The Austrian Journal of Technical and Natural Sciences, 2026 No 1–2
ISSN 2310-5607

PREMIER Publishing
ppublishing.org

DOI:10.29013/AJT-26-1.2-94-97

MESOTHERAPY AS A METHOD OF CORRECTION OF ALOPESIA IN PATIENTS AFTER BARIATRY

Tashkenbaeva Umida Alisherovna [1], ***Abboskhonova Fotima Khasanovna*** [1]

[1] Tashkent State Medical University

Cite: *Tashkenbaeva U.A., Abboskhonova F.Kh. (2026). Mesotherapy as a Method of Correction of Alopesia in Patients After Bariatry. Austrian Journal of Technical and Natural Sciences 2026, No 1–2.* https://doi.org/10.29013/AJT-26-1.2-94-97

Abstract

This article examines the role of mesotherapy in the treatment of alopecia in patients who have undergone bariatric surgery. The authors conducted a comprehensive multivariate analysis, revealing a significant influence of individual, behavioral, and structural factors on the development and course of alopecia. The study results showed that the nature and severity of hair loss depend on the affected area and the time of symptom onset, emphasizing the need for an individualized approach to both diagnosis and treatment.

The study involved 321 patients, divided into groups based on the frequency of mesotherapy use. It was found that frequent and daily use of the procedure may be associated with an increased incidence and severity of alopecia, especially in androgenic and diffuse alopecia. The article emphasizes the importance of performing invasive procedures according to established protocols, taking into account the individual characteristics of the patient. The authors call for further study of the safe and effective use of mesotherapy, which is especially important for improving the quality of life of patients who have undergone bariatric surgery.

Keywords: *bariatric surgery, mesotherapy, alopecia, hair treatment, prevention*

Introduction

Alopecia is a chronic disease characterized by progressive hair loss of various localizations and degrees. This pathology is widespread worldwide and significantly impacts patients' quality of life, causing psychological discomfort, low self-esteem, and social isolation. The problem of alopecia is particularly relevant in patients who have undergone various types of surgical interventions, such as bariatric surgeries, as after such interventions, there is an increase in the frequency and severity of hair loss manifestations (Ruiz-Tovar J., Oller I., Llavero C., Zubiaga L., Diez M., Arroyo A., Calero A., Calpena R., 2014; Darlenski R., Mihaylova V., Handjieva-Darlenska T., 2022).

In recent years, there has been increased interest in clinical practice in studying the factors influencing the development and course of alopecia, as well as in developing effective preventive and therapeutic approaches. Modern medicine aims to comprehensively treat this condition, including not only medication methods but also procedures that stimulate hair follicle regeneration and nutrition, such as mesotherapy, plasma therapy, and the use

of mineral and vitamin complexes (Guo H., Zhu J., Ma Y., Sachin B., Cao D., Tang L., 2017; Ledoux S., Flamant M., Calabrese D., Bogard C., Sami O., Coupaye M., 2020).

Today, the development of the field of trichology is accompanied by the introduction of innovative diagnostic methods such as trichoscopy, digital phototrichography, and genetic research, which allows for a more accurate determination of the types and stages of alopecia, as well as the identification of its pathogenetic mechanisms. In the field of treatment, there is a trend towards an individualized approach based on a comprehensive assessment of risk factors, including nutritionological, hormonal, and immunological aspects (El Sayed M. H., Abdallah M. A., Aly D. G., Khater N. H., 2016).

The integration of minimally invasive procedures, such as mesotherapy and plasma therapy, aimed at stimulating hair growth, improving microcirculation, and metabolic processes in the scalp, has become an important trend. At the same time, the issues of safety and effectiveness of these methods remain relevant, especially with long-term use and the presence of associated risk factors, such as previous surgical interventions and microelement deficiencies (Ruiz-Tovar J., Oller I., Llavero C., Zubiaga L., Diez M., Arroyo A., Calero A., Calpena R., 2014; Darlenski R., Mihaylova V., Handjieva-Darlenska T., 2022).

