

EFFECT OF DIAMOND MICRODERMABRASION ON OILY SKIN: A CASE REPORT

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A – study design, B – data collection, C – statistical analysis, D – interpretation of data, E – manuscript preparation, F – literature review, G – sourcing of funding

ABSTRACT

Background: The history of microdermabrasion dates back to ancient Egypt. The first treatment in Europe occurred in 1985 and has since become a popular method of exfoliation of the superficial layers of skin. Microdermabrasion is an effective method of taking care of the skin of the face and body, bringing about immediate effects in the treatment of deep scars and stretch marks.

Aim of the study: To determine the effectiveness of diamond microdermabrasion on a person with hyperuricemia of the sebaceous glands.

Materials and methods: Based on interviews, a case analysis, and the impact of diamond microdermabrasion on the structure of the skin's surface, the level of hydration, oiliness and epidermal exfoliation were analyzed.

Case report: The subject was a 22-year-old woman struggling with oily skin. A few acne lesions and a large number of blackheads were observed in her nasal area. An interview was conducted prior to the procedure to eliminate any contraindications. The study was conducted within a period of 4 months at 3-week intervals. The Nati Skin Analyzer was used to determine the skin parameters of the patient.

Results: After applying a series of treatments using the microdermabrasion apparatus, satisfactory results were obtained in the form of reduced peeled sebum and improved skin hydration in the T and U zones.

Conclusions: The study shows that diamond microdermabrasion treatment has a beneficial effect on the patient's skin condition. Photographs before and after the surgery document the positive effects this series of treatments had. There was a decrease in the level of sebum secretion and the elimination of skin changes in the form of acne or open comedones.

KEYWORDS: diamond microdermabrasion, oily skin, cosmetology

BACKGROUND

Microdermabrasion is a cosmetic treatment involving the mechanical exfoliation of superficial layers of epidermis [1]. The treatment brings instant effects and is efficient in the treatment of deep wounds, pigmentation patches, and stretch marks. It works perfectly in seborrhea skin care. Proper treatment does not cause any damage to the skin barrier and thus, post-treatment regeneration is fast. Microdermabrasion is also applied to increase penetration of active substances deep into the skin [2]. To increase the depth of absorption of cosmetic substances, the microdermabrasion method can be combined with needleless mesotherapy, sonophoresis or iontophoresis [3]. The level of depth of the microdermabrasion depends on many factors including the chosen pressure, the diameter of the head, the level of gradation of the diamond, and the time of work in a given place [4].

Mechanical exfoliation of the superficial layers of epidermis helps in taking care of oily skin by decreasing secretion of sebum, which is the substance secreted by sebaceous glands [5]. The work of these glands is affected by adrenal hormones, estrogen, and most androgens, which stimulate its secretion. Seborrhea may increase due to stress, smoking, and air pollution [6].

Oily skin is primarily characterized by excessive secretion of sebum and can be treated as a transient condition, often associated with a younger age group, but it can persist into adulthood. It is characterized by gray-yellow coloring and a tendency to pollution and inflammatory changes. Initially, open and closed blackheads appear, which later lead to inflammatory pustules and papules. Oily skin at a young age is firm, tense, and supple, covered with a protective water-lipid coat, which prevents excessive dehydration [7]. The intensity of sebum production depends mainly on the size

of the sebaceous glands and is related to genetic conditions; it is often proof of a family tendency to inherited seborrhea. The average amount of sebum secreted by the human body per day is about 1-2g. The activity of the sebaceous glands changes depending on age [5].

Treatment of oily skin is very complex because a balance should be maintained between the removal of the appropriate amount of sebum to avoid glittering and the transient dehydration of the skin [6]. Cosmetic care consists of reducing the thickness of the stratum corneum. One should not use care products with a strong irritant effect, because they may cause damage to the natural bacterial flora, changing the acidic environment to an alkaline one [7]. In the treatment of oily skin, hygiene rules should be strictly adhered to in order to avoid infection and acne complications [8].

The ingredients of cosmetics used in treatment should be multidirectional. They should be sebostatic and bacteriostatic and should inhibit sebaceous lipid oxidation, alleviate irritation, and have a matting effect to allow for a small aesthetic improvement [6].

AIM OF THE STUDY

The aim of the study is to assess the effect of diamond microdermabrasion on the parameters of oily skin (exfoliation, hydration, oiling of the skin) using the example of the case study.

MATERIAL AND METHODS

The presented work used a special device for diamond microdermabrasion. For the measurement of skin parameters, a Beauty of Science computer device was used, called the Nati Skin Analyzer, which measured levels of exfoliation, the degree of hydration, and the degree of skin lubrication both before and after the treatment series was performed. The treatment was performed for 4 months, at intervals of 3 weeks. Measurements were obtained both before and after the series of treatments and were compared using the values presented in tab. 1-3.

