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SURGICAL PROCEDURE AND MANAGEMENT OF LARGE MAXILLARY RADICULAR CYST
A CASE REPORT

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Abstract

Radicular cysts may constitute up to 70% of all cystic lesions of the jaw, with the incidence of occurrence being in the maxillary region.

In fact, cysts are pathological lesions that are lined by epithelium and contain technical or semi-textured material that can range from a translucent yellow to a firm, curd-like mass.

The aim of this paper is to present the enucleation of a large radicular cyst in the maxilla in the presence of scant x-ray documentation. The therapeutic approach consisted of opening a mucoperiosteal flap after Pether to access the cyst that had perforated the vestibular lamina.

The cyst was completely extirpated using the Partch II method. However, despite the scarce radiological documentation, the oral surgical procedure for enucleation of the cyst was successfully performed.

We report a case of 26-year-old male patient with the presence of a large cystic lesion on the right side of the maxilla in the area between the premolar-molar space. Radical surgical approach is the only treatment in most cases of large radicular cysts.

Key words: radicular cyst, cystectomy, Partch II, sinus maxillaries, histopathological findings, X-rays recordings.

Introduction

Radicular cysts have high incidence of occurrence in the maxilla, which can be up to 70% compared to other cysts. [1]. Cysts are pathological lesions that are lined with two types of membranes like epithelium and contain a transparent yellow or solid mass similar to cottage cheese. [2].

These cysts occur as a result of infected and necrotic pulp inflammation in the teeth and if the cysts are not infected they are usually asymptomatic. Typically they are characterized as osteolytic periodontitis lesions detected by radiography. Radicular cysts on x-ray are most often round or pear-shaped and occur in the premolar or molar region of the maxilla and mandible [3,4].

These lesions are most commonly seen in middle age group to old age [5]. The treatment of radicular cysts is determined by the size of the cystic lesion, its location, proximity to adjacent anatomical structures, and the patient's health status. Surgical therapy usually involves two methods: cyst enucleation for smaller cysts - Partch II, or marsupialization for larger cysts, i.e. Partch I. This paper presents a large maxillary radicular cyst that was enucleated using the Partch II method.

Etiology of Radicular Cysts

Radicular cysts are classified as odontogenic cysts according to the WHO (World Health Organization) 2017 [6] and are formed by resorption of the periapical portions of the alveolar bone by immunoinflammatory mechanisms.

These mechanisms involve the activities of cells that are key in bone formation and resorption, such as osteoblasts, osteocytes, and osteoclasts. The formation of radicular cysts is further enhanced by the release of inflammatory cytokines and growth factors.

Radicular cysts are lined by stratified squamous and non-keratinized epithelium, which is irregular, thick, and has an abundance of inflammatory cells during active infection. In contrast, in the absence of active infection, these cysts have a regular and thin epithelial lining with little infiltration of inflammatory cells.

Cholesterol crystals can be found in the lumen of radicular cysts and the cysts can be histologically classified as true cysts or pocket cysts. In the former category, the cysts are completely lined by epithelial lining, while in the latter, their lumens open into the apical root canals of the teeth. The causative tooth is always within the cyst and all adjacent teeth are "involved teeth" [7].

Histopathological examination is necessary to confirm the diagnosis of periapical cysts. However, the use of computed tomography (CT) and conventional radiography are excellent adjuncts to determine pathological changes at the organ/tissue level. In addition, although CT can help to differentiate between periapical granulomas and cysts, it is still almost impossible to make a diagnosis without histopathological findings. Cysts are usually painless unless they are secondarily infected.

For the treatment of cysts, the causative tooth may be indicated for extraction, if the prognosis for its treatment is poor as in our case, or with endodontic treatment to preserve it. However, in both cases, the epithelium of the cyst should be completely removed from the cystic cavity to avoid recurrence. Cysts that are large and in close proximity to craniofacial structures such as the maxillary sinus require special attention when enucleating it.

