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LONG-TERM RESULTS OF SURGICAL TREATMENT OF ROOT CYSTS OF THE JAWS

Rachkov A. A.¹, Evtuhov V. L.²

*Belarusian State Medical University,¹Department of Maxillofacial surgery and
Facial plastic surgery;²Department of Oral Surgery,
Minsk, Republic of Belarus*

Introduction. The tooth-preserving operation cystectomy is one of the most frequently performed elective surgical interventions at an outpatient dental practice. An important task of the dental surgeon is the clinical examination of patients with this pathology and the assessment of long-term treatment results based on cone-beam computed tomography (CBCT).

Aim of the study to compare the long-term results of various methods of surgical treatment of radicular cysts based on the data of cone-beam computed tomography.

Objects and methods. The study included 60 patients (divided in 2 groups) with the diagnosis: “radicular cyst” (ICD-10 K 04.8). The treatment plan included CBCT of the maxillofacial region, endodontic treatment of “causal” teeth, cystectomy with apicoectomy, intraoral radiography on the day of surgery, and repeated CBCT 1, 2, and 3 years after surgical treatment.

Results. During the clinical examination of the operated patients of group 2, repeated CBCT of the jaws was performed 2 and 3 years after surgical treatment to analyze the structure of bone tissue in the area of postoperative defects. The obtained data stated the absence of recurrence of the root cyst. In group 1, the development of recurrence of the root cyst was noted in 4 cases of observations.

Conclusion. The results obtained allowed us to conclude that the proposed method of surgical treatment of jaw cysts is advantageous.

Keywords: radicular cysts of jaws; cystectomy; cone beam computed tomography.

ОТДАЛЕННЫЕ РЕЗУЛЬТАТЫ ХИРУРГИЧЕСКОГО ЛЕЧЕНИЯ КОРНЕВЫХ КИСТ ЧЕЛЮСТЕЙ

Рачков А. А.¹, Евтухов В. Л.²

УО «Белорусский государственный медицинский университет»,¹кафедра челюстно-лицевой и пластической хирургии лица;²кафедра хирургической стоматологии, г. Минск, Республика Беларусь

Введение. Зубосохраняющая операция цистэктомия является одним из наиболее часто выполняемых плановых хирургических вмешательств в амбулаторной стоматологической практике. Важной задачей стоматолога-хирурга является клиническое обследование пациентов с данной патологией и оценка отдаленных результатов лечения на основе данных конусно-лучевой компьютерной томографии (КЛКТ).

Цель исследования — сравнить отдаленные результаты различных методов хирургического лечения корневых кист на основе данных конусно-лучевой компьютерной томографии.

Объекты и методы. В исследование включены 60 пациентов (разделенных на 2 группы) с диагнозом: «корневая киста» (МКБ-10 К 04.8). План лечения включал КЛКТ челюстно-лицевой области, эндодонтическое лечение «причинных» зубов, цистэктомию с резекцией верхушек корней, внутриротовую рентгенографию в день операции, повторную КЛКТ через 1, 2 и 3 года после оперативного лечения.

Результаты. При клиническом обследовании пациентов группы 2 выполнялась повторная КЛКТ через 1, 2 и 3 года после хирургического лечения для анализа структуры костной ткани в области послеоперационных дефектов. Полученные данные констатировали отсутствие рецидива корневых кист. В группе 1 развитие рецидива корневых кист отмечали в 4 наблюдениях.

Заключение. Полученные результаты позволили сделать вывод о преимуществе предлагаемого способа хирургического лечения корневых кист челюстей.

Ключевые слова: корневые кисты челюстей; цистэктомия; конусно-лучевая компьютерная томография.

Introduction. The tooth-preserving operation cystectomy with apicoectomy of the “causal” tooth is one of the most frequently performed elective surgical interventions at an outpatient dental appointment [1, 2, 3]. The emergence of new materials and methods makes it possible to improve the quality of rehabilitation of patients in this group every year. An important task of the dental surgeon is the clinical examination of patients with this pathol-

ogy and the assessment of long-term treatment results based on cone-beam computed tomography (CBCT).

Aim of the study to compare the long-term results of various methods of surgical treatment of radicular cysts based on the data of cone-beam computed tomography.

Objects and methods. The study included 60 patients with the diagnosis: “radicular cyst” (ICD-10 K 04.8). The treatment plan included CBCT of the maxillofacial region, endodontic treatment of “causal” teeth, cystectomy with apicoectomy, intraoral radiography on the day of surgery, and repeated CBCT 1, 2, and 3 years after surgical treatment.

Patients were randomly divided into 2 groups. During the surgical stage of treatment, osteoplastic materials (bone chips and collagen membrane) were used. In patients of the 1st group, these materials were fixed by the standard method, which involves applying the membrane to the defect. In patients of the 2nd group — by the method of endocortical fixation.

Endocortical method of membrane fixation is as follows. The membrane is given a special shape: one of the edges of the membrane is narrow with a width equal to the diameter of the bone defect, and the second edge of the membrane is wide with a diameter exceeding the size of the surgical defect by 10 mm. The narrow edge of the membrane is placed on the resected tooth root (if necessary, with a retrograde root canal filling), the cavity of the bone defect is filled with osteoplastic material. After that, the wide edge of the membrane, which protrudes beyond the defect, is folded over and placed on the pre-perforated outer cortical plate of the bone over the defect at the base of the mucoperiosteal flap. The flap is placed in place and fixed with separate interrupted sutures.

