7% of the world's adult population, consists of obese individuals (3). The rate of obesity has been reported as 11.3% in males and 32.6% in females in our country. (4). In the same study conducted twelve years later, this rate was observed to increase to 27% in men and 44% in women.

Diabetes, cardiovascular diseases, respiratory system diseases, and some skin problems are also seen due to obesity (5). Skin is the largest organ of our body. Enlarges with the increase body weight (6). There is a slight increase in skin diseases and problems both due to the increase in skin rate and due to obesity.

Obesity surgery is performed with increasing frequency Weight loss after bariatric surgery may be excessive and rapid (7). As a result of this, the fat mass under the tense skin decreases and sagging of the skin may occur. The sagging that may occur depending on the amount and speed of weight loss after the surgery may vary depending on the person's previous skin quality, age, gender, muscle mass, smoking, sun exposure, nutrition, and physical activity level. Although sagging can occur all over the body, it is most common in the abdomen, and upper and lower extremities (8). In fact, these sagging after surgery is not a cause of bariatric and metabolic surgery. In other words, the healthier the person's skin structure before the surgery means the healthier skin after the surgery. Sagging can be seen more frequently and prominently in people who use cigarettes and alcohol (9).

There is a decrease in the elasticity of the skin and accordingly, the skin starts to sag with increase in age. There is no strong evidence that rapid weight loss in the body increases sagging (10). Despite this, the decrease in muscle mass in the body can cause

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sagging (11). So there is no certainty that every patient will experience sagging skin.

In this study, we aimed to discuss how the skin changes that occur after the surgery affect the patients and their satisfaction.

Material and Methods

The patients' ages, genders, preoperative and postoperative body weights were recorded in order to evaluate the changes in the skin of the cases who underwent bariatric surgery in our general surgery clinic. Questionnaire forms were prepared for the changes in the pre- and postoperative skins and skin appendages of the patients (Table 1). Questionnaires were conducted face-to-face in some patients and *via* telephone in some patients. The answers were noted without any comments or guidance. Suggestions and treatments were made for the changes in the skin of the patients After the questionnaire forms were filled.

Ethical approval for this study was obtained from the City Hospital Ethics Committee. (23.09.2020 dated 66.meeting 1069 decision number).

Statistical Analysis: The distribution of the answers given to the survey questions was analyzed by frequency analysis.

Whether the difference between the mean time elapsed according to the changes before and after the operation was significant or not was examined with the “t” test in independent groups. When the elapsed time was grouped as less than 1 year or more, whether there was a significant relationship between the categorical variables was examined by “chi-square analysis”. Analyzes were performed with SPSS software at a confidence level of 95%.

IBM SPSS for Windows, Version 17.0 (IBM Statistics for Windows Version 17, Chicago, IL, USA) software was used for the statistical tests. Data were expressed as mean + standard deviation (O + SD) or n (%). Analyzes were performed with SPSS software at a confidence level of 95%.

Findings: When the distribution by gender is examined, the rate of men is 15.7%, and the rate of women is 84.3%. When the age distribution is examined, the youngest is 19 years old and the oldest is 60 years old, and the average age is 32.8. While the lowest preoperative weight was 87 kg, the highest was 180 kg and the mean was 119.7 kg.

The mean time was 15.4 months with at least 1 and at most 72 months had passed after the operation. The lowest weight was 52 kg and the highest weight was 144 kg, with an average of 82.8 kg after the operation (Table 2). When the distribution of postoperative changes is examined; The rate of those who felt their

skin more flexible was 78.4%, the rate of those whose skin was drier than before was 47.1%, and the rate of those whose skin was more oily than before was 31.4%.

The rate of those with increased acne on their face was 31.4%, the rate of those with less hair than before was 62.7%, and the rate of hair loss was 76.5%. The rate of those with increased cracks on their body was 62.7%, the rate of those who experienced more itching than before was 35.3%, the rate of those with increased thinning of their nails was 45.1%, the rate of those with more nail breakage was 51%, and the rate of those with less nappy rash on their body was 92.2% (Table 3).

The relationships between the changes in the body and the elapsed time were examined.

The mean time after surgery was compared between those who experienced the changes and those who did not.

According to this; There was no significant difference between the mean time after surgery of those who experienced the changes mentioned and those who did not. ($p>0,05$) (Table 2). The time elapsed between those who did and did not experience the specified changes was compared in two categories. There was no significant correlation between the changes experienced in patients with more than 1 year postoperative period and those with less than 1-year postoperative period. (Table 3, graphic 1).

Discussion

Changes in skin physiology; have a variety of effects on the skin, including numerous skin manifestations and aggravation of skin diseases. Obesity affects the skin for many reasons and causes a number of diseases by disrupting the physiology of the skin.

Skin diseases are more common in obese patients than in normal-weight patients.

The most common of these skin changes are acanthosis nigrans, skin blisters, hyperandrogenism, lines due to excessive stretching, color changes, peripheral vascular diseases, lymphedema, morphological changes in the feet and hair loss which is more than in normal weight people (12). In our study, almost all of the patients stated that they had different skin problems due to being overweight.

