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Selective Grinding of Teeth

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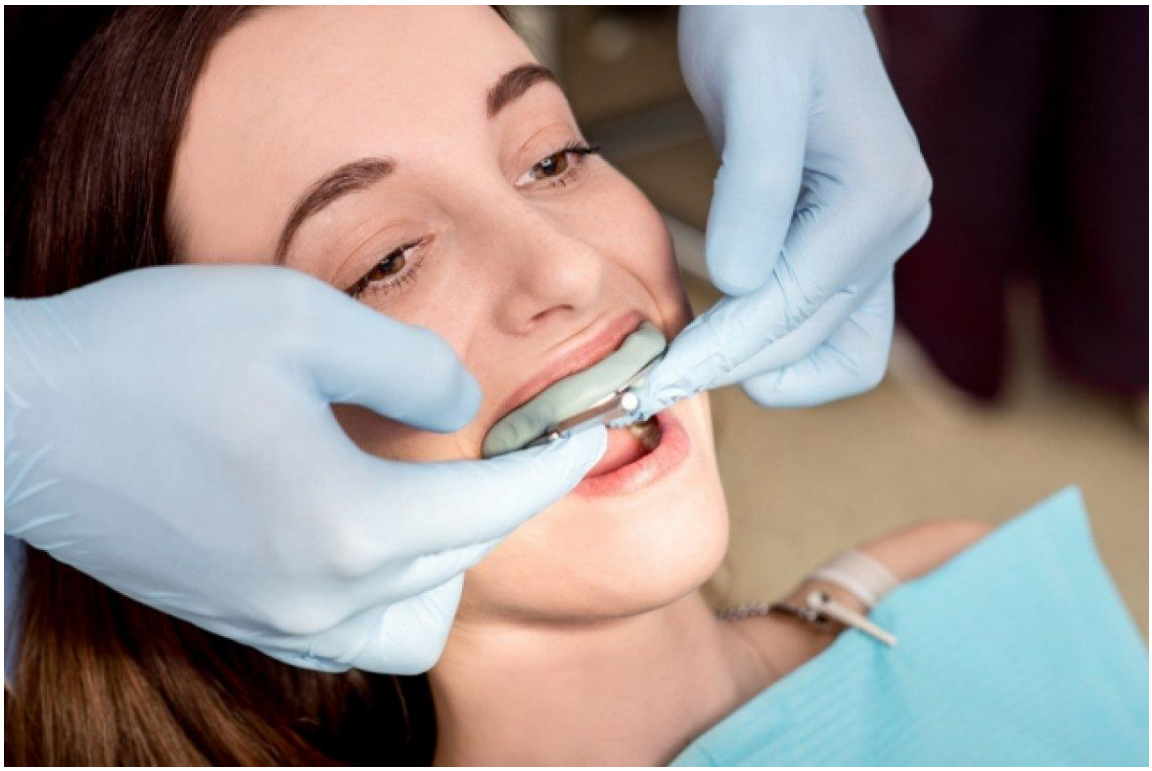
Abstract: In the initial stage of periodontitis, when there is no displacement of teeth, tremors and diastema are absent, which are more often observed in patients with partial secondary adentia, orthopedic treatment (splinting) is not indicated. In this case, it is mandatory to treat partial secondary adentia, taking into account the reserve capabilities of the supporting teeth. In other cases, it is necessary to carry out treatment aimed at restoring blood circulation and relieving inflammatory phenomena in tissues, treating somatic pathology, and restorative therapy.

Keywords: Orthopedic treatment, restorative therapy.

Introduction: In the initial stage of periodontitis, when there is no displacement of teeth, tremors and diastema are absent, which are more often observed in patients with partial secondary adentia, orthopedic treatment (splinting) is not indicated. In this case, it is mandatory to treat partial secondary adentia, taking into account the reserve capabilities of the supporting teeth. In other cases, it is necessary to carry out treatment aimed at restoring blood circulation and relieving inflammatory phenomena in tissues, treating somatic pathology, and restorative therapy. It is important to eliminate exogenous effects: remove sub- and supergingival dental deposits, replace low-quality fillings, crowns and bridges, eliminate blocking moments during movement of the lower jaw in the lateral and medial-posterior directions. The elimination of premature occlusal contacts and blocking moments during movements of the lower jaw can be a preventive measure in the absence of clinical signs of periodontitis.



