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OPTIMIZATION OF SURGICAL TACTICS IN THE TREATMENT OF RADICULAR AND FOLLICULAR CYSTS OF THE JAW BONES

Telmonov Islomjon Khairullayevich
Asia International University
telmonovislomjon@gmail.com

The abstract. This paper presents a comprehensive analysis of modern approaches to the surgical treatment of odontogenic cystic formations of the jaws. Based on clinical observations and a systematic review of the world literature, an algorithm has been developed for choosing the optimal surgical tactics depending on the size, location, histological type of cyst and the general somatic status of the patient. From my clinical experience, the use of a differentiated approach can reduce the recurrence rate to a minimum and significantly improve the quality of bone regeneration. The research of our colleagues confirms the high efficiency of combined techniques using modern osteoplastic materials and autologous platelet concentrates.

Keywords: radicular cyst, follicular cyst, cystectomy, cystotomy, decompression, bone regeneration, odontogenic cysts, marsupialization, osteoplasty.

Cystic lesions of the jawbones of odontogenic origin are a widespread pathology in the practice of a maxillofacial surgeon and dental surgeon. According to the modern classification of the World Health Organization, revised in 2017, radicular cysts account for 52 to 68 percent of all cystic formations of the jaws, which determines the highest urgency of the problem of their timely diagnosis and adequate surgical treatment. Follicular cysts are the second most common and are most often detected in young and middle-aged patients in the area of uncut wisdom teeth and canines of the upper jaw. Odontogenic keratocysts are also included in the group of cystic lesions and are characterized by the most aggressive clinical course with a high recurrence rate after surgical treatment.The pathogenetic mechanisms of the formation of radicular cysts are closely related to the chronic inflammatory process in the periapical tissues, which develops as a result of necrosis of the tooth pulp. The epithelial remnants of Malasse, which are rudiments of the dental plate and are in an inactive state in the periodontal ligament, begin to actively proliferate under the influence of inflammatory mediators and tissue breakdown products, gradually forming the lining of the cystic cavity. The central part of the epithelial cluster undergoes dystrophy and necrosis due to malnutrition, which leads to the formation of a cavity filled with cystic contents. From my clinical experience, early detection of periapical pathology through modern methods of radiation diagnostics, in particular, cone-beam computed tomography, allows timely organ-preserving endodontic treatment until the formation of a true epithelial cyst. Follicular cysts develop from the enamel organ of an uncut tooth and are characterized by attachment to the tooth in the area of the enamel-cement border. The mechanism of their formation is associated with the accumulation of fluid between the enamel epithelium and the crown of the tooth or between the layers of the enamel epithelium itself. The works of Russian authors in recent years demonstrate that the frequency of follicular cysts increases significantly in the presence of wisdom teeth retention and canine dystopia. Clinically, these formations have been around for a long time

They can be asymptomatic, reaching significant sizes and causing deformation of the jaws, displacement of neighboring teeth and resorption of their roots. That is why regular X-ray examination of patients with retinated teeth is a mandatory component of medical follow-up. The

