APPLICATION OF THE "DIAGNOCAT" SYSTEM FOR EVALUATION OF BONE TISSUE RECOVERY AFTER APICAL MICROSURGERY WITH RETROGRADE OBTURATION OF ROOT CANALS

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Introduction. Chronic destructive forms of periodontitis during exacerbation can be complicated by purulent processes of the maxillofacial region. In this regard, the long-term existence of a chronic infection focus leads to a decrease in non-specific resistance of the body. The method of computed cone beam tomography (CBCT) in therapeutic dentistry is intended both for the diagnosis of periapical inflammatory processes and for the evaluation of the results of bone tissue restoration after endodontic treatment. The use of CBCT research is based on measuring the linear dimensions of the periapical lesion in three reformates and is subjective. Recently, dentists have been using automated CBCT data processing programs for diagnostics, such as Artificial Intelligence - Diagnocat (AI-Diagnocat), which allows for objective measurements of the volume of periapical inflammation in cubic millimeters before and after treatment.

Objective: to analyze bone tissue restoration using the Artificial Intelligence - Diagnocat system after root apex resection with subsequent retrograde treatment with root canal obturation.

Materials and methods. A total of 26 patients aged 18 to 56 years with a diagnosis of chronic apical periodontitis (K04.5) in multi-rooted teeth were examined. The degree of bone tissue damage was assessed using the AI Diagnocat system before and after the treatment. The study included lesion sizes from 50 mm3 to 150 mm3. The patients underwent root apex resection with subsequent retrograde treatment with root canal obturation. Postoperative examination of patients was conducted after 12-16 months. The obtained CBCT data were processed in the Diagnocat AI.

Results. Before apical surgery and endodontic treatment of multi-rooted teeth, the Diagnocat AI system showed that the average volume of periapical inflammation was 0.86 mm3, and observation after 12-16 months showed an average volume of periapical bone destruction within 0.6 mm3 (+/- 0.5), which in linear measurements corresponds to a double width of the periodontal ligament space.

Conclusions. According to the classification of healing after apical microsurgery with root resection proposed by UPenn, the obtained periapical space indicators allow us to consider complete healing after surgery. Dynamic monitoring of changes in bone tissue in the root area after resection of the apices of the roots of teeth with subsequent retrograde treatment with obturation of the root canals using the Artificial Intelligence - Diagnocat system provides objective indicators of bone tissue restoration.