IP as one of the stages of complex treatment is indicated for periodontitis of any severity, in other words, at the advanced stage of periodontitis. It is carried out according to a certain method and in a given sequence. If the technology is followed, the area of the chewing surface should not increase, and contact with the teeth of the antagonists should be preserved. In addition, it is important to keep the height and position of the protective and supporting tubercles unchanged (protective tubercles are the cheek tubercles of the chewing teeth of the upper and lingual tubercles of the chewing teeth of the lower jaw; supporting tubercles are the palatine tubercles of the chewing teeth of the upper and cheek tubercles of the chewing teeth of the lower jaw). There are many dental repair techniques described in the literature. Among them, the most well-known and widespread IP methods are Jenkelson, Schiller, Mool, Gross and Matthews, etc. Jenkelson proposed to eliminate premature dental contacts in the central and habitual occlusions, and did not attach importance to them in the lateral and anterior occlusions. According to this method, there are three classes of premature contacts. Class I - those that are localized on the vestibular surface of the buccal tubercles of the molars and premolars of the lower jaw, as well as in the upper third of the crowns of the vestibular surface of the incisors and canines of the lower jaw. • Class II - contacts localized on the palatine surface of the palatine tubercles of the upper molars and premolars. • Class III - contacts on the buccal surface of the palatine tubercles of the molars and premolars of the maxilla. Contacts of classes I and II lead to lateral displacements of the lower jaw, and teeth experiencing increased chewing loads assume an oral or vestibular position. The purpose of the IP of premature contacts of classes I and II is to reduce the area of the chewing surface of the teeth to reduce the occlusive load. In case of premature class III contacts, the lower jaw is displaced medially and, to prevent its sagittal shift, the medial slopes of the palatine tubercles of the upper molars and premolars are repaired. The Schiller premature contact technique differs from the Jenkelson technique in that the grinding is carried out both in the central and anterior, as well as in the lateral occlusions. This makes it possible to achieve multiple and uniform occlusal contacts between antagonistic teeth not only in the central occlusion, but also in all other positions of the lower jaw. IP in periodontitis should begin with the analysis of contacts with teeth antagonists in the central occlusion. The presence of supercontacts in the central occlusion causes a constant lateral load on the teeth, aggravating the course of periodontitis. In addition, the inability to close the rows of teeth in the central occlusion forces the patient to move the lower jaw to the side, which can lead to the development of pathological changes not only in periodontal tissues, but also in the masticatory muscles and the temporomandibular joint (TMJ). When eliminating supercontacts in the frontal region in the central occlusion, the following rule must be followed: if contact with the incisors and canines of the upper jaw disappears during the forward movement of the lower jaw, supercontacts on the palatine teeth of the upper jaw are eliminated. If contact with the antagonist teeth persists during the forward movement of the lower jaw,