Despite the richness of modern methods for diagnosing and treating alopecia, numerous unresolved issues remain in clinical practice, especially regarding the prevention and selection of optimal methods for correcting the disease in patients after bariatric interventions. In particular, the role of factors such as the characteristics of patients' behavior, the use of mesotherapy, and its influence on the course of the pathology and (Guo H., Zhu J., Ma Y., Sachin B., Cao D., Tang L., 2017; Ledoux S., Flamant M., Calabrese D., Bogard C., Sami O., Coupaye M., 2020) remains insufficiently studied.

The relevance of this study is due to the need to identify and analyze modern approaches, risk factors, and practical aspects of treating alopecia in patients after bariatric surgeries. Conducting such studies will help to form more accurate recommendations and increase the effectiveness of preventive measures, which is especially important in the context of increasing the volume of surgical interventions and the growing number of patients suffering from hair loss. Additionally, the results of this work will expand theoretical knowledge and contribute to the development of clinical trichology, ensuring more quality and personalized treatment of such patients.

Materials and methods

Analysis of alopecia after surgery was performed depending on the mesotherapy. The study involved 321 patients, who were divided into three groups according to the characteristics being studied. The first group included 115 patients suffering from alopecia after bariatric surgery, which made it possible to assess the influence of this type of surgical intervention on the development and nature of alopecia. The third, control group, consisted of 97 individuals without alopecia symptoms after bariatric surgery. The second group included 109 patients with alopecia who had not undergone bariatric surgery, which made it possible to compare the features of the pathology in the context of other possible causes of alopecia. Before starting the study, all participants signed informed consent in accordance with ethical standards. The subject of analysis was clinical and demographic indicators, as well as the features of alopecia course depending on the presence or absence of bariatric surgery.

Statistical analysis was conducted using Stat Tech version 4.12.1. Quantitative indicators were assessed for compliance with the normal distribution using the Shapiro-Wilk criterion (if the sample was less than 50) or the Kolmogorov-Smirnov criterion (if the sample was more than 50). In the absence of a normal distribution, the quantitative data were represented by the median (Me) and the interquartile range (Q1-Q3).

To describe categorical data, absolute values and percentages were used, with 95% confidence intervals for shares calculated using the Klopper-Pearson method. Comparison of three or more groups for quantitative indicators not subject to normal distribution was carried out using the Kraskel-Wallis criterion. Posterior comparisons were carried out using the Dunn criterion with a Holm correction.

Pearson's chi square criterion was used to compare fractions in multi-field conjugate tables. In the case of multiple comparisons, the posteriori analyses were also conducted using the Pirson chi-square criterion with a Holm correction. Statistical significance was established at a level of $p < 0.05$.

Research results

Analysis of the obtained data shows clear differences in the manifestation and degree of alopecia in patients after surgery, depending on the mesotherapy regimen. In the group without mesotherapy, practically all patients had no or minimal alopecia, which confirms the effectiveness of this procedure in preventing or slowing down the progression of hair loss. At the same time, in patients who received mesotherapy occasionally or daily according to doctor's instructions, the frequency and severity of alopecia, especially in more severe forms and affected areas, increased significantly.

Statistical analysis showed that with frequent or daily mesotherapy, the likelihood of alopecia development increases. Especially noticeable is the increase in the number of cases of diffuse and androgenic alopecia in patients receiving procedures according to doctor's prescriptions. In particular, significant differences were noted in the degree of manifestation according to the classification of Sinkler syndrome and the area of damage. The benefits of mesotherapy are contradictory and require more precise study, since, according to the data obtained, if incorrectly applied, it can intensify or accelerate the manifestation of alopecia.

