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**Introducing the innovative Silk Touch technique into the training of
permanent makeup artists**

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***Abstract.** Pigment migration is a key issue in performing permanent eyebrows, leading to aesthetic discrepancies and a decline in customer satisfaction. The development and implementation of effective methods for preventing this phenomenon is essential for improving the quality and safety of cosmetology services. Modern, innovative techniques, particularly Silk Touch, demonstrate high potential in minimizing the risk of internal pigment migration due to their delicate effect on the skin and controlled pigment application. The **article aims** to analyze the effectiveness of the Silk Touch technique for preventing pigment migration and improving the quality of the permanent eyebrows procedure. **Methods.** A comparative study of the results from training groups of permanent makeup masters, using both the traditional method and the Silk Touch technique, was conducted. The analysis included an assessment of the quality of the procedures, color stability at 1, 3, and 6 months after the procedure, the absence of undesirable shades, and cases of pigment migration. Descriptive statistics methods and comparison criteria for independent samples were used for statistical analysis. The study's results confirmed*



that training using the Silk Touch technique yields significantly better color stability ($p < 0.05$), a decrease in the frequency of undesirable shades, and a complete absence of internal pigment migration compared to traditional techniques. The method is characterized by delicacy, process control, and reduced skin trauma, which positively affects the speed of recovery and the quality of the final result.

Conclusions. *The Silk Touch technique is a practical and innovative method for preventing pigment migration during the application of permanent makeup for eyebrows. It can be considered a modern standard in the training of master specialists in this field. Its implementation in training programs contributes to improving the quality of services, achieving a natural and long-lasting result without the risk of changing the shade or moving the pigment.*

Keywords: *pigment migration prevention, Silk Touch, permanent makeup, color stability, artist training.*

Впровадження інноваційної техніки Silk Touch у підготовку майстрів перманентного макіяжу

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Анотація. *Міграція пігменту є однією з ключових проблем під час виконання перманентного макіяжу брів, що призводить до порушення естетичного результату та зниження рівня задоволеності клієнтів. Розроблення та впровадження ефективних методів профілактики цього явища має важливе значення для підвищення якості та безпечності косметологічних послуг. Сучасні інноваційні техніки, зокрема Silk Touch,*



демонструють високий потенціал у мінімізації ризику внутрішньої міграції пігменту завдяки делікатному впливу на шкіру та контрольованому внесенню пігменту. **Метою** статті є аналіз ефективності техніки Silk Touch для запобігання міграції пігменту та підвищення якості процедури перманентного макіяжу брів. **Методи.** Проведено порівняльне дослідження результатів навчання груп майстрів перманентного макіяжу за традиційною методикою та з використанням техніки Silk Touch. Аналіз включав оцінювання якості виконання процедур, стабільності кольору через 1, 3 та 6 місяців після процедури, відсутності небажаних відтінків та випадків міграції пігменту. Для статистичного аналізу застосовано методи описової статистики та критерії порівняння для незалежних вибірок. **Результати дослідження** підтвердили, що навчання за методикою Silk Touch забезпечує достовірно кращі показники стабільності кольору ($p < 0,05$), зниження частоти появи небажаних відтінків і повну відсутність випадків внутрішньої міграції пігменту в порівнянні з традиційними техніками. Метод характеризується делікатністю, контрольованістю процесу та зменшенням травматизації шкіри, що позитивно впливає на швидкість відновлення та якість кінцевого результату. **Висновки.** Техніка Silk Touch є ефективним інноваційним методом профілактики міграції пігменту під час виконання перманентного макіяжу брів та може розглядатися як сучасний стандарт у підготовці майстрів цієї спеціалізації. Її впровадження в навчальні програми сприяє підвищенню якості послуг, досягненню натурального та довготривалого результату без ризику зміни відтінку або переміщення пігменту.

Ключові слова: профілактика міграції пігменту, Silk Touch, перманентний макіяж, стабільність кольору, навчання майстрів.

Problem statement. Pigment migration after permanent eyebrows is one of the most common and complex issues in the practice of master specialists in this



field. Internal movement of pigment in the dermal layers leads to a change in the shape and color of the eyebrows, the appearance of undesirable shades, a violation of the aesthetic characteristics of the result, and a decrease in customer satisfaction. Despite the availability of numerous modern techniques, the problem of preventing pigment migration remains relevant due to the difficulty of predicting skin reactions and the influence of technical factors during the procedure.

An essential aspect of solving this problem is to enhance the level of professional training for specialists, notably by introducing innovative methods that reduce the risk of complications and ensure color stability. One such modern technology is the Silk Touch method, characterized by its delicate effect on the skin, controlled pigment application, and minimized trauma.