This paper discusses a cyst located on the right maxillary side, treated surgically with extraction of the causative tooth and enucleation of the cystic lesion.

A case report

A twenty-six-year-old man came to the Clinic for Oral Surgery and Implantology at the PHI USKC Sveti Pantelejmon in Skopje, with swelling buccally on the right side of the face in the area of the upper first molar. The swelling appeared a few days before coming to the clinic. Antibiotic therapy was prescribed to calm the inflammation and then he was scheduled for the operating room.

Plexus anesthesia was given for the superior alveolar nerve and palatal anesthesia for the palatine nerve. On the small retroalveolar radiograph that was taken immediately before the intervention, a lightening is seen between the upper second premolar and the upper first molar on the right side (Fig. 1), which due to the inflammation has lost the osteosclerotic ring characteristic of a cyst that is not inflamed. Plexus anesthesia was given for the superior alveolar nerve and palatal anesthesia for the palatine nerve. A plan was made to open a mucoperiosteal flap according to Pether and the cyst that had perforated the buccal wall of the maxilla was encountered.

The cyst was completely extirpated using the Partch II method (Fig. 2), and with the extirpation, a collision with the maxillary sinus was made (Fig. 3). After debridement, the wound was sutured per primam and the material was sent for pathohistological examination in a sterile syringe with saline to the Institute of Pathological Anatomy at the Faculty of Medicine in Skopje, from where the documentation returned that it was indeed a radicular cyst (Fig. 4).

Postoperative antibiotic and analgesic therapy were given to the patient as well as advice for hygienic and dietary regimen.

Figure 1. Retroalveolar X – Ray

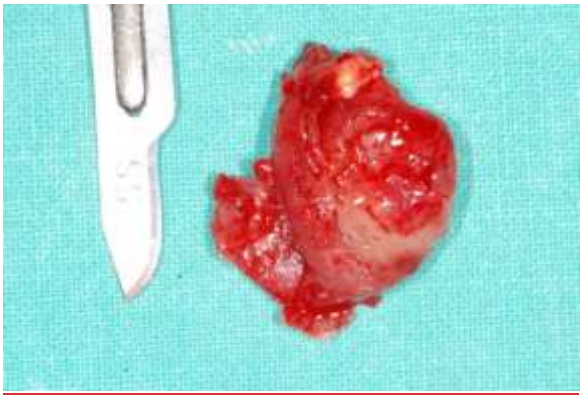

Figure 2. Extirpated cyst in toto

Figure 3. Collision with maxillary sinus

GRANULOMA ET CYSTIS RADICULARIS

Figure 4. Pathohistological finding

Discussion

Cysts develop in 3 phases: initiation phase, cyst development phase, and cyst growth phase [8]. Radicular cysts begin as a hard bone swelling and as they grow, the thickness of the surrounding bone decreases. The swelling thins the bone with its growth and during intraoral examination and palpation at the site of the swelling we have the well-known Dupuytren's phenomenon [9].

The epithelium of the cyst can originate from several epithelial structures [10]. Common consequences of the appearance of radicular cysts are resorption of the tooth root, collision with adjacent anatomical cavities: maxillary sinus and nasal cavity, swelling that can be painful, and loosening of adjacent teeth [11].

The treatment of radicular cysts is determined by the size of the cystic lesion, its location, proximity to adjacent anatomical structures, and the patient's health status. Surgical therapy usually involves two methods: cyst enucleation for smaller cysts - Partch II, or marsupialization for larger cysts, i.e. Partch I [12].

Conclusion

Surgical approach is the only treatment in most cases of large radicular cysts. It should be noted that preoperative radiological analysis is also a key factor that dictates this surgical approach. In addition to retroalveolar imaging, panoramic radiography and 3D are also used to see the relationship with adjacent structures, in our case they could not be used due to justified objective reasons of the patient.

Despite the scarce radiological documentation, the oral surgical procedure for enucleation of the cyst was successfully performed. In order to provide complete diagnosis of cystic lesions, it is necessary to make a pathohistological verification.

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