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Orthopedic Treatments for Localized Periodontitis

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ABSTRACT

Orthopedic methods for the treatment of periodontal diseases include direct prosthetics, selective grinding of teeth, temporary and permanent (long-term) splinting, and prosthetics.

Direct prosthetics. After the extraction of teeth, a number of changes occur in the dentoalveolar system. The preserved teeth receive an additional functional load, which, with a weakened periodontium of existing teeth, can lead to an exacerbation of inflammation, an increase in pathological mobility, an increase in atrophic phenomena, and the appearance of secondary tooth displacement. The purpose of this prosthesis is to prevent functional overload preserved teeth, their splinting and restoration of the integrity of the dentition (Krapivin E.V. et al., 2017; Nikitin O.N. et al., 2017). There are several methods of direct prosthetics. Their essence lies in the manufacture of immediate prostheses before tooth extraction or immediately after surgical manipulation (Chirkov N.V. et al., 2018). Disadvantages of this method of prosthetics: a large number of corrections of prostheses due to trauma of the inflamed gums, poor fixation of prostheses, requiring relining V distant terms, absence possibilities save teeth having mobility (Lukashev D.A. et al., 2017; Naumovich S.A. And etc., 2018;Zudin P.S. et al., 2018).

Selective grinding. To prevent the progression of pathological processes in periodontal tissues, it is necessary to create a sliding occlusion. For the diagnosis of premature occlusal contacts, various methods are used, such as the analysis of occludedograms, diagnostic models of the jaws, marking supracontacts using articulating paper. Widely used in the practice of dentists are Fuji Prescale measuring films, a hardware and software complex T-scan (Sharifov A.A. And etc., 2016; Samarina V.S. And etc., 2017; Fedotova M.V. et al., 2020). Selective grinding is necessary to reduce and redistribute the occlusal load in places of premature contacts, reduce the mobility of ground teeth, and increase the damping capacity of the periodontium. All this together contributes to the stabilization And decrease progression pathological process V periodontal tissues in patients with mild to moderate periodontitis. The disadvantages of the grinding technique are possible increased sensitivity solid fabrics teeth, wrong distribution chewing load, complications associated with overheating of the tissues of the teeth, as well as a decrease in the

height of the lower face (Yakovenko N.I. 2016; Shcherbakova T.A. 2017).

Temporary splinting. To make a decision on the need for splinting of teeth, it is necessary to evaluate periodontal tissues and the degree of tooth mobility according to clinical and radiological examination data (Timoshin A.V. et al., 2018). The type of splinting is selected depending on the loss of bone tissue. So, horizontal splinting is carried out with a decrease in bone tissue by half the length of the tooth root. (Sheenko L.I. 2019; Elhennawy K. et al., 2017). And rigid splinting in three planes is used for teeth mobility of II-III degree according to Entin and loss of bone tissue up to 3⁄4 of the root length.

For temporary splinting, the following tasks are provided: the need to create a rigid fixation of mobile teeth; Union

several teeth in one block to restore contact points and increase the resistance of individual teeth to stress; providing braking of change of positions of teeth in three directions by means of the block; redistribution of masticatory load and reduction of local injury.

Temporary splints are used to immobilize mobile or migrating teeth during complex preparation, for the duration of the manufacture of a permanent structure (Jalaluddin M. et al., 2017; Carter SD et al., 2018). They are also applied after orthodontic treatment. The use of these tires improve trophism fabrics periodontal, decrease chewing pressure. They are used during gingivotomy and gingivectomy, as well as in the treatment of focal and generalized periodontitis (Brago A.S. et al., 2016; Mazurova K. et al., 2018).

In historical reference, the Ciezynski method is known, which tied movable and stable teeth with bronze-aluminum wire or stainless soft wire 0.5 mm thick. To give greater rigidity to the structure, twisting was carried out in the interdental space. (Ponomareva N.A. et al., 2017; Toboev G.V. et al., 2018).

In the 30s of the 20th century, in order to prevent relaxation of the wire coils and reduce injury to the interdental papillae, Glickman strengthened the wire-bonded splint with quick-hardening acrylic plastics (Naumovich S.A. et al., 2018).

Novotny used a fully acrylate splint, which fixed mobile teeth from the lingual surface and filled the interdental spaces in the form of a strip, up to 2 mm thick (Kochkina NA 2015).

Splints for covering the surface of the teeth can be of several options: from the oral or vestibular surface, or vestibulo-oral, made by the laboratory method (Remizova A.A. et al., 2015; Sevbitov A.V. et al., 2015, Novikov O. O. et al., 2016).

One of the simple and effective temporary splints is a splint made of transparent polycarbonate material, made using a vacuum forming apparatus on a plaster model. (Zagorsky V.A., 2016; Naumovich S.A. et al., 2017). Today, fiber-adhesive tires are widely used, which are divided on the basis of organic and inorganic matrices. They consist from polyethylene fibers or microfiber quartz. The matrices are impregnated with composite to improve fixation to the teeth. In clinical use, fiber-adhesive splints are additionally impregnated with a composite material for better mechanical fixation of mobile teeth (Shlezinger M. et al., 2017). The main disadvantage of such splinting is a shorter duration of operation compared to traditional non-removable structures, the inability to use on teeth with a destroyed occlusal surface (IROPZ 20-50%).