the cutting surfaces of the teeth of the anterior group of the lower jaw are sanded. An occlusogram is used to determine the supercontacts in the central occlusion. A heated wax plate is placed between the rows of teeth and the patient is asked to close his teeth in the position of central occlusion. When the wax hardens, the plate is removed and the resulting occlusogram is examined. Where the tooth prints have pushed through the wax plate, there are premature contacts. Then the occlusiogram is applied to the lower dentition and the areas of wax pressed through are marked on the teeth with a marking or ink pencil. In the future, hillsides will be sanded in these areas. Nowadays, articulation paper of different thicknesses (200, 100, 80, 12 and 8 microns) is increasingly used instead of wax plates. The first three types of articulation paper are used for pre-grinding teeth; articulation paper with a thickness of 8 and 12 microns is used for final grinding, since the periodontal teeth can compensate for an increase in occlusal height on individual teeth up to 12 microns. In the central occlusion of the IP, supercontacts are performed on the lower molars, premolars and upper incisors and canines. After complete correction of occlusal contacts in the central occlusion, normalization of the ratios of the dentition in various positions of the lower jaw begins: protrusion, mediotrusion, laterotrusion, lateroprotrusion, lateroretrusion, and retrousion. First of all, it is necessary to check the presence of supercontacts on the balancing side, since they not only block the movements of the lower jaw, but also disrupt the synchronicity of movements of the TMJ. This leads to chronic microtrauma and the development of joint pathology. Correction of the articulation ratios of the dentition during the forward movement of the lower jaw cannot be performed arbitrarily. Simple removal from occlusion and shortening of the tooth with supercontact leads to its extension from the hole and aggravation of the course of periodontitis. Tooth extraction is carried out until uniform contacts are obtained throughout the sagittal incisor path when the lower incisors slide along the palatine surface of the anterior group of teeth of the upper jaw. Dental examination aimed at eliminating supercontacts and moments blocking lateral movements of the lower jaw should begin with an analysis of the right and left transversal occlusions. The oral slopes of the upper buccal and internal slopes of the lingual tubercles of the lower molars and premolars are sanded, and, if necessary, the fissures are deepened. The protective mounds of the upper and lower molars should not be sanded. This can lead to biting of the cheek or tongue when closing the rows of teeth. After removing the teeth in the central, anterior and lateral occlusions, it is necessary to check and, if present, eliminate the supercontacts in the extreme posterior position of the lower jaw. At the same time, the slopes of the tubercles of several teeth should normally contact symmetrically on both sides. SP must be carried out with diamond drills of medium and fine grain (to prevent enamel microcracks), a turbine drill with water cooling at high speeds. Sanded surfaces must be thoroughly polished and coated with fluoride varnish or other special fluorinated materials. When conducting IP in several stages, it is necessary to carefully polish the ground surfaces after each reception and cover them with fluorinated materials.

ORTHOPEDIC TREATMENT OF PERIODONTITIS

Medical devices (splinting prostheses) for the complex treatment of periodontitis in orthopedic dentistry are divided into four main groups. • For orthopedic treatment. • For direct prosthetics and splints. • For permanent splinting. All of these devices, in turn, are divided into removable and non-removable. Any orthopedic treatment device is manufactured in such a way that it covers at least one functionally oriented block of teeth. Depending on how the teeth are combined into functional blocks, stabilizations are distinguished: • sagittal; • parasagittal; • frontal; • frontosagittal; • along the arc. The type of stabilization is selected based on a thorough analysis of the periodontal histogram according to V.Y. Kurlandsky and after determining the severity of periodontitis in each individual patient. Which of the medical devices is more appropriate and effective to use is determined strictly individually for each patient (the type of splinting that ensures the fulfillment of all tasks is shown. In addition, medical devices should not violate aesthetics, but, if necessary, on the contrary, restore it).

Temporary splinting of teeth in periodontal diseases. Temporary splints are medical splinting devices that are used throughout the entire period of complex periodontitis treatment. If necessary, they are replaced with permanent splints or other denture designs. The indication for the manufacture of temporary splinting devices is the advanced stage of the inflammatory-dystrophic form of focal and generalized periodontitis (GP), especially complicated by the pathological mobility of teeth and the uneven course of the pathological process. Temporary splints make it possible to eliminate the traumatic effect of chewing on periodontal tissues and help to correctly resolve the issue of preserving or removing teeth with II and III degrees of mobility. In addition, the complex treatment of periodontitis with the use of temporary splints allows you to switch to a rational type of permanent splinting in the future. Requirements for temporary tires. • Reliable fixation of teeth combined in a block. • Easy to apply and remove. • Uniform redistribution of chewing