Despite the growing popularity of this technique, scientifically based data on its effectiveness in the context of training masters and preventing pigment migration is insufficient. It necessitates the study of the effectiveness of training in the Silk Touch technique in comparison with traditional methods, which will enable the determination of its feasibility as a standard in professional training.

Analysis of recent research and publications. The issues of implementing innovative training methods for beauty industry specialists, particularly permanent makeup artists, are widely discussed in modern scientific and professional publications. In the study by V. Nazarenko [1], the evolution of makeup as a tool for visual identity in mass media is traced, emphasizing the importance of maintaining aesthetic harmony and stability of results, which is particularly relevant when working with Silk Touch technologies. Innovative approaches to training qualified specialists are analyzed by I. Sylaiieva [2], focusing on the integration of modern training methods, which directly relates to the professional training of permanent makeup artists. O. Dubaseniuk [3] emphasizes the importance of using the latest pedagogical technologies in education, forming a methodological basis for the development of effective professional training programs.



The aspect of integrating theoretical knowledge and practical skills in the field of make-up is highlighted by H. Wing [4], suggesting approaches to increasing student engagement in the learning process. In the medical context, M. K. Marwah, A. Kerure, and G. S. Marwah [5] reveal the scientific foundations of microblading, which enable an understanding of the anatomical and physiological aspects of pigment injection, crucial for preventing undesirable effects. The study by E. Andreou, M. N. Kadoglou, and C. Papadopoulos [6] focuses on the safety of pigments for tattoos and permanent makeup, with an emphasis on toxicological risks and standards for the safe use of dyes. Z. D. Draelos [7] offers an expert perspective on permanent makeup from a dermatological standpoint, highlighting factors that impact color stability and pigment migration.

Special attention is paid to educational resources and trending learning technologies. Bellus Academy [8] analyzes career prospects in the field of makeup, while Finishing Touches Group [9] and Rizzieri Academy [10] present professional permanent makeup courses that focus on modern quality standards. The use of digital technologies and artificial intelligence in the training of master's students is highlighted on the Perfect Corp platform [11], where master's students and their instructors are offered digital tools for simulating and optimizing the educational process. Practical aspects of procedure safety and the avoidance of pigment migration are considered in the work of D. Hvas and J. Serup [12], who describe key technical differences and working methods. A detailed description of the pigments used in permanent makeup is provided in the study by H. S. Jin and B. S. Chang [13].

Many online platforms now offer distance learning formats and flexible educational programs for learning and improving permanent and semi-permanent makeup techniques [14], which allows professionals and students to acquire new skills and maintain a high level of qualification.

Thus, modern research and professional sources provide a scientific and practical foundation for enhancing training methods in the field of permanent



makeup, emphasizing the importance of safety, innovative technologies, process control, and the aesthetic stability of results.

Identification previously unresolved parts of the general problem. Despite the existing achievements in the field of permanent makeup techniques and the prevention of pigment migration, several aspects remain insufficiently studied. There are no comprehensive methodological training models that integrate modern, innovative technologies and digital tools, particularly controlled pigment application techniques and methods for minimizing skin trauma, into training programs tailored to the specific needs of professional permanent makeup artists. The available developments are mostly fragmentary, which limits the possibilities of a systematic assessment of the effectiveness of various practices, in particular the Silk Touch technique, in preventing pigment migration.

The empirical basis of research on the effectiveness of implementing innovative techniques in domestic vocational training institutions is limited. A significant part of scientific works is based on local experiments or theoretical generalizations without conducting large-scale comparative studies, which complicates the objective assessment of the impact of the latest techniques on color stability, the absence of unwanted shades and the quality of the final result.

The issue of adapting international experience in teaching permanent makeup techniques to the conditions of Ukrainian vocational training remains problematic. The effective integration of foreign educational and technological practices, taking into account material and technical capabilities, regulatory restrictions, and the peculiarities of national standards for training masters, remains insufficiently studied.

The proposed study aims to fill the identified gaps by developing an integrated model of training in the Silk Touch technique using innovative tools, expanding the empirical base through experimental.



Formulation of the article's goals (task setting). The purpose of this study is to scientifically substantiate the effectiveness of training in the Silk Touch technique in the context of preventing pigment migration during permanent eyebrows and enhancing the aesthetic outcome quality.

