

Treatment of Odontogenic Cysts of the Jaw Bones in Children

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Abstract: This article describes the methods of treatment of odontogenic cysts of the jaw bones in children and the surgical rehabilitation of patients with this pathology. Literature data on various methods of surgical treatment of odontogenic cysts of the jaw bones in children are summarized. The prospects of recognition of odontogenic cysts in computed tomography are noted, the decisive preference in making a diagnosis is given to a mandatory pathohistological examination.

Keywords: odontogenic cysts, rehabilitation, cystectomy, children.

According to the authors, among odontogenic cysts in children, inflammatory cysts are more common (radicular - 49.4% and tooth-containing - 37.7%). Odontogenic cysts are equally common in boys (54.9%) and girls (45.1%) with predominant localization on the lower jaw. Children with radicular cysts applied for inpatient surgical care at the age of 12–18 years (87.5%), with dental cysts at the age of 6–11 years (86.9%), with follicular cysts equally often at the age of 6–11 and 12–18 years (47.6 and 52.4%) (Kushner A.N., Lapkovsky V.I., Petrovich N.I., 2013).

Due to the wide prevalence of jaw cysts of odontogenic etiology, the actual problem of maxillofacial surgery is the improvement of methods for treating this pathology (Khatskevich G.A., 2009; Solntsev M.A., 2010; Vasiliev G.A., 2011), as well as with the presence of significant damage to the structures of the jaw bone, complicated by premature loss of teeth, impaired chewing function, jaw deformity and the threat of a pathological fracture (Mirsaeva F.E., 1999; Mukovozov I.N., 2002). Suppuration of odontogenic cysts is often complicated by the development of sinusitis of the upper jaw, osteomyelitis of the jaw bones, abscesses and phlegmon, which pose a threat to the life of the patient [2,3,7]. The development of central cancer of the jaw is discussed, since the epithelial membrane of the cyst becomes malignant. The problem is relevant because the lack of reliable information about the effectiveness of various methods of surgical intervention makes it difficult to develop accurate recommendations for the use of methods of surgical treatment of odontogenic jaw cysts [4,6,19,24]. The main condition for a successful postoperative period in patients with jaw cysts is the restoration of regional blood circulation in the tissues of the wound after the incision in order to provide access to the cyst of the mucous membrane, periosteum and detachment of the mucoperiosteal flap [14,16,20,25].

According to some authors, keratocysts of the jaw bones range from 5.4 to 17.4% of all odontogenic cysts (Kreidler JF, 201 3; Cawson RA, Odell EW, 201 8). Sometimes keratocysts with congenital pathology are included in the symptom complex (Gorlin's syndrome, Marfan's syndrome). A characteristic feature of the keratocyst clinic is that these formations do not have clear symptoms that allow them to be accurately diagnosed before surgery. Only in those cases when the cyst reaches a large size, symptoms appear in the form of a violation of teething or their displacement, jaw deformation (V.V. Roginsky, 2005).

Small keratocysts are sometimes localized in the periapical tissues, as well as periradical inflammatory cysts surround the tissues of an unerupted tooth, similar to a follicular cyst (tooth-containing). It is a well-known fact that many years after the operation, keratocysts of the jaws tend to recur (SN Fedotov, 2009). In the histological classification of odontogenic tumors, keratocysts are classified as tumors and are called "benign keratocystic odontogenic tumor" (WHO, 2005). Histopathological examination of the diagnostic surgical material is crucial in making a diagnosis, but sometimes previous operations and / or a characteristic sign - suppuration make pathohistological verification difficult as well, since their characteristic epithelial lining is destroyed. Regarding the treatment of keratocysts, there is also no consensus. Different authors offer different methods of treatment: cystectomy, treatment of the cystic cavity with chemicals, with cryodestruction, etc. Some authors, given the tendency of keratocysts to recur, prefer a radical approach to treatment - resection of the jawbone (Donoff R.B., 1972).

According to M.Azimov (2015), patients with odontogenic maxillary sinusitis accounted for 4-6% of all patients who were treated. L.M. Emelianenko (2010) and Kozlov B.C. (2013) provide data on the annual increase in the number of patients in this category, which is 1-2%. Despite the large increase in the disease, the results of surgical treatment of patients with odontogenic maxillary sinusitis cannot be considered optimal. This information is confirmed by the data of M.M. Solovyov, P.Y. Shimchenko (2005) - 32% of patients in the long-term after radical sinusotomy according to Caldwell-Luc make the following complaints: a feeling of heaviness, a feeling of fullness, sometimes twitching pain in the area of the operated upper jaw; purulent discharge from the nose; lacrimation, numbness of the upper lip, nose.

The above symptoms occur due to the fact that after the removal of the pathologically altered mucous membrane of the sinus, its stable regeneration does not occur, and this leads to the prolongation of the chronic inflammatory process (Malakhova M.A., 2005; Bykanova T.G., 2003; Gayvoronsky A.V., 2012; Palchun V.T. et al., 2012) and can lead to carcinoma (Sagalovich B.M., 2007). Painful symptoms also arise due to the fact that during sinusotomy according to Caldwell-Luc, a part of the anterior wall of the sinus is removed along with the mucous membrane (Bogatov A.I. et al., 2003), in this case, the total area of the defect in the sinus mucosa increases significantly and reappears conditions for its poor regeneration. Thirdly, the long-term existence of chronic foci of odontogenic infection in the periodontium of the lateral group of teeth of the upper jaw leads to the destruction of the bone structures of the sinus floor and damage to its mucous membrane.