pressure on the supporting teeth and replacement of dental row defects. • The splint should not interfere with therapeutic, surgical, or physiotherapy procedures. • Splints should not injure the oral mucosa, gums, and gingival papillae. • Easy to manufacture and reasonable cost, since during the complex treatment period it may be necessary to replace the tire with another temporary or permanent splint device. There are a large number of techniques for manufacturing temporary splinting medical devices. They can be made of plastics, composites reinforced with fiberglass and other materials, metal alloys, etc. To make a plastic mouth guard according to Kurlandsky-Kopeikin, impressions are taken from the dentition. Models are cast from the prints in the laboratory, then parallelometry is performed to determine the general equator line. After that, the general equator line is outlined, it is the lower boundary of the tire. Then the models are fixed in an articulator, the occlusal height is raised by 1.5-2 mm and the wax composition of the tire is modeled. It is very important that the bumps, slopes of the bumps and fissures of the chewing surfaces of the tire are modeled without super-contacts blocking the movements of the lower jaw, and when the jaws close, they have multiple contacts with antagonistic teeth. An increase in the occlusal height within 2 mm does not cause changes in the TMJ and muscular system, since it is within the difference between the positions of the lower jaw in central occlusion and physiological rest. In cases where there is a small included defect in the dentition, the intermediate part is modeled as the body of the bridge-like prosthesis, and in the presence of an extended included defect, as the saddle-shaped part of the removable prosthesis. The temporary splint is fixed to the dentition using temporary cement or a bonding system. When, according to clinical indications, it is impossible to increase the occlusal height, it is possible to make a temporary plastic prosthetic splint (according to V.N. Kopeikin), fixed with medical cyanocrylate glue MK-2. Currently, bonding systems from various foreign manufacturers of dental materials can be used instead of glue. A temporary prosthetic splint according to Kopeikin is made on a plaster model. To do this, a self-hardening plastic layer 2-2.5 mm thick is applied from the oral side of the model at the border from the cutting edge or the transition of the chewing surface to the oral to the equator of the tooth, along the entire length of the splinted group of teeth. After hardening, the plastic mouth guard is processed, polished and fixed in the oral cavity. In localized forms of periodontitis, ligature splinting can be used, followed by coating metal wire on the oral and vestibular sides with a thin layer of composite material. Stainless steel wire with a diameter of 0.2-0.4 mm is suitable for this. Surgical silk can be used instead of metal wire. This material does not change under the action of oral fluid (saliva) and does not stretch, but to bind teeth with silk, grooves 1-1.2 mm deep must be made on the crowns of the teeth, which must be sealed with a composite material after splinting. The Goldaev splint is a fairly effective method of splinting the anterior group of teeth of the lower jaw, especially in the presence of an additional horizontal form of pathological abrasion in the initial stage, i.e. within the enamel-dentinal border. The essence of the technique is that a steel wire rod is inserted into the pre-prepared grooves on the cutting edge of the teeth of the lower jaw and fixed to them with a composite material. Significant advances have been made in dental materials science in recent years. In particular, light-curing composites, adhesive systems with high adhesion to 12 tooth tissues have become widely used in dental practice, and, most importantly, fundamentally new splint fittings have appeared. This has created a new understanding of the basic model of a modern periodontal splint, consisting of reinforcement and a light-curing composite. The advantage of this technique is that the immobilization of teeth is achieved through the use of not only reinforcing material, but also composite. Currently, two types of materials that differ in chemical composition are widely used as fittings for splinting medical devices: glass fiber based on an inorganic matrix and polyethylene based on an organic matrix. These fittings are made of a variety of the thinnest intertwined fibers with a diameter of 3-5 microns. A.N. Ryakhovsky proposed a so-called cable-stayed system for splinting teeth. The author took into account the disadvantages of splinting with reinforcing materials and fixed the reinforcing threads on the teeth so that they were in constant tension. In addition, these filaments provide circular coverage of each splinted tooth. A.N. Ryakhovsky offers single-row and double-row methods of splinting teeth, depending on the clinical situation. The manufacture of permanent splinting prostheses in the complex treatment of periodontitis solves the same tasks as the manufacture of temporary splinting medical devices. The only difference is that permanent splint prostheses remain in the oral cavity after completing a course of active comprehensive treatment. At the same time, unlike temporary splints, they constantly redistribute the load between teeth with reduced functionality and teeth with healthy periodontitis and/or transfer it to the mucosa of the alveolar process. Of the many permanent splinting structures, solid-cast splinting fixed structures and splinting dentures have become the most widespread. The length and type of splint depend on the degree of preservation of the periodontal and its reserve forces. To calculate this value, the following rule