Table 1. *Analysis of postoperative alopecia depending on mesotherapy*

Indicators	Sections	Mesotherapy			P.
		No.	Sometimes	Daily according to the doctor's instructions	
Type of alopecia after surgery	No	163 (98.8)	61 (73.5)	90 (49.2)	< 0.001* $p_{no - daily\ according\ to\ the\ doctor's\ instructions} < 0.001$ $p_{sometimes - daily\ according\ to\ the\ doctor's\ instructions} = 0.004$
	focal A	0 (0.0)	0 (0.0)	1 (0.5)	
	androgenic A	2 (1.2)	11 (13.3)	58 (31.7)	
	diffuse A	0 (0.0)	11 (13.3)	34 (18.6)	
Alopecia degree according to Sinclair classification	0	162 (98.2)	61 (73.5)	90 (49.2)	< 0.001* $p_{no - sometimes} < 0.001$ $p_{no - daily\ according\ to\ the\ doctor's\ instructions} < 0.001$ $p_{sometimes - daily\ according\ to\ the\ doctor's\ instructions} = 0.013$
	I	1 (0.6)	4 (4,8)	20 (10.9)	
	II	0 (0.0)	5 (6.0)	19 (10.4).	
	III	2 (1.2)	3 (3,6)	18 (9.8)	
	IV	0 (0.0)	6 (7.2)	18 (9.8)	
	V	0 (0.0)	4 (4,8)	18 (9.8)	
Area of damage	No	163 (98.8)	61 (73.5)	92 (50.5)	< 0.001* $p_{no - daily\ according\ to\ the\ doctor's\ instructions} < 0.001$ $p_{sometimes - daily\ according\ to\ the\ doctor's\ instructions} = 0.042$
	temporal region	1 (0.6)	3 (3,6)	12 (6.6)	
	parietal region	0 (0.0)	4 (4,8)	24 (13.2)	
	occipital region	0 (0.0)	3 (3,6)	14 (7.7)	
	more than one area	1 (0.6)	12 (14.5)	39 (21.4)	
	total defeat	0 (0.0)	0 (0.0)	1 (0.5)	

* – *differences in indicators are statistically significant ($p < 0.05$)*

Theoretically, the development of alopecia with frequent or daily mesotherapy can be attributed to a number of factors. For example, many injections, the use of certain medicines or ingredients, incorrect technique, or the body's individual reaction can cause inflammation, skin damage, and follicles, leading to increased hair loss. At the same time, with proper therapy and drug selection, mesotherapy can have a beneficial effect by stimulating blood circulation and metabolic processes, improving hair follicle nutrition.

In interpreting the results, it is important to note that mesotherapy, being an invasive procedure, must be carried out strictly according to protocols, while it is important to consider the individual characteristics of the patient. Otherwise, repeated injections and technical violations can contribute to the development of inflammatory processes, deterioration of microcirculation, and consequently, accelerated progression of alopecia.

Conclusion

Thus, for the prevention and treatment of alopecia in patients after surgery, strict criteria for prescribing mesotherapy, individual selection of medications, and control over the technique of procedures are necessary. Overall, these results highlight the need for further research and clarification of the conditions for safe and effective use of mesotherapy in this group of patients.

References

Ruiz-Tovar J., Oller I., Llavero C., Zubiaga L., Diez M., Arroyo A., Calero A., Calpena R. (2014). Hair loss in women after sleeve gastrectomy: Predictive value of serum zinc and iron levels. Am. Surg. – 80. – P. 466–471.

Darlenski R., Mihaylova V., Handjieva-Darlenska T. (2022). The Link Between Obesity and the Skin. Front. Nutr. – 9. – 855573 p.

Guo H., Zhu J., Ma Y., Sachin B., Cao D., Tang L. (2017). Risk factors analysis of hair loss in obese patients afer laparoscopic sleeve gastrectomy. Chin. J. Dig. Surg. – 12. – P. 592–595.

Ledoux S., Flamant M., Calabrese D., Bogard C., Sami O., Coupaye M. (2020). What are the micronutrient deficiencies responsible for the most common nutritional symptoms after bariatric surgery? Obes. Surg. – 30. – P. 1891–1897.

El Sayed M. H., Abdallah M. A., Aly D. G., Khater N. H. (2016). Association of metabolic syndrome with female pattern hair loss in women: A case-control study. Int. J. Dermatol. – 55. – P. 1131–1137.

submitted 12.02.2026;
accepted for publication 26.02.2026;
published 27.02.2026

Contact: djumaniyazova.gulnoza@bk.ru