https://doi.org/10.34883/PI.2025.9.4.008

Lutskaya I.
Institute for Advanced Training and Retraining of Healthcare Personnel of Belarusian State Medical University, Minsk, Belarus

Substantiation for Principles of Aesthetic Stomatology

Conflict of interest: nothing to declare.

Submitted: 28.11.2025
Accepted: 12.12.2025
Contacts: lutskaja @mail.ru

Abstract

The development of aesthetic dentistry requires expanding the scope of not only practical skills, but also theoretical knowledge in this profession.
The purpose of this study is to formulate the principles of aesthetic dentistry as an independent field of specialty.
The material of the study was the analysis of literature data, as well as their own scientific research and practical implementation.
The results of the performed work allowed us to formulate the principles of aesthetic dentistry.
Keywords: aesthetic dentistry, principles of work

Луцкая И.К.
Институт повышения квалификации и переподготовки кадров здравоохранения Белорусского государственного медицинского университета, Минск, Беларусь

Обоснование принципов эстетической стоматологии

Конфликт интересов: не заявлен.

Подана: 28.11.2025
Принята: 12.12.2025
Контакты: lutskaja @mail.ru

Резюме

Развитие эстетической стоматологии требует расширения объема не только практических навыков, но и теоретических знаний в данной профессии.
Цель настоящего исследования – сформулировать принципы эстетической стоматологии как самостоятельной области специальности.
Материалом изучения явился анализ данных литературы, а также собственных научных изысканий и практических внедрений.
Результаты выполненной работы позволили сформулировать принципы эстетической стоматологии.
Ключевые слова: эстетическая стоматология, принципы работы

■ INTRODUCTION

The rapid mastering of manual skills in the field of aesthetic dentistry by specialists is outpaced by their acquisition of theoretical knowledge and scientifically substantiated recommendations. One of the reasons for this is insufficient supply of special educational, scientific and methodical literature. The majority of publications (including periodicals) cover mainly the authors' work experience, instructions or guidelines for clinical use of instruments and materials [1, 2]. A much smaller volume of publications is devoted to the results of scientific research in the field of physiology and psychology of visual perception of colour, size, shape of an object, as well as refraction of this information in the aspect of practical activity [3, 4]. The discussion of the role of structural and functional features of enamel, dentin, pulp in ensuring the relationship between the tooth and filling materials also deserves more attention [5].

■ THE PURPOSE OF THE STUDY

The purpose of the study is to formulate the principles of aesthetic dentistry as an independent field of specialty.

■ MATERIALS AND METHODS

The accumulated world experience, theoretical knowledge obtained from modern literary sources, results of scientific research, clinical observations carried out by the author together with colleagues allowed to substantiate the provisions on which the modern aesthetic dentistry as a science is based, which provides effective implementation of the proposed means and methods in practical health care.

■ RESULTS

The results of the research are presented with specific formulations and clinical examples.

The most crucial principle or the cornerstone of aesthetic Stomatology consists in achieving treatment results, which are as close to the natural parameters of a dentition as possible.

The realization of the primary principle is ensured by means of optimum medication practices relying on methods, which cause the minimal damage or no damage at all to intact structures. As far as therapy is concerned, different methods of dental bleaching are to be considered as well as minor dissection (microabrasion) and grinding the prismless layer off the enamel surface.

Dissection and especially depulping are to be performed only when no other solutions are deemed viable. Any treatment used must guarantee a high degree of aesthetics, mechanic durability, safe and reliable adhesion between restorations and tooth tissue.

In particular, the so-called in-office whitening, which involves the use of highly concentrated hydrogen peroxide (35–50%) is to be performed only in case of local lesion.

Microabrasion is recommended when some parts of a tooth are slightly rougher while some dark spots are visible on the enamel surface Such a treatment is applied with the help of optical devices such as binocular loupes, monoculars, intra-oral cameras.

In restorational and orthopeadic Stomatology the optimal treatment presupposes the choice of such a construction, which would secure the maximal protection of both

the hard tissue and the pulp of a tooth (fig. 1, 2). Performing a safe minimal dissection under the control of a binocular loupe, the use of high-quality materials and up-to-date technologies ensure that the pulp will remain vital and no complications will follow.

The cutting-edge methods and facilities in therapeutic Stomatology involve the wide use of photo-hardening polymers, parapulpar pins and adhesive tapes. Orthopeadic treatment is about making fully ceramic and metal-ceramic constructions to be firmly fixed on to support teeth in a mouth cavity.

