EUROPEAN INTERNATIONAL JOURNAL OF MULTIDISCIPLINARY RESEARCH AND MANAGEMENT STUDIES

VOLUME04 ISSUE07
DOI: https://doi.org/10.55640/eijmrms-04-07-06 Pages: 44-54

VENEERS AND LUMINEERS

Hojimuradov Burkhan Ravshanovich
Assistant Department of orthopedic dentistry, Samarkand State Medical University, Samarkand, Uzbekistan

ABOUT ARTICLE

Key words: Modern technologies, microprostheses, veneers and lumineers.

Received: 12.07.2024
Accepted: 17.07.2024
Published: 22.07.2024

Abstract: Aesthetic and reconstructive dentistry in the 21st century is receiving increasing attention. Modern technologies allow you to restore or replace teeth, making them almost indistinguishable from your own. Two important areas are veneers and lumineers, ceramic or porcelain linings.

INTRODUCTION

Aesthetic and reconstructive dentistry in the 21st century is receiving increasing attention. Modern technologies allow you to restore or replace teeth, making them almost indistinguishable from your own. Two important areas are veneers and lumineers, ceramic or porcelain linings, which, in fact, are microprostheses. Teeth for veneers are ground separately, each tooth has its own veneer. Lumineers are thin plates that attach to teeth without first grinding them. In fact, veneers and lumineers are variations on the theme of the same method.

A general approach to veneers and luminaires.

Veneers and lumineers have become widely known in popular culture. The use of this treatment method has led to a discussion of its appropriateness and ethical use. Currently, there are no generally accepted recommendations regarding the suitability of this treatment method.

Veneers are usually used to correct incorrect positions and small dental diastemas. In addition, malformations, minor chips and discoloration that do not react to chemical bleaching are eliminated by using veneers and luminaires.

The successful implementation of veneers and lumineers requires careful planning, as well as a clear understanding of the patient's expectations. With regular care and good oral hygiene, veneers and lumineers can be a conservative and ideal treatment option.

Currently, two methods are used for the manufacture of dental veneers — direct and indirect. The direct method involves the direct application of the composite to the tooth surface without laboratory manufacturing. In most cases, the direct technique does not require temporary fixation of the dentition and can be performed in one visit to the dentist. The indirect method uses a dental laboratory to make veneers. The indirect method requires recording an impression, which is an additional step. With the advent of computer-aided design and automated manufacturing technology, it is now possible to perform an indirect restoration procedure in one visit to the dentist.

Treatment according to a direct or indirect protocol may or may not require a reduction in the natural structures of the tooth.

Planning the placement of dental veneers.

The preoperative dental veneers treatment protocol requires compliance with all reliable dental and medical principles. At the same time, the following issues should be considered and resolved before the operation:

Active periodontal disease

Occlusal imbalance

Other active pathologies

In the vast majority of cases, the installation of ceramic laminated veneers is the patient's choice. The patient's goals and expectations should be carefully studied. The limitations and risks must be explained to the patient and fully understood. Alternatives such as traditional orthodontics, bleaching and crown treatment should be explored before intervention. Often, several treatment methods are combined to achieve the patient's goals.

The study of the existing chewing system requires the recording of impressions for the production of educational models.

To simulate postoperative aesthetics and functional prognosis, an aesthetic wax model can be created on articulated models (see image below). This helps in assessing treatment goals and potential additional needs for changing the periodontal architecture. The structure of the gum plays a crucial role in the process of creating a smile design.

In addition to the hinge model, the ideal option is to study the extraoral anatomy of the patient. The smile line, median line, interpupillary distance and other important anatomical landmarks are recorded and taken into account. Recording and analyzing such data is best done using digital photography.

Interpreting the above, the clinician, in collaboration with the patient, can better choose the appropriate cladding technique, as well as the optimal substrate for veneers.

Preparation of teeth for veneers placement.

The preparation scheme of veneers made of ceramic laminate varies, there are several preparation techniques. In general, tooth preparation should be optimized to remove the least amount of tooth tissue.