should be used: the sum of the coefficients of teeth (according to the Kurlandsky odontoparodontogram) with unaffected periodontitis included in the splint should be 1.5-2 times higher than the sum of the coefficients of teeth with affected periodontitis and equal to the sum of the coefficients of antagonist teeth, taking into account the fact that a lump of food is placed between three or four teeth. In cases where periodontitis affects all teeth of a functionally oriented group (anterior, lateral), they switch to a mixed type of stabilization. For a group of chewing teeth, this is a parasitic view.; for the anterior group of teeth - in an arc with the inclusion of premolars. With intact dentitions, removable Grozovsky and Elbrecht splints are used for orthopedic treatment of GP, consisting of multi-link clasps from the vestibular and oral sides of the teeth, interconnected by folding clasps with occlusal pads. Removable splinting braces are considered to be much more effective, in which the retention parts of the clasps are located on the oral surface, i.e. above the equator. Thus, the tooth is kept from shifting both in the vestibulo-oral and horizontal directions (Roach's T-shaped clamps). Splinting dentures with claw-like appendages located on the teeth of the frontal group are also quite effective. There are a large number of different non-removable splint structures that have both advantages and disadvantages. Among them: ring and cap tires, a Mamlock tire and its modifications, tires made of equator crowns or half crowns, a splinting denture made of solid-cast crowns, etc. The Mamlock tire is a solid cast tire with root pins. For its manufacture, it is necessary that all teeth are depulpated, and the roots of the teeth are relatively parallel to each other. Teeth are not depulpated to modify a Mamlock splint. The doctor dissects the palatine or lingual surfaces of the supporting teeth from the cutting edge to the dental tubercle to a thickness of 0.3-0.4 mm. After that, using an intraoral parallelometer, he drills parapulpar shapes with a diameter of 1 mm and a depth of 2 mm and removes double impressions. Refractory models are cast from the impressions in the dental laboratory, on which a tire is modeled from wax. Next, the wax structure is replaced by a metal alloy according to the classical method. The finished tire is processed, stored, polished and fixed to the teeth using special bonding systems or liquid-flowing composites. In case of focal periodontitis in the frontal region, especially in the upper jaw, it is very effective to strengthen teeth using pins inserted into the bone tissue of the apical zone through the canal of this tooth. This technique is called endodonto-endossal implantation. It has great advantages even over intraosseous implants, as it is an example of a "closed" implantation, i.e. the pin does not communicate with the oral cavity.

In endodonto-endossal implantation, an intra-root bed is first formed. To do this, the root canal is expanded to a size corresponding to the diameter of the inserted implant. Then the apical opening is opened and a bed is created for the implant in the bone. A smooth endodonto-endossal implant requires a drill bit with a diameter 0.1 mm smaller than the implant. A narrow guide channel is created for the screw implant. After that, a sterile analogue of the implant is inserted into the created bone canal through the root of the tooth and a control X-ray is performed. The next step is drug treatment and drying of the root canal. Cement is applied to the interdental part of a sterile endodonto-endossal implant and slowly, rotationally, it begins to be inserted into the tooth canal. At the same time, the implant must enter the created bone canal by at least 4 mm. After the cement cures, the excess implant is cut off using a water-cooled turbine tip and the teeth are splinted. The diameter of the implant for the upper jaw should be at least 1.5 mm, and for the lower - at least 1.2 mm.

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