

MEDICAL SCIENCES

PROSTHETICS WITH FIXED OVERDENTURES ON IMPLANTS

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Abstract

The author considers the advantages, disadvantages and methods of preventing complications in the prosthetics of patients with fixed overdentures. It has been proven that individual planning of the design of a subperiosteal implant allows creating the most correct location of the support heads in their required number and ensures high-quality fixation of the prosthesis, leaving a specific clinical situation.

Keywords: subperiosteal implant, fixed overdentures, fixation of prostheses.

Well-known options for prosthetics on implants are the manufacture of a removable, fixed or conditionally removable orthopedic structure. Each of these options has indications and contraindications for use, its advantages and disadvantages [1,7]. The purpose of this work was to determine the criteria for the use of the so-called integumentary structures on subperiosteal implants with a fixed method of fixation on supports.

In order to increase the strength of the structure and for the convenience of the exact location of the fixing elements, the integumentary prosthesis is reinforced with a metal frame. In our opinion, the indication for the use of an integumentary prosthesis is quite large defects in the dentition, especially accompanied by a decrease in the height of the alveolar part of the jaw or a change in the appearance of the periodontal area. To such situations can be attributed to defects in the dentition after a long-standing extraction of teeth (local or generalized atrophy of the alveolar process, deformities of the alveolar process, defects in the alveolar process after previous surgical interventions, soft tissue defects). The advantages of a fixed structure are as follows: the psychological comfort of the patient; simplicity at the stages of laboratory production; the possibility of fixing the prosthesis after the preparation of supports; ease of fixation, leveling the inaccuracy of the casting of the metal frame; the ability to reproduce a full-fledged occlusal surface; the possibility of obtaining a good cosmetic result [2,9]. Despite this, cemented prostheses also have significant drawbacks [3,4]. According to the literature, these shortcomings can manifest themselves after 2–3 years of use [6]. Based on the complaints of patients, clinical examination data and X-ray control, 61 patients had:

- edges of overhanging crowns (87.3%);
- loose marginal fit of crowns to supports (43.4%);
- periapical changes in abutment teeth (35.1%);
- violation of aesthetics (34.5%), among which

dissatisfaction with the color or shape of crowns (27.9%)

- and root exposure (6.6%);
- inadequate form of prostheses (13.2%), in particular, the absence of contacts with antagonists (6.6%),
- occlusal disorders (3.2%), too large flushing space under the intermediate part (3.4%);
- chipping of ceramic cladding (10.1%);
- prosthesis fractures (8.3%);
- violation of fixation of prostheses (8.0%);
- mobility of abutment teeth (4.9%);
- pathology of the marginal periodontium (3.5%);
- loss of neighboring teeth and the need to change prosthesis designs (1.1%)

Such conclusions are in the context of general ideas about the etiology of complications after cementation of prostheses [5, 12]. Summarizing these conclusions, we emphasize that most of the shortcomings are the consequences of the mistakes of the doctor and dental equipment at different stages of the manufacture of the prosthesis. It can be considered positive that a high percentage (8-31%) of the so-called biological complications after non-removable fixation of prostheses can be ignored in the case of prosthetics on a subperiosteal implant [9]. Interesting results were obtained by examination of 102 combined metal-acrylic and metal-plastic crowns after 8-15 years of operation. In 29 crowns, significant wear was found, in 10 cases - a crack in the lining, in 40% - significant wear and damage to the crowns. In addition, during the control period, the subgingival placement of the edges of the crowns on the vestibular side remained only in 16% of cases. Moreover, according to foreign authors, non-removable metal-acrylic and metal-plastic prostheses can acquire cosmetic and structural defects, which will require their restoration or processing after 2-3 year [10,11].

The results of long-term control (5-7 years) of prosthetic treatment on intraosseous implants [2, 4] show similar data: the examination revealed a violation of the safety of the lining associated with the erasure of plastic on the chewing surface of the molars [8]. The development of modern dentistry allows for the clinical restoration of the prosthesis in the oral cavity. First of all, this method justifies itself in the restoration of the cladding. Depending on the facing material, such a restoration can be carried out by mechanical (retentive) fastening of a new portion of the material or by silanization (etching) followed by the use of the classical adhesive technique, or complete reworking [6]. A large complex of problems should be considered complications that have a risk of developing around implantation, namely: mucositis, cuff gingival hyperplasia, peri-implantitis [8]. In all these cases, the situation may require mechanical removal of the prosthesis by knocking down or ultrasonic action. The second option is not recommended.

itself in practice, especially when it is necessary to remove a large structure in terms of the number of supports. Another problem of fixed prosthetics on implants is the risk of spontaneous partial or complete removal of prostheses [6, 7, 8]. cement; edge junction density; the height of the support heads and the angle of the walls; the presence of retention on the fixing surfaces; mechanical loads

act on implosion. Partial decementation of the prosthesis should be considered the greatest threat to the further functioning of the entire system (prosthesis - implant - bone bed), especially when natural teeth are included in the design. This situation leads to inadequate biomechanical loads both on the supports, on which the prosthesis has been cemented, and on the supports, where the fixation has not yet been preserved.