The works of G.B. Troshkova and V.A. Kozlova (2007) demonstrated that the severity of the process and its prevalence depend on the period of appearance of the oroantral message that occurs after the extraction of teeth, before its surgical removal.

Some patients who underwent the classical operation of sinusotomy according to Caldwell-Luc have complaints of paresthesia of the tissues of the infraorbital region, they are explained by the traumatic nature of the intervention and the inflammatory process in the zone of innervation of the infraorbital nerve.

To prevent retraction of the soft tissues of the cheek and the formation of cicatricial adhesions, G.B. Troshkova (1997) proposed replacing a sinus wall defect with an allogeneic demineralized bone graft.

In order to improve the results of treatment of patients with odontogenic maxillary sinusitis, it is necessary to implement urgent measures, which include sanitation of foci of odontogenic infection of the upper jaw; prevention of the occurrence and timely elimination of the oroantral message that arose after tooth extraction (Petropavlovskaya M.Y., 1999); minimizing the trauma of surgical intervention in the surgical treatment of maxillary sinusitis of odontogenic etiology. Lopatin A.S. (1998), Ippolitov V.P. with co-authors (2005); Kozlov B.C. (2003); Garrel R. et al. (2003) recommend the use of an endoscopic technique, with which it is possible to visualize the sinus through burr holes and extirpate the pathologically altered membrane.

Cavities in the jawbones are found incidentally on radiographs performed for a different purpose, some of them provoke the onset of symptoms in the clinic: painful and painless swelling, which has a likely tendency to grow. Differential diagnosis of medium and small cysts of dysontogenetic origin is difficult, since the odontogenic cyst “grows” slowly for many months or even years and does not bother the patient (T.G. Robustova 2003, I.S. Karapetyan et al. 2004, R. E.Mac -Donald, D.E. Avery 2003, C.V. Bappop 2003). Long-term experience shows that the X-ray picture of large cavity formations does not always allow to establish a preliminary diagnosis accurately and correctly, since the cavity syndrome can be the result of various pathological conditions: radicular cysts, keratocysts, follicular cysts, ameloblastomas, ameloblastic fibromas, neoplasms of various histological structures, this predetermines and aggravates the further fate of patients.

Many works are devoted to X-ray diagnostics of diseases of cysts of the maxillary sinuses (Rabuhina N.A., Chuprynina N.M., 1991). Diagnosis of periradicular cysts is most significantly represented by the following studies (Oliverio PS, 2003; Ikeshima A., 2005). Literature data still show that diagnostic errors are quite common (Ovrutsky G.D., Livshits Yu.N., 2006). This fact is due to some features of the clinical course of jaw cysts and their insufficient X-ray semiotics [14,16,22]. A significant percentage of cysts occur with complications in the form of inflammation of the cystic cavity and sinus, thinning of the deformation of the walls of the maxillary sinus, germination into the nasal cavity, which necessitates a more accurate and objective diagnosis in order to grow optimal treatment. Thus, an objective assessment of the nature and dynamics of the development of such odontogenic cysts is complex and insufficiently studied [10,12,13]. At the same time, in identifying the nature of the occurrence of odontogenic cysts, assessing their course, as well as the features of reparative osteogenesis in the postoperative period, radiation methods occupy a significant place.

In the publications of scientists, the prospects of recognition of odontogenic cysts in computed tomography are noted (Anyutin R.G. et al., 1993; Kuznetsov. V. et al., 1997; Lopatin A.S., Artsybasheva M.V., 2006; Ruston V.E., Horner K., 2007; Yoshiura K., Higuchi Y., Araki K., 2009).

Computed tomography is performed to determine the size, contours and depth of cyst germination in adjacent soft tissues, this study makes it possible to determine the listed parameters in layers and accurately (A.A. Kulakov, N.A. Rabukhina, O.V. Adonina 2005, P.J.Boyne, D.Nou, C.Moretta, T.Pritchard 2005).

However, the final decisive preference in making a diagnosis is mandatory histopathological examination [1,6,8]. The significance of radiopaque examinations in children in the diagnosis of odontogenic cysts is not sufficiently deeply indicated, which undoubtedly provide valuable information about the distribution and localization of cysts.

In the literature studied by us, a small proportion reflects the clinical and radiological characteristics of surgical treatment for long-term results of odontogenic cysts of the upper jaw and their consequences. Meanwhile, such information is extremely important for clinical practice [3,5,7].

To date, there is no single approach to the treatment of large odontogenic cystic formations of the jaw bones and some types of benign tumors. The main reason for this is the high recurrence

rate of the disease. The value of the recurrence rate, according to the literature, keratocyst varies depending on the chosen technique from 0 to 63.5%. Upon completion of cystectomy, recurrence rates can be as high as 18.9% (Zhao Y.F. et al. 2002) and even 54.5% (Morgan T.A. et al. 2005), while the recurrence rate is 0-2% (Zhao Y.F. et al., Kolokyta et al. 2007) obtained after block resection of the jaw and decompression (cystotomy) [2,4,19,21,24,25].

The largest number of maxillofacial surgeons prefer radical resection techniques for large jaw cysts and benign tumors, which are more often crippling and require a multi-stage rehabilitation period.

In the socio-economic conditions of our time, patients prefer outpatient treatment to stay in a hospital and reduce the duration of disability associated with surgery. Therefore, a dental surgeon must simultaneously offer an effective, least traumatic and affordable method of treatment [9,11,13,20].

Conclusions. Summing up the above, it follows that at present the actual task of surgical dentistry and maxillofacial surgery is to improve the diagnosis and choice of the optimal method for the treatment of extensive odontogenic cystic lesions and benign neoplasms of the jaws, based on the most complete clinical and radiological picture.

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