MEDICAL SCIENCES

THE NEED FOR GINGIVAL RETRACTION IN THE MANUFACTURE OF AESTHETIC STRUCTURES

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ABSTRACT

After the preparation of the tooth, one of the main manipulations in the manufacture of aesthetic structures is to obtain an impression. When prosthetics with metal-ceramic and all-ceramic crowns, the refined impression technique is used using silicone or polyester impression materials. One of the main criteria for the obtained impression is the accurate representation of the tissues of the marginal periodontium, the hard tissues of the tooth in the cervical area and the gingival sulcus, which is an important step for the exact fit of the subgingival margin of the future restoration. To achieve this goal, a special manipulation is carried out - gum retraction, which consists in expanding and completely opening the periodontal sulcus.

Keywords: retraction, aesthetic prosthetics, gum biotype.

Relevance of the topic. In modern dental practice, various means for gum retraction are widely used, because they are used for both direct and indirect restorations.

Scientific studies of recent years prove the outstanding relevance of studying the means of retraction.

The purpose of the study: based on domestic and foreign literature data, to explore the advantages and disadvantages of various means and methods of gum retraction

Materials and methods:

The effect of fixed dentures on the tissues of the prosthetic bed, in particular in the area of the marginal periodontium, is important to consider due to the high frequency and severity of drug interventions developing after complications [1; 7; 9; 10]. The development of the inflammatory process in this part of the mucous membrane is explained not only by traumatic damage to the epithelium during tooth preparation, the accumulation of dental plaque, but also by incorrect contours and position of the edge of the artificial crown [7].

Ensure a smooth transition of the orthopedic restoration to the root of the tooth and prevent injury to the marginal periodontium [2;5;7;8]. Mechanical impact on the gum contributes to the development of acute chronic inflammation [7;9], which can lead to irreversible morphological changes in the complex of periodontal tissues [6;10].

Considering the foregoing, the solution of the issues of prevention of periodontitis due to mechanical and thermal injuries in the process of preparation of abutment teeth, especially against the background of periodontal diseases, continues to be problematic [7;10]. Until now, the most common method of restoring defects in hard tissues of teeth is the manufacture of aesthetic crowns. When using crowns, it is necessary to take into account both orthopedic indications and the condition of periodontal tissues. It is also necessary to pay attention to the relative position of the edge of the crown and the edge of the gums. The following options for the location of the crowns are known:

- mounted (at the level of the equator of the tooth);
- gingival (at the level of the edge of the gums when preparing a tooth with a ledge);
- subgingival.

The optimal solution is to use supragingival and gingival methods of crown placement in the area of the posterior teeth. One of the factors determining the quality of prosthetics with artificial crowns is the size of the marginal gap, which is determined by the thickness of the cement layer on the verge of the edge of the artificial crown and tooth tissues [10].

Most authors compare the results of their own studies with the maximum allowable marginal gap (39 μm). In addition, the margin of the restoration must exactly match the margins of the preparation. The gap between the inside of the crown and the stump of the tooth should not exceed the volume required for cementing.

It is generally accepted that in the cervical area the gap should not exceed 20 microns. The reason for wide metal-ceramic crowns in the cervical zone may be due to clinical (on the imprint, the doctor poorly reflected the ledge, gums) and laboratory factors.

Gingival retraction is a mechanical or pharmacomechanical expansion of the gingival sulcus. In the modern practice of a dentist, indications for retraction are clinical situations that require access to the working surgical field, which may be a ledge of the prepared tooth for taking impressions and at the stage of its creation; carious cavity or wedge-shaped defect in the cervical region of the tooth; when fixing fixed prostheses; protection of the marginal gums from mechanical trauma; protection of the working field from the gums; volume reduction marginal gums, creating access to the hanging part of the tooth.

Currently, several chemical compounds are used to impregnate the thread: adrenaline, alum (double aluminum and alkali metal sulfate), aluminum chloride, zinc chloride, aluminum sulfate, tannic acids and ferrous sulfate, all of which help retraction and stop bleeding from the gums. Also used are retraction threads that are not impregnated with anything. Such threads are used for patients with a high risk of hypertensive crisis, with a burdened allergic history and in pregnant women.

A healthy condition of the periodontium without signs of any pathology is a prerequisite for gum retraction. Before taking an impression, the dentist must determine the biotype of the gums to make a decision about the possibility and necessity of soft tissue retraction.

An important role is played by gingival retraction in the manufacture of impressions. Modern technologies in the manufacture of fixed dentures provide for the placement of impression material under the gingival margin.

The open edge of the restoration on the model guarantees the accuracy of the marginal fit of the prosthesis.

For high-quality preparation of teeth and a clear definition of the boundaries of preparation performed with gum retraction, the authors propose to evaluate the dentogingival complex as a whole [1,3]. Normally, from the free gingival margin to the crest of the alveolar process in the region of the anterior teeth, there is a distance of 3 mm on the vestibular side, and about 4 mm on the proximal sides (in the presence of adjacent teeth).

The normal location of the alveolar ridge occurs in 85% of patients. In case of injury, tissues heal with a loss of 15% of the primary level.

The low position of the alveolar ridge (the distance to the alveolar process is more than 3 mm from the vestibular side and more than 4 mm from the proximal sides) occurs in 13% of cases. The combination of low ridge position and thin periodontal tissue biotype has the least predictive outcome of end gingival position after injury. Healing may be incomplete, recession of marginal gums, defects in the gingival papillae with the formation of gaps between the crowns are possible. In 2% of cases, a high position of the alveolar ridge is observed, while the distance to it is less than 3 mm from the vestibular side and less than 4 mm from the proximal sides.

