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Mucous membrane of the oral cavity and periodontal tissues during prosthetics with bridge prostheses

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Abstract

The problem of replacing the dentition with dental implants, followed by prosthetics of patients using fixed structures, especially metal-ceramic, is very important. Dental implantation has long become a routine practice, and the aesthetic properties of ceramics give patients a sense of comfort, inner satisfaction and confidence.

Keywords: dentitions by dental, fixed dentures, oral cavity

1. Introduction

Pathological changes in periodontal tissues can occur as a result of the impact of the prosthesis material on the adjacent gum tissue, as a result of the interaction of the dental implant with the environment of the oral cavity. The negative effect of fixed dentures on the periodontal tissues of supporting implants can be aggravated by the design features of the prosthesis, low oral hygiene and other factors.

Purpose of the study

to give a clinical assessment of the condition of periodontal tissues in the field of dental implants after prosthetics with fixed metal-ceramic structures.

Materials and research methods

To solve the tasks set in this scientific research, we examined 56 patients aged 35 to 65 years who had fixed ceramic-metal dentures on dental implants in the oral cavity. The lifespan of orthopedic structures ranged from 1 year to 5 years. The examined patients had no allergic reactions and intolerance to metal alloys and ceramic mass from which the prostheses were made. In all patients of the main group, ceramic-metal orthopedic constructions were fixed on screw dental implants installed no earlier than 1 year after the operation, i.e. all patients underwent surgery for delayed dental implantation.

The condition of dentures was evaluated according to cosmetic and functional data. From an aesthetic point of view, cermet prostheses should imitate natural teeth in anatomical shape, color and location in the dental arch. Basic requirements: functionally full-fledged artificial crowns should fit snugly against the neck of the tooth, not go into the gingival sulcus by more than 0.2-0.3 mm, and not overestimate the bite. The bridges should be of high quality, should not fit snugly to the gum and irritate it. Dentures and the condition of periodontal tissues were clinically evaluated based on their cosmetic data and functional condition. 59 (56.19%) people had an orthognathic bite, 16 (15.24%) had an abnormal neutral, 12 people (11.43%) had a direct bite, and 5 (4.76%) had a prognathic neutral 3 (2.85%) - biprognathic neutral, 2 (1.9%) - prognathic distal, 1 (0.95%) - prognathic mesial, 3 people (2.86%) - deep bite, 4 (3.81%) - a one-sided oblique bite.

For an objective assessment of the condition of periodontal tissues, periodontal indices were used: papillary-marginal-alveolar index (PMA), periodontal index (PI). The degree of bleeding of the interdental papillae was determined by the value of the papillary bleeding index (PBI). To determine the severity of the inflammatory process in periodontal tissues, a Pisarev-Schiller test was used (iodine number of D. Svraakov, 1962). The hygienic condition of the dental / implant parts prosthetically fixed with non-removable MK structures was evaluated using

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hygiene indices (GI): simplified oral hygiene index (OHI-S) JC Green, JR, hygiene index, the plaque index at the approximate sites or the interdental hygiene index - IHI (1999).

Statistical processing of the numerical data of the materials of the experimental part of the study was carried out using univariate analysis of variance and Newman – Cales multiple comparisons in the Primer of Biostatistics 4.03 program for Windows. The differences were considered significant at $p < 0.05$.

The results of the study

When studying the state of periodontal tissues in 30 (35.29%) patients who had 26 (41.01%) abutments in the oral cavity of fixed teeth of ceramic-metal (MK) designs and teeth under MK crowns, no visible changes were detected. Patients did not show complaints regarding the condition of periodontal tissues; they appeared for the purpose of routine inspection. Objectively, the gum was pale pink, was moist, smooth, shiny. The inter-implant gingival papillae had no signs of inflammation, they were spiky in shape, and were tightly attached to the implants. The gingival margin also had no signs of inflammation, the alveolar gum was pale pink with a granular surface. Bleeding was not detected. During the Pisarev-Schiller test, the gum acquired a straw-yellow color, i.e. the sample was negative. The appearance of the gums corresponded to the condition of the clinically intact periodontium. In individuals with an intact periodontium, the Green - Vermilion Plaque Index of the abutment teeth of non-removable MK structures is lower than that of the control group. Despite the significant difference ($p < 0.05$), the index values in both groups belonged to a satisfactory level of hygiene. Tartar in patients of this group was not determined. The total GI Green - Vermilion value in this group corresponded to a satisfactory level. The GI value of Silness-Loe of supporting teeth with an intact periodontium did not differ from the norm ($p > 0.05$), the interdental GI did not differ significantly from the control value - $p > 0.05$.