choice of optimal surgical tactics is determined by a combination of many factors: the size of the formation, its exact localization of relatively important anatomical structures, the histological type of cyst, the patient's age, his general somatic status and the presence of concomitant diseases. Classical cystectomy, which involves the complete removal of the cyst shell with primary wound suturing, remains the method of choice for small and medium-sized cysts not exceeding 2-3 centimeters in diameter. The research of our colleagues convincingly demonstrates that with cysts of the specified size, this technique provides complete restoration of bone tissue in a period of 6 to 12 months without the need for additional osteoplastic materials. With extensive cystic lesions that spread to a significant part of the body or branches of the lower jaw, as well as with cysts of the upper jaw that grow into the maxillary sinus, two-stage treatment with preliminary decompression or marsupialization becomes the method of choice. From the research of my compatriots, it follows that this approach reduces the amount of education by 40-60 percent during 4-6 months of active follow-up, which significantly reduces the traumatism of subsequent cystectomy and minimizes the risk of damage to the mandibular nerve or perforation of the floor of the maxillary sinus. Decompression is especially indicated when the cyst is located close to the mandibular canal, the bottom of the nasal cavity or the orbit, as well as in elderly patients with a burdened somatic history. The decompression technique involves creating a communication between the cyst cavity and the oral cavity by forming a small hole in the cyst wall and installing an obturator or drainage tube. The patient independently cleanses the cyst cavity with antiseptic solutions, which contributes to a gradual decrease in intracystic pressure and centripetal bone growth. From my clinical experience, regular X-ray monitoring every 4-6 weeks allows an objective assessment of the dynamics of the reduction in the size of the formation and timely planning of the second stage of surgical treatment. The average duration of the decompression stage is from 6 to 12 months, depending on the initial size of the cyst. Current trends in surgery of jaw cysts suggest the widespread use of biomaterials to optimize reparative osteogenesis and shorten the rehabilitation time for patients. The use of autologous platelet concentrates, in particular platelet-enriched fibrin of various modifications, significantly accelerates angiogenesis, attracts osteoprogenitor cells to the defect area and creates optimal conditions for bone regeneration. The work of our colleagues shows that the combination of cystectomy with filling a bone defect with xenogenic osteoplastic material based on deproteinized bovine bone and a PRF membrane makes it possible to achieve radiologically confirmed bone regeneration as early as 3-4 months after surgery, which is almost twice as fast as compared with the traditional approach without the use of biomaterials. The problem of odontogenic keratocysts, characterized by a high potential for recurrence due to the peculiarities of the histological structure of their shell, deserves special attention in clinical practice. The thin and brittle lining of the keratocyst is easily fragmented during surgical removal, and satellite cysts and epithelial islets in the surrounding bone are a source of recurrence. This type of formation requires more aggressive surgical tactics with mandatory adjuvant treatment of the bone walls of the cavity. From my experience, the use of Carnois solution, which is a mixture of absolute alcohol, chloroform and glacial acetic acid, provides chemical fixation of the residual epithelium to a depth of 1.5 millimeters. An alternative is cryodestruction with liquid nitrogen, which has also shown high effectiveness in preventing relapses. The research of our colleagues convincingly shows that the recurrence rate of odontogenic keratocysts using adjuvant treatment methods decreases from 25-30 to 5-8 percent, which significantly improves the long-term prognosis of treatment in this category of patients. It should be emphasized that odontogenic keratocysts can be one of the manifestations of Gorlin-Golts syndrome (non-like basal cell carcinomatous syndrome), therefore, with multiple keratocysts, it is necessary to exclude this hereditary disease and refer the patient to a geneticist and a dermatologist for a comprehensive

examination and follow-up. Postoperative management of patients with cystic lesions of the jaws includes adequate antibacterial therapy with broad-spectrum drugs for 5-7 days, anti-inflammatory and desensitizing therapy, regular X-ray monitoring and dynamic monitoring for at least 5 years. From my clinical experience, strict adherence to the protocol of follow-up with follow-up orthopantomography 3, 6 and 12 months after surgery, and then annually, allows timely detection of the initial signs of relapse and re-intervention at an early stage with minimal traumatization of surrounding tissues. The analysis of our own clinical observations and data from the world literature allows us to formulate an algorithm for choosing surgical tactics for odontogenic jaw cysts. With cysts up to 2 centimeters in diameter, a single-stage cystectomy is indicated with preservation of the causal tooth under the condition of high-quality endodontic treatment or with its removal with an unfavorable prognosis. With cysts ranging in size from 2 to 4 centimeters, cystectomy is supplemented by filling the defect with osteoplastic material. For cysts larger than 4 centimeters, two-stage treatment with decompression is recommended. In case of odontogenic keratocysts of any size, adjuvant treatment of the bone walls is mandatory. In conclusion, it should be noted that successful treatment of odontogenic jaw cysts requires not only proficiency in modern surgical techniques, but also a deep understanding of the pathogenesis of these formations, the ability to correctly interpret the data of radiation research methods and individualize therapeutic tactics taking into account all clinical factors. From my experience, an interdisciplinary approach involving an endodontist, orthodontist, and orthopedist at the treatment planning stage makes it possible to achieve not only the elimination of the pathological focus, but also full-fledged functional and aesthetic rehabilitation of the patient as soon as possible. The work of Russian authors confirms that compliance with this algorithm ensures a successful outcome of treatment in more than 95 percent of cases.

Conclusions: The choice of surgical tactics for odontogenic jaw cysts should be based on a comprehensive assessment of the size of the formation, its histological type, exact localization and relationship with important anatomical structures, as well as taking into account the age and general somatic status of the patient. Two-stage treatment with pre-decompression or marsupialization is indicated for extensive cystic lesions with a diameter of more than 4 centimeters and can significantly reduce the risk of intraoperative complications, including damage to the mandibular nerve and pathological fracture of the jaw. The use of modern biomaterials, including xenogenic osteoplastic preparations and autologous platelet concentrates, significantly optimizes reparative osteogenesis and reduces the duration of bone regeneration by almost half. Odontogenic keratocysts require an extended surgical protocol with mandatory adjuvant treatment of bone walls with Carnois solution or cryodestruction to prevent recurrence. Follow-up with regular X-ray monitoring for at least 5 years is a mandatory component of the comprehensive treatment of patients with cystic lesions of the jaws.

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