CASE REPORT

A 22-year-old patient with oily skin problem was the subject of the research. The areas presenting with the problem are the T zone (forehead, nose, and beard) and the U zone (cheeks). There were numerous open comedones and post-acne scars.

The study was conducted at the Public Higher Medical Professional School in Opole with the consent of the Bioethical Commission. The entire treatment series lasted 4 months. The first examination occurred in November 2016 and the subsequent treatments were carried out at intervals of 3 weeks.

In order to carry out the research, the patient was informed about its time and course and agreed to participate in the project. All contraindications were elimi-

Table 1. The range of values for the level of oiling of the skin.

Measurement	Unit	Range		Description
		From	To	
Greasiness	%	0	10	Dry skin
Greasiness	%	11	14	Skin with a tendency for drying
Greasiness	%	15	20	Proper greasiness of the skin
Greasiness	%	21	25	Skin with a tendency for oiling
Greasiness	%	26	100	Oily skin

Table 2. The range of exfoliation measurement values.

Measurement	Unit	Range		Description
		From	To	
Exfoliation	%	0	14	Normal range
Exfoliation	%	15	20	Unsettled
Exfoliation	%	21	100	Excessive

Table 3. Range of values of measurement of hydration.

Measurement	Unit	Range		Description
		From	To	
T zone hydration	%	0	24	Alarming
T zone hydration	%	25	40	Incorrect
T zone hydration	%	41	65	Normal range

nated and the patient was informed about possible side effects and home care recommendations.

Skin analysis was performed with the Nati Skin Analyzer device at the start. Analysis included an observation of the level of skin hydration, oiling, and exfoliation, and the structure of its surface. Skin parameters were measured before and after the series of treatments. Before the examination, the patient did not prepare the skin in any way or apply any cosmetics. All treatments were performed in the morning for a reliable result.

DISCUSSION

The diamond microdermabrasion treatment had a positive effect on the regulation of sebum production and the skin condition of the patient. Treatment eliminated all imperfections in the form of acne scars and open comedones. The skin became firm, elastic, and smooth. The color of the skin was uniform and bright. After analysis with the Nati Skin Analyzer, it can be concluded that the treatment brought about the expected results. The degree of exfoliation of the epidermis had changed. Initially, the epidermal exfoliation level was at 19.09%. After the series of treatments, the level of exfoliation decreased to 17.91%. The oiling of the skin before the test was 30.25%. After the treatment, it decreased sharply to 5.44%. The results

showed that the surface of the skin was free from sebaceous secretions. That was the reason why the patient felt unpleasant skin pulling. In the U zone the level of hydration before the test was 24%. After the series of treatments, it rose to 42%. Due to proper care, the stratum corneum maintained an appropriate level of hydration. Moisturization of the T zone was initially at 12%. After the treatment it increased to 20%. While higher, it remained in the alarming range. The study had beneficial effects overall because the patient complied with the provided home care recommendations. An important component was to avoid highly irritating and exfoliating measures.

On the basis of other research presented by Katarzyna Kordus and Barbara Potempa in the article entitled "Study of the motives of choosing types of microdermabrasion and opinions about their effectiveness in practice," it can be stated that the respondents expressed satisfaction with the effects of the treatment depending on the perceived removal of discolorations, the narrowing of the pores, and reduced roughness. However, they did not notice any changes in skin density. Diamond microdermabrasion was assessed as effective in removing discoloration and fine wrinkles. 69% of respondents who underwent this procedure considered the intensity of the diamond microdermabrasion as sufficient for their needs, while 31% considered the method to be not intense enough. Postoperative complications in the form of erythema and skin sensitivity have been rarely observed [9].

On the basis of the research it can be concluded that water-oxygen microdermabrasion relieved oily and mixed skin as well as stabilized sebaceous glands.

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Corundum microdermabrasion was a less frequently performed treatment among cosmetologists, perhaps due to the fact that the treatment was perceived by the respondents as a medical procedure.

The next article, "The effect of diamond microdermabrasion on the functioning of oily skin," presented the results of microdermabrasion performed on 16 women between the ages of 18 and 30. Each of them had a problem with oily skin. Seven treatments were carried out at intervals of 10–14 days. After the examinations, the condition of the skin was assessed as very good, and as many as 81% of the participants who had undergone treatment reported improvement in terms of brightening discolorations, reducing scars, or reducing comedones. For most people, the effects were noticeable after 3–4 treatments. Many patients did not report side effects and 94% of people said they would undertake microdermabrasion in the future to improve the condition of their skin [10].

CONCLUSIONS

Several conclusions can be drawn on the basis of the presented case and the analysis of the results:

1. The diamond microdermabrasion treatment had a positive effect on the regulation of sebaceous glands.
2. The cosmetic treatment improved the patient's skin condition in terms of the level of oiling and exfoliation.
3. The cosmetic treatment improved the skin's condition in terms of the rise of the hydration level of the U zone.

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