Surgery on paradontal tissue includes the use of methods of operative dentistry to minimize the risk of defects. When gingivotomy or tooth extraction is performed, it is recommended to use medication (e.g. containing such a collagen as hydroxiapatitis), facilitating the restoration of bone tissue.

Implantology effectively combines surgical and orthopeadic treatments, preventing bone structure atrophy and preserving the healthy look of the gingiva and restoring the natural shape and colour of teeth.

The principle of fully conscious collaboration between patient and dentist presupposes regular and thorough completion of all the procedures prescribed.

Thus, if in-home bleaching is administered, a patient is to perform it independently with the use of a protective plate to avoid any damage to mucosa.

Whitening toothpastes are recommended for hygienic purposes following the professionally applied whitening procedure.

In order to reach consensus, the choice of colour, size and shape of a construction is decided on mutually by patient and dentist. Any surgical interference is undertaken on condition that a patient's full consent is received.

As far as the quality of personal hygienic requirements goes, a patient's role in the preparation for the restoration process becomes dramatically emphasized.

Working with photo-composites and modern ceramics is based on a scope of strictly formulated requirements, which give scientific grounding to the manipulations applied.

The principle of colour imitation secures modeling of a restored structure with application of high aesthetic parameters, such as selecting the colour of restorative material with utmost precision to match the optical characteristics of dentine and enamel as well as the consecutive colour imitation of the lost tissues of a tooth (fig. 3). Layer-by – layer restoration and precise imitation of every single shade of colour make the construction look as natural as ever.

The material used to restore dentine, which is marked as O (opaque) or D (dentine), ought to be chosen in accordance with the colour of a given tooth. Colours of the enamel are selected according to the same regulations and are applied so that a restoration has a naturally sparkling and transparent surface.

Deeper cavities are filled with yellowish composite to match the dentine (opaque). The size of the opaque layer should equal the volume of the dentine lost. The identical layer of the composite (ceramic paste) is applied either over the proximal areas or diffusely across the whole surface of the construction in accordance with the tooth transparency, which is especially conspicuous around the cutting edge.

The principle of reproduction for natural volume parameters consists in planning the size, shape, relief of the surface usually followed by the reproduction of micro- and macrostructures on a restoration or alveolar sockets. The visual assessment and measurement results make it possible to examine the geometric parameters of a crown

Fig. 1. Defect in the cutting edge of the center incisor

Fig. 2. Result of microinvasive treatment

based on the interrelations of the side surfaces, to evaluate the expression of characteristics towards the side depending on the correlation between angles, convexity of the crown and inclination of the gingival dome. At this point of research scaled monoculars are normally used to measure linear and angle sizes.

The relief type of the vestibular surface of front incisor teeth is usually defined by availability of vertical enamel beads the shape of dental – gingival contour is identified by the upper frame of the crown.

Morphological specifications of the restoration must be identical to the parameters of the intact tooth. For this reason, it is necessary to adhere to precise geometric characteristics, features of belonging to the side and mamelons. Such massive elements of a structure are modeled by opaque materials. Individual specifications, such as surface relief, shape of cutting edge, and transparency, are formed by means of applying various shades of the enamel complying with the rules of preserving the volume of natural tissue.

Fig. 3. Choice of composite shades

Fig. 4. The principle of adhesive preparation

The principle of adhesive preparing stands for the expansion of the contact area between the tooth and the filling with the purpose of sufficient increase in the amount of surface energy, which, in its turn, ensures proper adhesion of the composite to the teeth. The objective can be achieved by means of hard tissue excision down to the intact structures, by creating enamel slant or cavity of a particular shape as well as via etching enamel by acid and the use of the adhesive system.

In case of front teeth, the contact area between the enamel and the photo-polymer may be increased by slanting down the cavity combined with the excision of the prismless layer (fig. 4). For molars it is advisable to shape a cavity in a specific way, namely: make a sharp angle between the bottom and the gingival wall, create an additional plateau on the chewing surface and smooth over inner angles.

Etching enamel by acid plays a most crucial role hence the destruction of the core and the periphery of the prisms has the micro-roughening effect, thus multiplying the size of the contact area between the enamel and the composite. The maximal use of the surface energy is possible due to the use of flowable resins, or adhesives, which never fail to imitate the relief of etched enamel. That is how the mechanism of microretention works for filling materials and enamel.

