

BLEACHING AND AESTHETIC RESTORATION OF TEETH IN VIOLATION OF THEIR COLORS AND SHAPES

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Annotation

In the present work provides clinical examples of restoration of color and shape of the front group of teeth. We use modern tools and techniques of bleaching, as well as composite materials for making of coronal part.

Keywords: bleaching of teeth, esthetic restoration of a crown, veneers.

The study of the phenomenon of discoloration of permanent teeth has its own history, including the development of diagnostic and treatment methods. It is characteristic that for a long period of time, teeth whitening was more often considered an ineffective and unpromising procedure. Discolorites were eliminated mainly by orthopedic structures (ceramic crowns). Since the end of the twentieth century, active developments in the field of dentistry have been noted, which allow us to consider the problem of enamel and dentin discoloration quite optimistically.

Depending on the reasons that caused pigmentation, a variety of methods can be used to correct the color, from the simplest measures to lighten teeth in the presence of surface spots to the combined use of intensive bleaching with subsequent restoration work when combining enamel pigmentation with defects in its surface or with deep staining of hard tooth tissues.

The methods of color neutralization in dentistry include pre-whitening of teeth with subsequent coating with veneers. Indications are lifetime pigmentation of teeth, color disorders in hypoplasia, discoloration after depulpation or as a result of carious lesions.

It was decided to use the method of home safe bleaching. The patient's independent implementation of the procedures prescribed by the doctor will provide a positive effect when the following requirements are met: optimal interaction between the doctor and the patient; the correct choice of means and methods of treatment by the dentist; the ability to combine bleaching in the clinic with home exposure, as well as with restoration work, for example veneers.

In the process of communication, special attention was paid to discussing the final result of treatment, since the effect of the desired level of bleaching may not always be achievable.

The dentist in the conversation explained some features of the color change after treatment, namely: the "whiteness" of the teeth stabilizes by the end of the second week after the completion of the procedures, and their coloring is somewhat darker than immediately after

bleaching. This is due to the drying of the enamel during treatment and their subsequent rehydration.

The oral cavity is sanitized, including the removal of dental deposits. The tooth shades are evaluated using the VITA scale with filling out a form and a digital designation of the expected color of hard tissues after bleaching. At the initial visit, the dark areas of the teeth correspond to the C4 shade.

As a home bleaching system, Perfect Bleach gel (VOCO) is used, containing 16% carbamide peroxide as an active agent, as well as additives that give a taste, smell, gel-like consistency. Carbamide peroxide decomposes into water and hydrogen peroxide, which releases atomic oxygen, eliminating tooth pigmentation.

Using the plate during the day makes it possible to re-apply the gel to ensure the maximum amount of the active agent, however, the occlusive load and increased saliva release reduce the concentration of the composition. Nighttime use of bleaching agents in conditions of reduced salivation and lack of chewing load increases the effectiveness of exposure, but excludes the possibility of changing portions of the selected drug.

The protective plate (kappa) was made in the laboratory on a plaster model with an exact impression of the teeth, including 5-6 mm of the vestibular and oral gum surface. The design and quality of the protective plate are important details, since the plate must reliably limit the area of exposure to the whitening gel, preventing it from entering the mucous membrane, as well as preventing its dissolution by oral fluid.

Since when using a thick, viscous gel, it is necessary to create gaps between the labial surface of the teeth and the inner surface of the plate in the laboratory, light-curing material with a thickness of about 0.5 mm was applied to the vestibular areas of the teeth in such a way that it did not reach 0.5 mm to the cutting edge of the teeth and the gingival edge. Then, a vinyl plate was formed on the model using a vacuum: "tanks" are formed in place of the cured composite to place the bleaching gel. In addition, they act as a valve that improves the fixation of the device, reduces the chewing pressure on the tooth.

The mouth guard was carefully adjusted by cutting off the teeth in the neck area, which reduced the risk of contact of the bleaching agent with the gum.

The instructions for the patient included the following recommendations. Brush your teeth; add a small amount of gel to each tooth cell in the mouth guard. Carefully place the plate on the teeth without squeezing the gel beyond its limits. Remove the excess gel from the gums with your fingers. You can rinse your mouth for 5 seconds. After the session, remove the mouth guard and rinse it in cold water. Rinse your mouth and remove the remaining gel from your teeth with a toothbrush. Store mouthguards in a case in a cool place. The treatment regimen includes the use of the plate at night and during the day.

For 6 weeks, the patient independently carried out bleaching in accordance with the instructions: at least 4 hours during the day or during the night. After home whitening, the

color of the teeth changed to A2 on the VITA scale, but the intensely colored spots did not disappear.

Since pigmentation extends to the entire depth of hard tissues and bleaching did not give the desired effect, for the purpose of color neutralization, the method of opaque overlap of intensely colored fabrics in the technique of making a semi-veneer was chosen. For this purpose, Amaris photopolymer syringes (VOCO) are selected by comparing the standards with the natural shades of the tooth. Optimal preparation of the areas changed in color is performed, the resulting surface is smoothed with fine-grained borons. Acid etching and adhesive preparation of enamel is carried out. Immediately after the bond photo-curing, the first opaque layer of the Amaris composite (VOCO), selected earlier, is applied to the pigmented area.

Then the layering of the photopolymer continues in accordance with the color form. Dentine composite restores the basic geometric shape, modeling the signs of belonging to the tooth. Enamel tones are used similarly to the type of transparency of intact teeth, forming elements of the macrorelief of the surface, including the posterior contour, cutting edge. The surface is processed and polished to a natural shine. The tooth is coated with a fluoride preparation. With some types of deep pigmentation, especially after depulcation, the color of the tooth acquires a rich shade, it is not possible to change it by bleaching or making a simple veneer. In such cases, the "white sheet" technique can be used, which complements the main stages of working with photopolymers.