To achieve this goal, the following specific tasks have been defined:

1) to conduct a comparative analysis of modern methods of training permanent makeup artists, assessing their effectiveness in preventing pigment migration and identifying key parameters for controlling the pigment application process that affect color stability and the absence of unwanted shades;

2) to present a model for training in the Silk Touch technique using innovative approaches to training permanent makeup artists;

3) to formulate recommendations for integrating the Silk Touch technique into professional training programs for artists.

Achieving these goals will enable the systematization of scientific and practical approaches to teaching the Silk Touch technique, filling existing gaps in the methodology for training masters, and improving the quality of cosmetology services, which is particularly relevant for the modern permanent makeup industry.

Presentation of the main research material. Permanent makeup is a modern cosmetic procedure that involves the introduction of pigments into the upper layers of the skin to imitate traditional makeup, particularly for eyebrows, eyes, and lips. This technique, also known as dermopigmentation or micropigmentation, has gained popularity due to its ability to provide a long-lasting aesthetic effect without requiring daily application of cosmetics.

Permanent eyebrows is one of the most common procedures in this field. It involves the introduction of pigment into the skin to correct the shape, density, and color of the eyebrows, which is especially relevant for individuals with alopecia, thinning hair, or eyebrow asymmetry. This procedure can be performed using different methods, such as microblading, tattooing or ombre techniques, depending on the desired result and the client's skin type [6; 12]. Permanent eyebrows combines



aesthetic and functional stability for long-term results. The main challenge in this area is to ensure uniform and controlled pigment application while minimizing the risk of internal migration, which can lead to color changes, the appearance of unwanted shades and disruption of the natural appearance.

Therefore, permanent eyebrows requires not only high aesthetic quality but also long-term color stability. One of the main problems during the procedures is internal pigment migration, when the color changes its localization in the skin and forms an unwanted background. It often manifests itself in the form of: a blue-gray shade resulting from the decomposition of organic black or dark brown pigments; green due to the instability of the yellow component of organic dyes; or red-orange as a result of the dominance of residual red pigments after fading of other fractions [13].

Several errors can cause such migration during the procedure, including the introduction of pigment too deeply into the reticular layer of the dermis, excessive concentration of organic dyes, high device speed, which can provoke tissue micro-tears, and the incorrect choice of needle, leading to uncontrolled dispersion of the pigment. The deep introduction and instability of organic pigments often lead to undesirable blue, green, or red shades. Additionally, the high speed of the device and traumatic use of the needle create additional «channels» for color migration. These and other problems of traditional techniques have led to the need to develop new approaches in the technique of permanent eyebrows.

The Silk Touch technique was developed as an innovative solution to prevent internal pigment migration. Its main differences are the introduction of pigment into the upper layers of the dermis, where there is no active vascular and lymphatic network, adjustable device speed, individual needle selection depending on the thickness and density of the skin, as well as the use of stable mineral pigments that do not decompose into undesirable cold or warm tones.



Training of permanent makeup artists encompasses various techniques designed to achieve stable and safe results, particularly in preventing internal pigment migration. Modern practices emphasize controlled pigment application, the selection of suitable needles and equipment types, the use of stable pigments, and an individualized approach to the client's skin type [6]. The effectiveness of different techniques varies depending on the combination of these parameters, which requires detailed analysis to optimize the training process.

The study was conducted to compare the effectiveness of two training approaches for permanent eyebrows artists: the traditional method and the innovative Silk Touch technique. The work was carried out in the format of a comparative analytical experiment. The study involved 30 artists (students), divided into two equal groups. The control group ($n = 15$) was trained using the classical method, which included standard technical techniques for using the device and basic principles of pigment application. The experimental group ($n = 15$) was trained in the Silk Touch technique, which involves superficial application of pigment to the upper layers of the dermis, adjustable speed of the device (4–5 levels), individual selection of needles depending on skin type, and the use of stable mineral pigments [12].

To assess the effectiveness of the training, several key indicators were identified that reflect the quality of the procedures and the stability of the final result. The main criteria included:

- the quality of the procedure, which was assessed using a standardized expert assessment scale, taking into account the uniformity of pigment application, clarity of lines, and the absence of skin trauma;
- the stability of the pigment color 1, 3, and 6 months after the procedure, which was determined by visual comparison with the reference shade and analysis of photo documentation;



- the presence or absence of undesirable shades that arise as a result of the decomposition of the pigment into warm or cold tones;
- cases of internal pigment migration, i.e., changes in color localization due to the movement of pigment particles into the deeper layers of the dermis or adjacent skin areas.