Thus, excessive retraction of the soft tissues of the gums will lead to trauma to the connective tissue attachment and soon create the risk of uncontrolled recession, especially if the patient has a thin alveolar ridge and a thin tissue biotype.

As practice shows, after preparation it is impossible to obtain a high-quality print. Trying to achieve a good and immediate result, they again perform anesthesia, introduce retraction threads, stop gingival bleeding, and coagulate soft tissues if necessary [3].

The healing process of damaged epithelial tissues causes prolonged gingival retraction and contributes to the exposure of the marginal edge of the prepared teeth, which is necessary when fixing orthopedic structures [4].

The disadvantages of using retraction threads to isolate cervical defects include:

- possible traumatization of the periodontal sulcus when packing the thread;
- insufficient protection of marginal gums during preparation;
- possible inclusion of thread fibers in the restoration.

Some authors clearly state that the use of gum retraction at any stage can lead to damage to periodontal tissues, regardless of the method of gum retraction.

Therefore, it is impossible to foresee the behavior of the gums after the application of microtrauma with a retractor, chemicals, or impression material. The likelihood of gum recession occurring after some time is quite high.

The fixation of fixed dentures requires control of the accuracy of the fit of the edge of the restoration to the surface of the ledge. In a number of cases, when provisional crowns were not made for the patient, inflammation developed.

And hypertrophy of the gingival margin covering the ledge. Fixation of prostheses in such situations is much more complicated and requires preliminary retraction of the gums, otherwise an area of inflammation and bedsores are formed.

Mechanical retraction. Retraction cords are produced in different sizes according to the application. The gingival sulcus in different patients varies in size (00, 0, 1, 2, 3), as well as in depth and width, depending on the position of the tooth in the dental arch. The suture sizes that are used in a given clinical situation will ensure success in moving tissues prior to taking the impression.

Properly prepared, appropriately sized cord will help ensure a successful retraction procedure. The retraction cords most commonly used to reposition gum tissue are divided into their respective categories.

Currently, the dental products market offers a wide range of retraction threads (cord).

All types of threads designed to displace gum tissue can be divided into several groups.

1. Depending on the nature of the structure, screw (abbreviations - twisted) and braided (fabric tubes - braided) retraction threads are distinguished. Helical threads consist of one or more twisted fiber bundles. Having a good absorbent effect, crimped passive threads are difficult to insert into the gingival sulcus due to the possibility of separation of the fibers. Fabric tubes are more convenient to use. The woven fabric tube is easy to place in the gingival sulcus, has high cushioning characteristics and absorption quality.

2. Depending on the factory composition of binders, vasoconstrictors and hemostatic compounds, saturated (impregnated) and non-impregnated (non-impregnated) retraction threads are isolated. The use of impregnated threads impregnated at the manufacturing plant is considered more economical.

3. All retraction cords are made of cotton material. Cotton is a soft material with unique absorption prop-

erties. During the manufacturing process, different materials can be combined. There are threads made from 100% cotton, as well as cotton rings containing elastic fibers, or cotton threads reinforced with thin copper wire.

4. To ensure the success of the doctor's retraction, it is necessary to have a range of threads tailored to the specific clinical situation, since the size of the gingival sulcus varies from patient to patient. Manufacturers produce passive 3-5 sizes marked: 00. 0.1. 2, 3.

Classic mechanical retraction technique. If necessary, infiltration anesthesia choose a thread of appropriate thickness to allow the gum tissue to shift.

The thread is tightly looped around and placed in the gingival groove. To place the floss in the gingival sulcus, an instrument of the appropriate size is used - a retractor. The thread should remain in place for 5 minutes. If the retraction cord contains epinephrine HCl, the patient should be monitored and, in case of any unpredictable effect, the cord should be removed immediately. Unintended effects can be reduced to a minimum by using a suture produced with high impregnation control, thereby ensuring a constant dosage for each retraction. Before the introduction of the impression material, the thread should be easily removed from the groove of the gum in order to avoid the opening of capillary bleeding in it. Threads containing drugs to stop bleeding leave a clot or coagulate along the edge of the ledge. Therefore, before applying the impression material, it is necessary to use a jet of warm water to rinse or remove residues. Silicone or other hydrophobic materials need to keep the tooth and surrounding gum tissue as dry as possible. The marginal sulcus must remain retracted for a sufficient time before the insertion of the impression material.

Application of retraction pastes. Most retraction pastes provide combined retraction, that is, an increase in the volume of the paste during a chemical reaction, and the mechanical expansion of the gum groove is combined with the action of hemostatic drugs. The retraction paste initially has a soft and plastic consistency, reacts after mixing with a catalyst or, interacting with atmospheric oxygen or oral fluid, acquires a hard, elastic consistency. The use of retraction paste does not injure the gum tissue, unlike the methods described above, and is considered

The most gentle retraction method does not require local anesthesia and additional equipment.

Conclusions

We believe that the gum retraction procedure is a necessary manipulation for direct restorations, especially of class V cavities according to Black, preparation of abutment teeth for aesthetic constructions, during taking impressions with modern materials. This makes it possible to obtain a qualitative result of orthopedic and therapeutic intervention.

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