In the following clinical situation, a woman at the age of 31 signed up for an appointment with a dentist because her teeth were too dark. Contact with the patient begins with finding out complaints, collecting anamnesis, examination, palpation, instrumental examination of teeth (probing, percussion, thermodiagnosics), evaluation of the indices of the condition of the gums and plaque.

It is planned extra-coronal teeth whitening of the upper and lower jaw, combined bleaching of the depulcated 21st tooth (intra- and extra-coronal), followed by restoration of the erased cutting edge in accordance with the size and color pattern of the symmetrical incisor.

The patient is explained the possible effects of the materials used, their advantages and disadvantages. An informed consent is signed for the proposed treatment, including home bleaching, which is prescribed by a doctor and performed by the patient independently.

Before teeth whitening, the oral cavity was sanitized. In particular, the filling was removed from the palatine surface of the depulcated tooth. Professional removal of dental deposits was carried out, the patient was trained in individual oral hygiene and received recommendations on the use of preventive means for the period of treatment. The treatment was completed within 6 weeks.

On a symmetrical tooth there are the following nuances of color and shape: translucent cutting edge and crown corners, the dentine border is smooth, without mamelones, three white spots of hypoplasia of different sizes in the lower third of the crown, distal to the central tooth.

At the end of the preparation, the tooth was thoroughly washed with a jet of water, dried with fat-free air.

Then, an adhesive system was used, including total etching of enamel and dentin, followed by the application of adhesive bond (enamel + dentin) in one composition.

Opac, which strongly scatters light, creates the so-called "white sheet" effect. Then the main dentine layer of the composite was applied to the posterior area of the tooth, lapped to the dentine and cured with halogen light. The next portion of the composite was applied to the previous layer and distributed in the equator area in different directions using a wide ironer, covering the white opaque. The process of creating new shades was completed in the cutting edge area. The modeled opaque base was covered in layers with enamel shades of the material in accordance with the previously selected color standards, recreating a translucent cutting edge similar to the 11th tooth. A tooth-spring contour and a neck bulge were formed, with a "worn" pad in the area of the cutting edge.

The veneer was processed immediately after manufacture: the surface hybrid layer was removed, the relief was contoured. The antagonizing area of the palatine surface was carefully treated so that the minimum chewing load lay on the veneer. The proximal-posterior area was smoothed with a thin boron (in the form of a mosquito sting). Strips were used to finish the proximal surfaces.

Polishing of the veneer surface was carried out with discs without significant pressure on the restoration surface, with polishing heads. At the end, the tooth was treated with a fluoride-containing varnish, which reduces the risk of carious tissue damage.

The presence of a carious defect in the hard tissues of the tooth in some cases does not allow the pigmented dentin to be completely removed, since the risk of perforation of the roof of the pulp chamber is too high. Moreover, it is not always possible to "mask" a color that differs from the normal shade of dentin by the usual application of a photopolymer. Then you should resort to clarification followed by sealing. An effective method of aesthetic dentistry can be a combination of teeth whitening with veneers covering them.

Here is a description of a clinical case. The patient is not satisfied with yellowish-brown teeth. The discoloration extends to the entire thickness of hard tissues due to carious lesions. The method of correction in this case is bleaching, followed by sealing, opaque overlap of intensely colored fabrics and the manufacture of veneers.

Preparation of teeth for treatment includes the following stages.

- Familiarization of the patient with possible risks and side effects.
- Sanitation of the oral cavity, including the removal of fillings with careful elimination of the remnants of filling materials. Carious cavities after preparation are filled with temporary

fillings, which will be replaced with permanent ones 2-4 weeks after the completion of teeth whitening.

- Evaluation of tooth shades using the VITA scale with a digital designation, as well as the expected tooth color after bleaching, the selected material.

- Taking impressions with alginate masses with an accurate impression of teeth and gum line. An individual mouth guard (protective plate) with reservoirs in the area of teeth to be bleached is made on the resulting model. The edges of the plate are cut off by 0.2-0.3 mm above the gum line, thereby freeing the interdental papillae and preventing inflammation of the mucous membrane. The edges of the plate are smoothed, polished, cleaned and sterilized.

The definition of color and the planning of sizes and shapes takes on a special responsibility. The presence of carious defects requires maximum preparation with excision of the altered dentin.

In certain clinical situations, the use of a single, even highly effective method of treatment, may not lead to the desired result. We are talking about pronounced tooth pigmentation or discoloration against the background of damage to hard tissues. Self-whitening of enamel and dentin or isolated restoration of teeth does not always ensure the reproduction of their optical properties. In such cases, the use of a combined effect of the clarification procedure with subsequent elimination of defects is shown.

So, if the bleaching of pigmented spots does not provide the proper effect, they are covered with an opaque composite by making veneers. A similar tactic is used with pronounced pigmentation of a depulped tooth. After lightening intra- and extra-coronal procedures, intensive coloring is neutralized by a dentine photopolymer of increased whiteness. This method is called the "white sheet effect". Then the veneer coating is made in a direct way.

The development of pigmentation in the process of carious lesions of hard tissues dictates the mandatory restoration of the tooth. The aesthetic characteristics of the work performed increase if the enamel and dentin are pre-bleached. Clinical experience has shown high efficiency of lightening pigmented teeth by home safe exposure to components of the Perfect Bleach system.

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