The following situations require tooth tissue removal at the preparation stage:

Ensuring sufficient thickness for the structural integrity of the veneer

Ensuring optimal clearance in relation to the opposite dentition

Accommodating space for a new morphology

Adapting to the midline shift

Adaptation to the change in the inclination of the teeth

Caries removal

The need to respect the mechanical properties and limitations of the materials used in the manufacturing process during preparation cannot be overemphasized. Due to the variety of materials available on the market, the minimum depth of preparation to ensure mechanical integrity varies. As a rule, when applying a veneer, it is important that the tooth tissue be reduced by at least 1-2 mm. These recommendations exist to account for occlusive and shear forces.

In a study conducted by Otani et al., an automated robotic dental preparation system for the manufacture of porcelain laminate veneers was evaluated for accuracy and precision compared to conventional manual dental preparation. The study concluded that an automated robotic procedure was able to prepare a tooth model as accurately as a conventional hand-held procedure, and a conventional procedure was able to prepare a tooth model with greater accuracy.

Other guidelines for the preparation of veneers include the following:

Preservation of enamel for adhesion strength

Completion of the preparation of the veneer at or above the gum level to control humidity during cementation

Ensuring that the occlusal contact points do not rest against the edges

Avoiding all sharp corners inside the preparation

Consideration of training characteristics that help visualization for laboratory assistants

Temporary veneers.

The lack of temporary options for microprostheses in the form of veneers has become unacceptable for patients for reasons of aesthetics and sensitivity. In addition to the needs of the patient, temporary treatment serves as a diagnostic tool. Transitional restoration allows patients to visualize the final prosthesis. For the clinician, temporary structures make it possible to conduct an in vivo study of functional aesthetics. The concepts of guidance and occlusal stability obtained at the stage of studying the model can be confirmed. It is not uncommon for patients to use temporary structures for several weeks so that both the doctor and the patient can assess their suitability.

In the usual technique of making temporary veneers, a matrix is used, which is synthesized from a copy of a diagnostic wax impression. Acrylic resins of various brands can be injected into the matrix and onto the prepared teeth to produce an accurate and acceptable temporary restoration. Temporary structures are fixed on the prepared teeth using mechanical and/or other fixation methods. It is advisable that this restoration allows effective and efficient observance of the oral hygiene regime.

Violation of this position can lead to irritation of the gums, which will make the stage of cementing the final prosthesis almost impossible.

After the trial phase of transitional veneers, an impression is taken from temporary structures along with the prepared teeth. This vital information will help the laboratory technician in the manufacture of veneers that match the shape and function.

Fixation of veneers.

Fixing veneers requires a high degree of technical skills. All prepared teeth should be isolated using a reliable humidity control protocol. Contamination with blood, saliva, or any other liquid will compromise the maximum strength of the joint and long-term stability.

The retention and removal of temporary dentures depends on the technique used by the doctor. After removal, the prepared teeth must be thoroughly cleaned of all cement residues and debris. Failure to

comply with this requirement will prevent the veneers from fitting accurately. Pumice stone can be used as an effective material for wound treatment.

The use of light-cured or double-cured resin for fixing the final product is shown.

Complications of dental veneers installation

Numerous complications can lead to the failure of ceramic laminate restoration. These include the following:

Displacement of the veneer due to a break in the bond

Fracture of the veneer due to occlusal interference, bruxism, trauma and/or excess unsupported ceramics (> 2 mm)

Discoloration of the veneers' margins

Fragmentation of the veneer

Occlusive problems

A 10-year study conducted by Mazzetti et al. showed that the annual failure rate of ceramic veneers is 2.9% after 5 years and 2.8% after 10 years. A systematic review has shown that the success rate of veneers placement over a 20-year period is high; however, several studies have examined the life expectancy of veneers over 20 years.

Features of luminaires

Lumineers, also known as veneers without pre-preparation, are a special brand of veneers. Luminaires are not made of composite or porcelain, like traditional veneers, but of ultrathin laminate. While traditional veneers are 0.5 millimeters thick, lumineers are only 0.3 millimeters thick, which makes them thinner and therefore easier to install on teeth.

Like traditional veneers, lumineers can be used to correct a wide range of dental problems, such as worn teeth, severely discolored teeth, poorly aligned or misshapen teeth, broken or chipped teeth, and gaps between teeth.

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