The main factors in the prevention of complications include: the quality of the manufacture of prostheses, in particular, the precision casting of the frame, and the accuracy of its ratio to the ledges of the supports and the clear edge; rational preparation of supports and the choice of adequate material for fixing the prosthesis; timely therapeutic and periodontal treatment; regular follow-up examinations at least once every 6 months. Most complications remain relevant for prosthetics on subperiosteal implants [11]. It should be noted that the manufacture of a subperiosteal implant follows the same principles as the framework of the prosthesis, so special attention should be paid to the planning and manufacture of the prosthetic elements of the implant.

Since the marginal adaptation of the prosthesis is a decisive factor in achieving a long-term positive result, it is important that the edge of the prosthesis fits exactly to the implant shoulder [10].

An important issue considered in the literature is the stage of preparation of supports [20]. Modern research is aimed at finding optimal preparation techniques and creating optimal shapes of prepared teeth [9]. Careful planning of the shape of the prosthetic heads of the implant allows, already at the laboratory stage, to create parallel supports as the most suitable for fixation. In this case, it becomes possible to abandon

the clinical preparation of supports. This greatly speeds up and simplifies prosthetics. The experience of domestic authors indicates the need for a clear distinction between the prosthesis and peri-implant tissues. In the subperiosteal construction, this can be

be achieved by passing a wide ledge into a thin neck [11]. At the same time, the height of the neck is chosen and created, taking into account the phenotype of the gums, which is determined during the first surgical intervention (Classic two-stage subperiosteal implantation). Careful polishing of the implant neck is also of great importance for the long-term well-being of peri-implant tissues. This approach contributes to dense coverage of the supports by soft tissues, prevents mechanical irritation of the gingival margin, simplifies independent and professional hygienic care of implantation. In some situations, such a specific modeling of the implant heads is contrary to the requirements of cosmeticity, but the gingival mask of the prosthesis most often covers all metal elements that may be noticeable. The problem of cosmetic prosthetics becomes even more urgent in the case of using intraosseous implants as supports. Scientific and clinical searches for improvement are carried out in several directions at once (soft tissue plasty, the use of specific gingival shapers, the use of ceramic transgingival elements, the use of heavy-duty ceramics for the manufacture of individual orthopedic heads, the manufacture of metal-free prostheses) [3]. Individual production of subperiosteal implants in the conditions of conventional dental laboratories and insufficient experience in practical work do not yet allow the use of such options for improving cosmetics and leave wide prospects for the development of this topic.

Externally, non-removable integumentary structures resemble conventional removable dentures. But the fundamental difference is that a cemented prosthesis will remain in the mouth for many years. This forces us to focus on reproducing all the anatomical features of the artificial gums and the excellent quality of the prosthesis. These measures will help the patient to quickly adapt to the prosthesis, and in the future will serve as a reliable prevention of inflammatory complications around the implantation. The cosmetic value of plastic gums in the integumentary structure can hardly be overestimated. Therefore, you should use the entire available arsenal of opportunities to improve the "naturalness", namely: careful masking of the metal frame with special varnishes that do not allow translucence through the plastic; overlapping of the metal elements of the prosthesis with a sufficient facing layer of plastic; selection of the required shade of the base plastic in accordance with nearby tissues; application of plastics from capillary pattern; maximum reproduction of the anatomical relief (interdental papillae and vestibular contour of the alveolar process) Individual planning of the design of the subperiosteal implant allows you to create the most correct location of the supporting heads in their required number, regardless of the anatomical conditions of the jawbone; provides high-quality fixation of the prosthesis in accordance with the specific clinical situation. The most acceptable for wide practi-

cal use should be considered a metal-reinforced prosthesis with artificial teeth and a gum mask. The optimal option for fixing a cover prosthesis on a subperiosteal implant is

bolt, lock or screw fixation, which provides constant free access to the prosthesis and peri-implant areas. Therefore, the manufacture of non-removable overdentures on subperiosteal implants cannot be considered the best option from the point of view of long-term control, but it is this fixation option that remains technologically the most accessible today for implementation under modern conditions.

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