The results of rheoparodontography showed that in patients prosthetically treated with MK designs with an intact periodontium of the abutment teeth, the rheographic index, vascular tone index, peripheral resistance index and vascular elasticity index are comparable with the values of these control group indices (table 5).

When examining periodontal tissues in 36 (64.7%) patients, in the area of their 20 (58.99%) implants under single crowns and supporting implants of fixed MK structures, pathological changes were revealed. At the same time, patients did not show complaints. Only with careful questioning did itching and bleeding in the area of inflamed gingival papillae occur, rarely occurring when brushing teeth.

In 24 (96.0%) patients with periodontitis, symptomatic gingivitis was catarrhal: the gingival papillae were swollen, enlarged, friable, hyperemic, with a bluish tinge; the gingival margin is swollen, enlarged, roll-shaped thickened, hyperemic, with a cyanotic hue. In 6 (16.0%) patients, gum retraction by 1.5–2 mm was determined. The alveolar gum is slightly swollen with a loss of granularity and a slight discoloration. When probing, periodontal pockets with a depth of 3.0–4 mm were determined mainly at the approximate surfaces of the implants. The contents of periodontal pockets had a serous character. A significant amount of soft plaque was observed, supragingival and subgingival hard deposits were determined. After probing periodontal pockets, moderate bleeding occurred. Violation of

the statics of dental implants was manifested by the absence of tight contacts along the border of the implant-bone. X-ray expansion of the periodontal gap in the cervical region of the support implants was determined, resorption of the cortical plate and the apex of the inter-implant septa of the affected areas of the alveolar processes to 1/3 of the length of the implant was observed.

In patients with periodontitis, the value of the Plaque Index (CI) of the Green - Vermilion support implants exceeded the control value ($p < 0.05$), but in both groups the indicators corresponded to a satisfactory level of hygiene. The value of the tartar index (CI) of the Green - Vermilion significantly differed from the value of the control group ($p < 0.05$). The general value of the Green - Vermilion GI support implants of patients with periodontitis corresponded to a poor level of hygiene. During the survey, patients explained this hygienic condition by the presence of pain and bleeding gums when brushing teeth. The values of Silness-Loe GI in periodontitis significantly exceeded the values in all groups of the examined patients, and the values of interdental GI did not have significant differences compared with other groups.

A comparative analysis of the condition of periodontal tissues of supporting implants in patients with gingivitis and periodontitis, according to the indicators of all periodontal indices, revealed significant differences: the PMA index was $31.51 \pm 2.83\%$ and $52.54 \pm 3.11\%$ ($p < 0.05$), PI - 0.98 ± 0.08 points and 2.20 ± 0.12 points ($p < 0.05$), Pisarev - Schiller test - 1.53 ± 0.12 points and 2.74 ± 0.23 points ($p < 0.05$), PBI index - 1.1 ± 0.1 points and 1.7 ± 0.1 points ($p < 0.05$). The periodontal condition of supporting implants of bridge prostheses and implants under single MK crowns changed in.

Conclusion

Thus, the results of clinical observations have led to the conclusion about the effect of fixed metal-ceramic constructions of dentures on the periodontal support implants. Examination of 56 people prosthetically fixed metal-ceramic structures, in 36 (45.8%) of them, in the area of available 20 (37.1%) support implants, pathological changes were revealed. In 30 (25%) patients who had 26 (27.7%) support implants, chronic catarrhal gingivitis of mild and moderate severity was observed, in 25 (20.8%) patients in the area of 53 (9.4%) support implants - Chronic periodontitis of mild severity. In 30 (15%) patients who had 146 (25.7%) supporting implants of fixed MK structures in the oral cavity, no visible changes were detected.

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