The assessment of the size of bone defects before surgical treatment and in the postoperative period was carried out using the “Method for diagnosing cysts of the jaw bones”, approved by the Ministry of Health of the Republic of Belarus. The essence of the method lies in the fact that the first and subsequent measurements are carried out taking into account the axis of the “causal” tooth. This technique makes it possible to reliably trace the dynamics of bone defect recovery at different periods of dispensary observation of patients, which distinguishes it from the generally accepted method for assessing defects in the “maximum dimension”. First of all, we noted the dynamics of the size of defects in the vestibulo-oral direction, as well as the density of bone tissue based on the Hounsfield method. Statistical analysis was performed using Microsoft Excel 16.16 and Statistica 10.0 software.

Results. In the first study before surgery, there was no statistical significance of differences in the bone defect size between the groups: 10.5 (9.7–12.3) mm in group 1 and 10.3 (9.0–11.7) mm in group 2. The values of the Hounsfield index were also comparable in the groups: 101 (79–132) mm and 104 (81–141) mm, respectively.

A re-examination 1 year after the operation showed differences in the groups. In patients of the 1st group, there was a lack of statistical significance of the size of bone defects before surgery — 10.5 (9.7–12.3) mm and after surgery 10.0 (9.3–11.5) mm, $p=0.59$. In patients of the 2nd group, the results of measuring the bone defect showed a statistical significance of differences before and after treatment of 10.3 (9.0–11.7) mm and 7.9 (7.0–8.7) mm, $p=0.005$. In addition, comparison of the results of the 1st group 10.0 (9.3–11.5) mm with the results of the 2nd group 7.9 (7.0–8.7) mm also indicated the presence of statistical significance of differences.

The value of the Hounsfield index in patients of the 1st group before surgery was 101 (79–132) U, and 1 year after surgery — 756 (634–857) U, $p=0.001$. In patients of the 2nd group, the value of the Hounsfield index before surgery corresponded to 104 (81–141) U, and after — 973 (884–1053) U, $p=0.001$. When comparing the results of the 1st group 756 (634–857) units and the 2nd group 973 (884–1053) units for this indicator, there was a statistical significance of differences ($p=0.001$).

Figure 1 (pictures No 1, 2) shows the clinical example of a patient of the 1st group. Picture 1: root cyst of the upper jaw. In the area of the root apex of tooth 2.1, the focus of bone tissue destruction is 1.5 cm with clear contours.

CBCT before surgery. Picture 2: CBCT 1 year after surgery. In the area of the root apex of tooth 2.1, weakly structured bone tissue is determined.

Figure 1 (pictures No 3, 4) shows the clinical example of a patient from group 2. Picture 3: Root cyst of the upper jaw. In the area of the tops of the roots of teeth 2.1, 2.2, a focus of destruction of bone tissue of 2.0 cm with clear contours is determined. CBCT before surgery. Picture 4: CBCT 1 year after surgery. In the area of the resected tops of teeth 2.1, 2.2, newly formed bone tissue is determined.

During the clinical examination of the operated patients of group 2, repeated CBCT of the jaws was performed 2 and 3 years after surgical treatment to analyze the structure of bone tissue in the area of postoperative defects. The obtained data stated the absence of recurrence of the root cyst. In group 1, the development of recurrence of the root cyst was noted in 4 cases of observations.

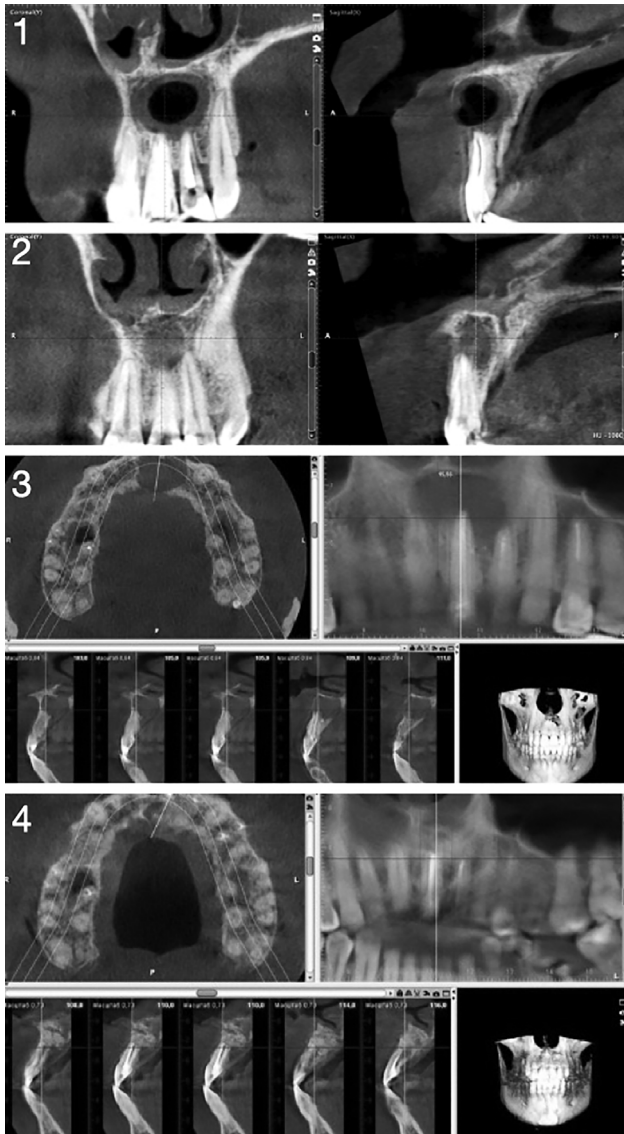


Figure 1 — CBCT's of patients from the groups 1 and 2 before and after surgical treatment.

Conclusion. Thus, based on analysis of the results of CBCT of maxillo-facial region in dynamics, we can conclude that the method of endocortical fixation of resorbable membranes is superior to the standard method.

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