Permanent (long-term) splinting. For orthopedic treatment of periodontal diseases, a large number of removable splints are used, such as solid splints for the entire dentition with arch-occlusal linings, splints with multi-link clasps and arcs, clasp prosthesis splints (Shikhnabieva E.D. et al., 2018; Nakamichi R. et al. ., 2018). In these constructions, the choice of fixing and loading elements plays an important role in the outcome of the treatment of the disease (Tregubov I.D., 2017).

K.S. Kotov And other (2016) suggested use removable splinting arc prostheses with a metal base and cast support-retaining cams, prosthesis splints with locks for orthopedic treatment of chronic generalized periodontitis of moderate and severe severity in permanent splinting (Kotov K.S. et al., 2016; Mitin N.E. et al., 2017; Korol D.M. et al., 2018).

For permanent splinting of the anterior group of teeth, a wide variety of design options can be used: non-removable extra- and intra-root splints, non-overlapping, partially overlapping and overlapping cutting edge teeth (Galiullina E.F. And etc., 2017; Astashina N.B. and etc., 2018).

Fixed splints block teeth in three directions, due to the absence of phonetic disorders, patients get used to it faster than to removable splints (Zaitseva A.V. et al., 2017; Carter SD et al., 2017). With the help of such splints, it is possible to immobilize the entire dentition, or individual groups of teeth (Naumovich S.A. et al., 2017; Corona PS et al., 2018).

Intra-root splints are made for depulped teeth. Tooth treatment consists in leveling the incisal edge and grinding it from the lingual side at an angle of 45 □ . The lingual wall is ground off, retreating from the cutting edge by 1/3 of the length of the tooth crown. In the area of the ground surface of the teeth, channels are drilled and a wax splint is modeled. Then it is replaced with metal and cemented on the abutment teeth. (Mitin N.E. et al., 2016; Sifakakis I. et al., 2018). The disadvantages are the complexity of the work - depulpation of teeth, which can sometimes be difficult and fraught with various complications from the tissues surrounding the roots (Huang YF et al., 2016).

cast pin splint consists of a metal plate located on the oral surface and the cutting edge of the anterior teeth, fixed on the root pins, but has a number of disadvantages. Namely , the preparation of the entire occlusal surface of the teeth, the lack of aesthetics, is used only for splinting the anterior group of teeth. Its application impossible with a large number of intracanal pins, a large divergence of the canals, requires mandatory depulpation of the teeth, and cannot be used in the absence of one or two teeth (Kopeikin V.N. et al., 2001).

Tires foliar, consisting of rings, half rings are the most simple and easy to implement. The main disadvantages of such splints are the minimum strength of the structures in the places where the rings and half rings are soldered, the possibility of shifting the rings and half rings at the time of taking impressions, the lack of aesthetics and the place of contact with the teeth is subject to resorption of the fixing cement (Fishev S. I. et al., 2017).

Tires crown-cap are made mainly on the anterior teeth of the lower jaw. The disadvantages of this tire are the lack of aesthetics, in the combined version, the plastic is subject to abrasion, discoloration over time and chips (Makeev G.A. et al., 2018; Sherbakov AS et al., 2015; Gołyńska M. et al., 2017).

Beam splints consist of beams and crowns for abutment teeth. The disadvantages of splints made for vital teeth is the opening of the tooth cavity, and for depulpated ones, the difficulty of preparing teeth at the time of depulpation and the root canals of the teeth are not always parallel, which makes it difficult to use this splint (Petrov Yu.V. et al., 2005; Naumovich S.A. et al., 2018).

Defects in the dentition make it difficult to treat periodontal diseases. The remaining teeth have a functional overload, they are displaced. With small included defects in the anterior section, Maryland prostheses are used. With their help, the missing tooth is replaced with a light-cured composite and fixed behind the adjacent teeth with a tape or wire. Such splints can be used with bone loss up to 2/3, and with tooth mobility of I-II degree according to Entin, splints without reinforcing tape or wire are used (Zagorsky V.A. 2016).

To replace missing teeth and treat periodontitis bridges or crown splints are used, which

complicate drug therapy (Galegashvili L.N. et al., 2017; Gawron K. et al., 2017).

Recently, intraoral scanning has been widely used in dentistry (Doroshina I.R. et al., 2014; Yumashev A.V. et al., 2015). From an optical impression on a CAD / CAM system, you can make a large number of various tires (removable And fixed), splints, kapp (Sevbitov A.V. et al., 2017; Arutyunov S.D. et al., 2018; Chen I. et al., 2015).

Some authors For splinting mobile teeth 1-2 degrees the front group offer a zirconia splint. In their opinion, the splinting method is more durable and aesthetic, but the main disadvantage is the high cost (Ponomareva N.A. et al., 2017). The common disadvantages of most splints are the difficulty of preparing teeth, the risk of injury to the tissues surrounding the tooth and the oral mucosa, the lack of splint aesthetics, the need for expensive equipment, intolerance dental materials (Remizova A.A. And etc., 2015; Iron A.S. et al., 2016; Thomas D.S. et al. 2018).

Thus, given the huge choice of splinting structures, each of which has its own drawbacks, the problem remains unsolved design development, responsible everyone requirements For integrated treatment patients with periodontal disease. And the methods of orthopedic treatment of patients with moderately severe localized periodontitis used to date do not provide proper result.

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