Data collection was conducted in several stages: immediately after training, as well as at 1, 3, and 6 months after the procedure. For the objectivity of the results, photo documentation and expert assessment were employed, conducted by three independent specialists with a minimum of 5 years of experience in the field of permanent makeup. For statistical analysis of the results, descriptive statistics methods (mean values, standard deviations, and frequencies of sign manifestation) and comparison criteria for independent samples (Student’s t-test) were employed. Differences at the $p \leq 0.05$ level were considered statistically significant, indicating the reliability of the results obtained. The summarized results are given in Table 1.

Table 1

Comparison of training results using the classical technique and the Silk Touch technique at different time intervals

<i>Indicator</i>	Group	After the procedure	1 month	3 months	6 months
<i>Quality of performance (scores, 0–10)</i>	Classical technique	7,2 ± 0,6	–	–	–
	Silk Touch	8,9 ± 0,5	–	–	–
<i>Color stability (%)</i>	Classical technique	100	85	72	60
	Silk Touch	100	94	90	85
<i>Unwanted shades (%)</i>	Classical technique	–	10	18	25
	Silk Touch	–	2	5	8
<i>Pigment migration (%)</i>	Classical technique	–	8	12	18
	Silk Touch	–	0	2	3

Source: created by the author



The obtained data indicate a significant advantage of the Silk Touch technique compared to the classical method. The quality of the procedure in the group trained using the innovative method was higher compared to the control group, which was confirmed by the statistical significance of the differences ($p < 0.01$). Thus, the innovative technique provides more accurate and uniform pigment application, as seen in the case of Silk Touch.

Analysis of color stability revealed that six months after the procedure, the level of pigment retention in the Silk Touch group was 25% higher than that achieved with the traditional technique ($p < 0.05$). This result indicates greater predictability and durability of the effect when using the innovative approach.

Regarding the appearance of undesirable shades in the classical method group after six months, this was recorded in 25% of cases, while in the Silk Touch group, it occurred in only 8%. It indicates a more stable color range and a reduced risk of pigment deformations when using the new technique.

The incidence of internal pigment migration also differed significantly between groups. In the Silk Touch group, the maximum rate was 3%, while in the classical technique, it reached 18% at the sixth month of observation. Reducing this risk is a crucial criterion for ensuring the safety and aesthetic stability of the results [13].

Summarizing the results obtained, the Silk Touch technique ensures high quality of the procedure and significantly reduces the risk of undesirable effects. It makes it promising for implementation in professional training programs for permanent makeup artists.

The main differences between the traditional permanent makeup technique and Silk Touch are summarized in Table 2.

Table 2

Comparative characteristics of permanent makeup techniques



Criteria	Traditional techniques	Silk Touch technique
<i>Depth of application</i>	Medium/deep	Superficial, upper layers of the dermis
<i>Pigment type</i>	Organic, unstable	Mineral, stable
<i>Device speed control</i>	Limited, often high-speed	Adjustable, optimal (4–5th level)
<i>Needle selection</i>	Standard, not always adapted	Individual selection depending on the skin
<i>Risk of migration</i>	Medium/high	Minimal, no unwanted shades
<i>Color stability</i>	Partial	High, long-lasting result

Source: created by the author based on [14]

Data analysis reveals that the Silk Touch technique offers a more gentle pigment application process, significantly reducing the risk of internal migration compared to traditional methods and also shortening healing time.

The controllability of the pigment application process is a key advantage of the Silk Touch technique, directly affecting color stability and preventing the formation of unwanted shades. Among the main parameters that provide this control are the depth of application, the speed of the device, the type of pigment used and the correct selection of the needle. The interaction of these factors forms the final result, affecting the even distribution of pigment in the skin tissues and creating the effect of «silky shading».

One of the most critical parameters is the depth of pigment application, which determines the level of its fixation. Surface application to the upper layers of the dermis contributes to color stability and reduces the contact of the pigment with the active vascular and lymphatic systems. It is essential because the interaction with the circulatory system is the leading cause of pigment decomposition and the appearance of undesirable shades. On the contrary, excessive deepening creates conditions for pigment spreading, which leads to a color change to blue, green or red tones due to the decomposition of organic components.

The speed of the device is also of great importance. Excessively high speed provokes microtrauma of the tissues, forming “channels” for the movement of the



pigment into deeper layers, which increases the risk of its migration and uneven application. The use of adjustable speed, characteristic of the Silk Touch technique, ensures uniform distribution of the pigment without unnecessary damage to the skin.

