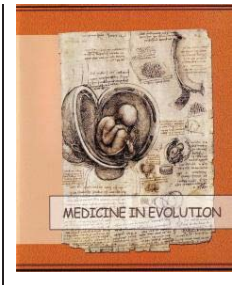


Treatment of maxillary odontogenic cysts by the method of marsupialization – review



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Abstract

Odontogenic cysts are the most frequent osseous destructive lesions of the jaws. As the volume increases, they cause significant bone resorption, cortical expansion and tooth displacement. Depending on the size, location of the cyst and the age of the patients, several treatment options are available: curettage, enucleation, radical treatment and marsupialization. The marsupialization (Partsch I) is a conservative technique used as curative treatment for the odontogenic cyst. Despite its disadvantages and controversies, remains an interesting therapeutic choice in the case of large cysts, or in old or very young patients.

Keywords: odontogenic cyst, marsupialization, Partsch I, curative treatment

INTRODUCTION

Odontogenic cysts of the jaws are pathological cavities partially or totally delimited by an epithelial membrane. These cysts arise in the thickness of the maxillary bones in the odontogenic epithelium and have a fluid or semifluid content [1,2].

According to data from the literature, maxillary cysts have a rate of 80-85% of all tumors and pseudotumors of the jaws. Maxillary cysts represent between 4.56% -14.4% of all maxillofacial pathology. An incidence of over 90% is due to radicular cysts [1,2]. According to some statistics, radicular and residual cysts represent 52.2% of maxillary cysts and approximately 62% of odontogenic cysts [3,4].

Odontogenic cysts are usually asymptomatic and accidentally discovered by routine radiographic examination. Pain can occur when they become infected. After a long period of evolution, it can cause bone resorption, cortical expansion and displacement of teeth, especially the tooth associated with the cyst [5].

Symptoms may be absent or the patient may have painful embarrassment, usually vestibular swelling, intraoral fistulas, and in the advanced stages, paresthesia, dental pain and signs of sinus damage.

Due to the predominant development inside the bone marrow or the extension in the maxillary sinuses without affecting the ostium, the cysts of the maxillary bones can reach remarkable dimensions without clinical expression for patients. Orthopantomography together with CBCT helps in rigorous planning of the intervention, with the reduction of postoperative morbidities for the patient.

Cystectomy is the intervention of choice in the treatment of small and medium maxillary dental cysts and is indicated when there is no risk of injury to important anatomical structures [1,2].

The treatment must be multidisciplinary, frequently preoperative endodontic treatments of the teeth with apexes that protrude in the cystic formation are needed. Treatment ranges from marsupialization, enucleation to surgical treatment or bone resections. Depending on the histopathological pattern, the recurrence rate is higher or lower. Patient monitoring, both clinical and radiological, must be long-term.

Aim and objectives

The purpose of this review is to sensitize dentists on the method of marsupialization, as an alternative for the treatment of large maxillary cysts.

METHODS

The minimally invasive treatment enjoys massive popularity in some surgical fields. It involves the removal of modified pathological tissue with minimal trauma to healthy tissues, especially the mucosa and skin, sparing the functional and defense mechanisms of the anatomical structure surgically approached.

Odontogenic cysts benefit as a method of marsupialization treatment [6]. Marsupialization is the making of an incision in the cyst, with an extension equal to or greater than its diameter, drainage of the contents, followed by suturing the edges of the cystic formation at the oral mucosa. This creates an adjacent cavity of the oral cavity [5-7]. It was first described by Partsch in the late 19th century for cystic lesions of the jaws. This treatment is a challenge for surgeons, especially in large tumors [7,8].

Reducing the size of the cyst would save vital teeth. The reduction in size of the cystic cavity occurs faster by marsupialization due to the centripetal healing of the maxillary bones [9].

Marsupialization is indicated in elderly patients, who cannot undergo general anesthesia due to systemic (respiratory, cardiac), or hematological (hemophilia) conditions. Preoperatively, the patient rinse with 2% chlorhexidine mouthwash. Surgery can be performed under local anesthesia [10].

By marsupialization the cystic lesion is decompressed, but exposes the cyst mucosa to the oral environment [11]. Mandibular cysts are normally marsupialized in oral cavity. Maxillary cysts can be marsupialized in the maxillary sinus or nasal cavity, as well as in the oral cavity [12] (Figure 1).