The health of the person is positively affected After bariatric surgery. These include diabetes, hypertension,—and sleep apnea (13). Although there are significant positive changes in these systemic and vital diseases, bariatric surgery has both positive and negative effects on the skin (14). In this study, the patients stated that they experienced more skin

Table 1. The Questionnaire Form That Applied To The Patients

Name-surname:
Phone:
Age:
Gender:
Weight before operation:
Time passed after operation:
Current weight:

Please tick the appropriate part of the questions below:

Postoperative period;

	YES	NO
<ul style="list-style-type: none">• I feel my skin healthier• My skin is drier than before• Acne increased in my face• My hair is thinner than before• My hair is falling out more• Cracks increased in my body• I have more itching than before• My nails have become thinner• I experience more nail breakage• Less rash occurs on my body		

Table 2: Demographic Characteristics of The Patients

	N	Minimum	Maximum	Mean	Standard.deviation
Age	51	19	60	32.8	10.8
Preoperative weight	51	87	180	119.7	20.9
Time passed	51	1	72	15.4	13.7
Kg	51	52	144	82.8	19.2

problems in their preoperative life, but they stated that there were some changes in their skin due to excessive and rapid weight loss after the surgery, however, these changes were more tolerable problems than before the surgery.

Accordingly, patients who have undergone bariatric surgery also show improvement in skin disorders.

In addition, it has been determined that even if there is no improvement, the problems that occur are better tolerated.

However, although our patients' feeling of healthier skin was higher after the surgery than before the surgery, this rate was not statistically significant. Although there were patients who stated that their skin was drier after surgery, this result was also not statistically significant.

Studies have shown improvements in acanthosis nigricans, acrochordons, intertrigo, hidradenitis suppurativa, psoriasis and necrobiosis lipoidica after

bariatric surgery (15). Likewise, the positive effects of bariatric surgery on the skin have been reported.

In our study, more than half of the patients stated that their skin was less oily after surgery. Despite this, they stated that there was no increase or decrease in acne formation. Our results were also compatible with the literature.

Alopecia and hair loss are common problems. This may be due to nutritional deficiencies and sudden and massive weight loss. A one-year prospective study showed that 41% of women after bariatric surgery developed iron- and zinc-deficient hair loss and that zinc supplementation could improve the condition (16). Although the majority of our patients said that their hair was missing, this rate was not statistically significant. There was no change in hair loss.

Plantar hyperkeratosis, striae distensae, adiposis dolorosa and chronic venous insufficiency may occur as a result of mechanical effects due to excessive obesity (17). In our study, patients who stated that the

Table 3: Rates of Patients Expressing Changes In Their Skin Before and One Year After Surgery

		Time passed				p
		One year and less		More than one year		
		n	%	n	%	
My skin feels healthier	Yes	18	45.0%	22	55.0%	0.412
	No	6	54.5%	5	45.5%	
My skin is drier than before	Yes	9	37.5%	15	62.5%	0.157
	No	15	55.6%	12	44.4%	
My skin is more oily than before	Yes	9	56.3%	7	43.8%	0.279
	No	15	42.9%	20	57.1%	
Acne increased in my face	Yes	8	50.0%	8	50.0%	0.506
	No	16	45.7%	19	54.3%	
My hair is thinner than before	Yes	14	43.8%	18	56.3%	0.373
	No	10	52.6%	9	47.4%	
My hair is falling out more	Yes	18	46.2%	21	53.8%	0.537
	No	6	50.0%	6	50.0%	
Cracks increased in my body	Yes	13	40.6%	19	59.4%	0.183
	No	11	57.9%	8	42.1%	
I have more itching than before	Yes	10	55.6%	8	44.4%	0.273
	No	14	42.4%	19	57.6%	
My nails have become thinner	Yes	10	43.5%	13	56.5%	0.428
	No	14	50.0%	14	50.0%	
I experience more nail breakage	Yes	11	42.3%	15	57.7%	0.340
	No	13	52.0%	12	48.0%	
Less rash occurs on my body	Yes	22	46.8%	25	53.2%	0.649
	No	2	50 %	2	50 %	



Fig.1. Chart showing the rate at which patients express changes in their skin before and one year after surgery. Cracks increased in their bodies were in the majority. But this result was not statistically significant. Skin infections, namely inflammatory skin diseases such as candidiasis, psoriasis and hidradenitis

suppurativa, are observed with a higher frequency and severity in patients with obesity. Finally, skin findings related to a number of metabolic disorders such as gout are also seen.

(18). In our study, although the majority of patients who stated that they experience nail problems on their feet more after surgery, this rate was not statistically significant. Likewise, although there were patients who stated that there was a decrease in diaper rash problems after surgery, this rate was not statistically significant.

Successful bariatric surgery has shown a wide range of health benefits, including skin and general medical conditions. It is successful in treatment of obesity-related complications such as diabetes, hypertension, dyslipidemia and obstructive sleep apnea (19,20). However, bariatric surgery has both positive and negative effects on the skin. There are studies reporting improvements in many skin conditions such as psoriasis, intertrigo, hidradenitis suppurativa and ulcerated necrobiosis lipoidica diabetorum (21,22). Conversely, there are studies reporting the occurrence

of adverse skin conditions, often involving nutritional deficiencies of, for example, iron, folic acid, vitamins and trace elements (23). Despite all this, studies stating that bariatric surgery also provides improvement in skin problems are in the majority (19,20). In our study, we found that there was a decrease in skin problems in patients who underwent surgery. However, the reduction in these problems was not statistically significant.

In our study, we concluded that skin problems of the patients decreased after bariatric surgery and patients were more satisfied before surgery.

However, we could not find any study in the literature comparing the changes in the skin before and after surgery. Therefore, our knowledge and results on this subject are limited. Our study may be insufficient as it only includes patients' opinions. Larger studies covering skin findings and skin diseases in patients after bariatric surgery were needed. At the same time, there should be studies that include some parameters based on laboratory and patient-based measurements.

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