The optimal fixation of orthopeadic constructions is also secured by preparing teeth in accordance with a given construction, e.g. a ledge in case of crowning, a fissure in case of a clummer, etc.

The minimization principle for the consequences of Polymer shrinkage is based on the characteristic of the material to shrink down when hardening.

When direct restorations are made it is the photo-polymer itself that shrinks; in case of indirect constructions luting cement is subject to shrinkage.

If the defect is considerable a filling across the bottom or the side area may "split off" as a result of which a "gap" may appear, followed by many a complication.

Another serious consequence of shrinkage is the development of stress in tooth tissues. Post-filling pains may appear in molars and premolars.

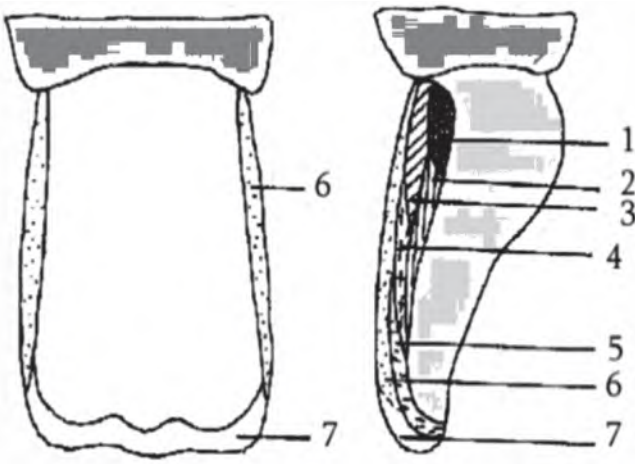

Fig. 5. Methods of layer-by-layer application reduces the risk of shrinkage

The risks of a filling splitting off or cracking in a composite-enamel contact zone as well as the risk of hypertension decreases on conditions that chemically hardened filling materials are used. As they get harder, the get "attracted" toward the pulp as a source of heat.

Before the initial level of hardening process, the shrinkage of the material is partly compensated for by its flowability. The risk of the composite splitting off the enamel is growing as the contact area is increasing and the structure design is becoming more complicated. In case of cavity with a distinctly complex configuration, with a bottom and several sides included, minimization of the negative consequences of polymer shrinkage is achieved through the simultaneous application of one layer of the composite on to no more than two surfaces. One of the methods employed suggests the use of herringbone pattern, another one is the lateral layering (fig. 5).

■ CONCLUSION

The concept of aesthetic Stomatology has become remarkably widespread over the past two decades in both practical application and in scientific literature. Its advent was ensured by the appearance of modern materials and brand-new technologies in therapeutical, orthopeadic and surgical Stomatology. They meet the highest demands of both doctors and patients, however to reach the highest point of effectiveness for the above-mentioned treatment it is absolutely necessary to combine the profound theoretical knowledge with practical research the focus of which is the range of scientific principles.

The principles of aesthetic Stomatology are also based on the results of scientific tests, theoretical analysis and clinical examination. The main thesis here consists in achieving the best results aimed at matching the natural parameters of a tooth.

The principle of colour imitation, applied in the domain of restorational and orthopeadic Stomatology, secures the proximization of the aesthetic parameters of the restoration to the optical characteristics of the tooth. Consequently, precise reproduction of volume characteristics guarantees the optimal aesthetic aspect of the construction and, in case of surgical interference, the preservation of the relief of alveolar sockets and the colour of the gingiva.

The principles of adhesive preparing and minimization of the consequences for polymer shrinkage make it possible to improve the quality of constructions by optimal preparation and the consequential filling of a cavity layer by layer.

Thus, being aware of the principles of aesthetic Stomatology enables us to choose the best methods of treatment in order to achieve the most effective working results.

■ REFERENCES

1. Inaki Gamborena. Technique of layer-by-layer application of Tetric EvoCeram composite for restoration of anterior teeth. *New in Dentistry*. 2008;1:60–61.
2. Wolff D., Stachle H.-J., Frese C. New in Dentistry. 2015;8:2–12.
3. Ahmand I. Digital dental photography. Part 10: printing, publishing and presentation. *Br. Dent. J.* 2009;207(6):261–265.
4. Ubassi G. *Form and Colour.* M. 2000; 231 p.
5. Lutskaya I.K. *Aesthetic stomatology.* Minsk, 2023; 248 p.