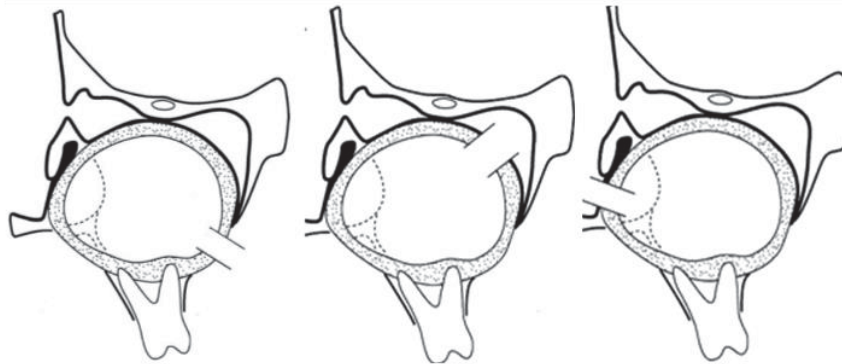


Figure 1. Diagrammatic representation of marsupialization of a maxillary cyst to the oral cavity, into the sinus or nasal cavity [13]

DISCUSSIONS AND CONCLUSIONS

Marsupialization has proven to be a conservative technique that has allowed the observance of neighboring anatomical structures, especially in the case of large cysts. This technique requires prolonged clinical and radiological monitoring [14,15].

Marsupialization aims to relieve pressure inside the cyst by decreasing the production of IL-1 α (interleukin-1alpha) and other inflammatory cytokines, allowing the new bone to fill the defect [16].

Some authors consider marsupialization superior to cystectomy, due to the fact that the cystic envelope has a special tendency to contract due to myofibroblasts, after the expulsion of the cystic content, which allows the formation of endosteal bone. With the decrease of intracystic pressure occurs the shrinkage of the cavity and the proliferation of normal mucoperiosteum, which contributes as additional factors in osteogenesis [17,18].

This treatment requires a conscientious patient who will irrigate the cavity twice a day to prevent food accumulation and keep it open. The cyst mucosa is replaced with normal epithelium during this treatment [19,20].

Pogrel and Jordan in their study showed that marsupialization allows complete treatment of odontogenic keratocysts, both clinically and radiologically, over a period of 7-19 months [19].

Other authors give a longer marsupialization period of 6-80 months, with an average duration of 24 months, and about 18.5% of cystic lesions disappear completely without cystectomy [21].

Marsupialization is a controversial topic. Some authors consider it necessary to perform the cystectomy procedure after marsupialization, others consider that this procedure is contraindicated in case of other forms of cysts such as keratocysts. At the same time, many surgeons use risky cystectomy procedures for large odontogenic cysts due to a lack of confidence in the marsupialization surgical technique.

The literature mentions the existence of a new problem, related to the correct assessment of the degree of reduction of cystic cavities and the regeneration of post-cystic defects through conventional radiographic techniques. The use of spiral computed tomography (a type of 3D CT scan) is recommended [17]. It is a non-invasive diagnostic imaging procedure that uses a combination of special X-ray equipment and sophisticated computer technology to produce cross-sectional images (often called slices), both horizontally and vertically. The same author recommends a CT scan at 3 months postoperatively, then orthopantomography (OPG) is performed at 6-12 months postoperatively [17].

For postoperative monitoring it is recommended to use OPGs that are more sensitive to changes in the cystic cavity, also have the advantage of low cost and lower exposure to X-rays. However, CT is recommended to accurately determine the reduction in the size of cystic lesions [17].

Surgical treatment remains the therapeutic solution of choice for bone cysts of the maxillary bones. Performing cystectomy as a final step in the treatment of patients with odontogenic cysts is recommended to be performed at an increase in bone density by 46%, compared to the initial values seen on panoramic radiography [22].

Some authors consider marsupialization as an unnecessary step that delays final treatment, but when it is well indicated, it facilitates surgical treatment, promotes and preserves normal tissues, reduces costs, hospitalization time and the need for surgical reconstruction [23].

Marsupialization could be used as a single surgical procedure or combined with other treatment modalities for maxillary cysts [14].

In the literature, there is controversy regarding the indications and contraindications to the use of different methods of treatment of maxillary cysts. Eradication of the lesions remains the goal of any treatment that must be achieved for ensuring prevention of recurrence and minimum morbidity. The minimally invasive principle of surgical treatment of these pathologies is a motivation for studying alternative techniques, such as marsupialization, and postoperative bone regeneration.

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