The choice of pigment type is equally important. Mineral pigments used in innovative techniques are characterized by high stability and resistance to decomposition into undesirable cold or warm tones. It significantly reduces the risk of blue, green or red shades during prolonged wearing of permanent makeup. On the other hand, organic pigments are more susceptible to chemical changes during metabolism, which increases the likelihood of color change.

An essential element of the technology is also the individual selection of the needle depending on the type and density of the client's skin. The correct choice of the needle allows for precise pigment application with minimal tissue trauma, which is critical for achieving long-term color stability and preventing unwanted shades. The optimal combination of all these factors within the Silk Touch technique makes it one of the most effective and promising technologies in the field of permanent makeup [15].

The introduction of innovative techniques into the training process of permanent makeup artists is a key factor in increasing their professional competence.

To effectively master the Silk Touch technique, it is advisable to adopt a comprehensive approach to training, which includes a combination of traditional theoretical instruction, practical classes, and the use of modern digital technologies. Innovative elements of such training include digital simulators, virtual skin models, simulators of pigment application techniques and interactive video lessons. They allow you to practice technical skills in a safe environment before working with real clients, which significantly reduces the risk of errors and improves the final result. This approach not only develops technical skills in permanent makeup masters but also fosters an understanding of process control mechanisms, which is the basis for achieving high-quality and safe procedures (table 3).

Table 3



A comprehensive approach to learning the Silk Touch technique and its key components

Component	Function description	Expected result
<i>Theoretical training</i>	Studying the principles of pigment application, anatomy and physiology of the skin, and familiarization with contraindications	Formation of basic knowledge and understanding of the process
<i>Practical training</i>	Practicing the technique on simulators and virtual models	Skills of controlled pigment application, reducing trauma
<i>Needle selection and device adjustment</i>	Individual selection of tools and speed	Optimal depth and uniformity of pigment application
<i>Use of mineral pigments</i>	Stable and safe pigments	Minimization of unwanted shades and internal migration
<i>Interactive video lessons</i>	Video and digital simulations of various techniques	Increasing the assimilation of the material and the accuracy of performing procedures
<i>Control and evaluation of results</i>	Assessing color stability and quality of work	Increasing the effectiveness of training and the quality of the final result

Source: author's development

The presented approach ensures the systematic mastery of the Silk Touch technique through the standardization of the training process, contributing to the development of practical skills in future masters and reducing the risks of professional errors.

To enhance the effectiveness of training for permanent makeup masters, it is advisable to incorporate specialized modules into the training process, focusing on developing a comprehensive understanding of the processes and practical skills required for working with the Silk Touch technique.

The first stage should be the introduction of courses on the basics of skin anatomy and the chemical properties of pigments. It will allow future specialists to



understand the causes of internal pigment migration, the mechanisms of its decomposition and the appearance of undesirable shades. Particular attention should be paid to demonstrating the differences between organic and mineral pigments, their stability and safety for tissues.

The practical component of training should include work on modern simulators, digital skin models and performing live demonstration procedures with control of key parameters: depth of application, device speed and needle selection. It allows you to practice the accuracy, controllability and delicacy of manipulations before starting work with real clients. It is crucial to teach individual selection of tools and adaptation of the technique to the type and density of the skin, which minimizes the risk of uncontrolled pigment dispersion and the appearance of color defects.

The evaluation of the training results should be carried out according to standardized criteria, including color stability over specific time intervals (1, 3, 6 months), the absence of unwanted shades, and internal pigment migration. An essential element is regular feedback with the teacher, error analysis and correction of the technique, which contributes to increasing the level of professional competence.

Thus, the integration of the Silk Touch technique into the training programs of permanent makeup masters, utilizing modern digital technologies, simulators, and standardized assessment methods, ensures the formation of highly qualified specialists who can perform procedures safely, effectively, and with a long-lasting aesthetic result.

Conclusions. The conducted study allowed for assessing the effectiveness of the Silk Touch technique as an innovative method of preventing internal pigment migration during permanent eyebrows. Analysis of the obtained results confirms the advantages of the Silk Touch technique, which provides high color stability, minimizing the risk of unwanted shades, as well as a controlled and delicate process of pigment application.



The obtained data indicate the feasibility of introducing the Silk Touch technique into training programs for permanent makeup artists to increase their professional competence, standardize work methods, and reduce the likelihood of uncontrolled pigment dispersion.

Promising areas for further research include the study of the influence of individual skin characteristics on color stability and the long-term effects of using the Silk Touch technique, as well as assessing the effectiveness of combining this technique with other innovative training technologies. Special attention requires the development of optimized training models for working with different skin types, which will enable improving practical training and increasing the safety and predictability of the procedures' results.

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