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USAGE EFFECTIVENES OF IMPROVED ENDODONTO-ENDOOSSAL IMPLANTS FOR STABILIZATION OF FRONTAL TEETH

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Summary : Despite the rapid development of materials and treatment methods for caries and its complications (pulpitis, periodontitis), its prevalence among the Ukrainian population remains high. Significant prevalence of chronic apical periodontitis, which is accompanied by the destruction of the alveolar bone part, leads to the need for surgical treatment of the disease (resection of the tooth root apex) for the preservation of teeth, especially the frontal group. Known ways to improve the biological parameters of teeth after surgical resection of the root top are their reinforcement with the help of endodonto-endoossal implants. This study shows the evaluation of the effectiveness of surgical treatment with the use of advanced endodonto-endoossal implants among young people who live in the Transcarpathian region. Data analysis of the evaluation of the effectiveness of the proposed method of surgical treatment of patients has made it possible to establish its high efficiency and recommend it as a method of choice.

Key words : endodonto-endoossal implant (EEI), periodontitis, people of young age, Transcarpathian region, effectiveness evaluation, root apex resection (RAR), bone density, HU (Hounsfield Unit), Periotest, conventional units (CU).

Actuality. Despite the rapid development of methods of treatment and rehabilitation of patients in dentistry, the prevalence of caries and its complications, among the Ukrainian population, remains at a high level [1, 7, 12]. That is why endodontic treatment of teeth occupies a significant place among all therapeutic dental interventions [2, 8, 9,]. According to the official reports of the Ministry of Health of Ukraine, the level of dental morbidity among the Ukrainian population has increased over the last ten years, which is especially noticeable among children and young people and leads to complications. It is this fact that causes the improvement of the techniques of radical interventions to restore the structure and functioning of the tooth-jaw system [6, 11, 13]. One of the common surgical interventions is RAR, which is used in the treatment of the frontal group of teeth, which also have an aesthetic function as an element of the quality of life of the patient [4], especially among young people.

However, teeth after resection of the root top the biochemical parameters significantly reduce, increases the functional load, movement of the tooth is found, and often this factors leads to its loss [3, 10].

A known method for improving the biomechanical parameters of tooth stabilization following surgical root top resection interventions is their reinforcement by endodonto-endoossal implants [5, 14], especially when it comes to the frontal group of teeth among young people, where the use of implants after resection of the tops is an alternative method treatment with preservation of aesthetic and functional result in different periods of postoperative term.

The aim of the study. Evaluation of the effectiveness of the surgical treatment performed with the use of advanced endodonto-endoossal implants.

Results and discussion. In order to determine the effectiveness of the proposed method for restoring the biological function of the frontal group teeth after resection of the root top using an advanced endodonto-endoossal implants, a group of 73 patients aging 16-24 years old with the following

diagnoses were selected: chronic granulomatous periodontitis of the frontal upper teeth group and the lower jaw (the size of the defect of the bone tissue at the apex of the root is up to 0.3 cm), chronic granulomatous periodontitis of the teeth frontal group of the teeth of the upper and lower jaws (size of the defect in bone on the top of the root is from 0.3 cm to 0.5 cm). Depending on the choice of treatment method, all patients were divided into 4 clinical groups. For all clinical groups of patients, additional methods of examination were performed.

Determination of the degree of mobility of the established EEI was carried out using the technique "Periotest" using the apparatus ("Periotest-S") produced by "Siemens" (Germany) [15]. The evaluation of the results were carried out on the basis of the received digital data using the Miller scale in the modification of Flesrar (1980).

Computed tomography was used to determine the bone density, and the evaluation of the data was performed using the X-ray absorption scale (the Hounsfield scale) and was ultimately expressed in Hounsfield units [15]. The evaluation of efficacy in all clinical groups was performed in several stages - 7 days after surgery and in long-term follow-up, in particular after 3, 6 and 12 months after treatment. Density of bone tissue was recorded during the initial examination, 7 days after the treatment (surgery), after 3, 6 and 12 months after the treatment. The average mobility indicators in 3 months indicate a reliable lower mobility of teeth in patients of the third clinical group, where as an alternative treatment method, an improved method of RAR with additional filling of bone tissue defect with an osteoplastic material was chosen (+ 29.0 ± 1.26 C.U., 18.0 ± 0.21 C.U.,, + 10.0 ± 0.8 C.U.,, + 24.0 ± 1.24 C.U., p <0.05). These figures correspond to the first and fourth groups - 2 degree of mobility, in the second - 1-2 degree, and in the third group 0-1 degree of mobility.

In the first and fourth control clinical groups, after 6 and 12 months of follow-up, no significant dental stabilization and a decrease in the degree of mobility were found, which remained at the level of 1-2 degree. The results obtained in the first clinical group ((+ 27.0 ± 1.24 and + 24.0 ± 1.24 conventional units and the fourth control group (+ 24.0 ± 0.2 and + 20.0 ± 1.31 conventional units)) confirm this assertion.

In the second and third clinical groups there is a stable positive dynamics with a clear tendency to reduce the degree of mobility of teeth (the second clinical group with indicators + 16.0 ± 0.21 and + 10.9 ± 0.11 conventional units) to 0-1 degree. In the third clinical group, after 12 months, it was almost possible to reduce the mobility of the teeth after surgery for 0 degree (+ 4,0 ± 0,01 and + 2,0 ± 0,01 conventional units, respectively).

The degree of mobility of teeth is confirmed by the results of densitometry. Restoration of the density of bone tissue at the site of defect to norm was observed among patients of the second and third groups reliably in 12 months. After 3 and 6 months after the treatment in the control and first clinical groups, the results in the dynamics were different (346.4 ± 1.13 HU and 310.2 ± 1.34 HU in the control and 540.0 ± 2.33 HU and 620.0 ± 2,38 HU - in the first clinical groups). After 12 months, the results in both clinical groups did not differ significantly (769.0 ± 1.35 HU; 743.0 ± 3.34 HU; p> 0.05), however, they significantly differed from those of healthy jawbone tissues (p < 0.05).

In the second clinical group, after 3 and 6 months after surgery, the density of bone tissue in the defect area was 756.3 ± 2.45 HU and 880.1 ± 4.34 HU. In the third clinical group, these indices were insignificantly higher and amounted to 834.3 ± 4.35 HU and 880.4 ± 2.56 HU. 12 months after the treatment, in the second clinical group, the density of bone tissue was 957.4 ± 2.45 HU, and in the third group, 1003.3 ± 4.38 HU.

Thus, the use of EEI of the improved design in a complex with the filling of bone defect by osteoplastic material after 6-12 months after conducted RAR restores the density of bone tissue in the defect zone to the

indicators of the density of healthy bone tissue of the jaw (880,1 ± 4,34 HU; 1003,3 ± 4,38 HU; 1000 ± 2,45 HU; p> 0,05).

In the course of statistical calculations it was established that the index of bone density in the zone of defect in the first and control groups increases unevenly, however, 12 months after treatment reached the maximum relative to all previous results of the markings.

When constructing Euclidean distances diagrams, it was found that for 12 months at initially close bone density in the defect area, there was a significant improvement in all groups of patients (p <0.05), although the effectiveness and uniformity of bone resection differed.

Conclusion. The statistical relationship between the mobility of the teeth and the density of bone tissue in the defect zone can be interpreted as a direct dependence. This testifies to the effectiveness of the proposed methodology and the feasibility of its use in practical surgical dentistry and to serve as a method of choice.

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