Cysts Observed in Chıldren: Case Serıes

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DOI:10.61139/ijdor.1330035

Abstract

There can be a wide variety and prevalence of oral pathological conditions in children that can differ from adults in terms of symptoms and clinical course. This case presentation aims to raise awareness about the importance of early diagnosis and treatment of oral pathological lesions in pediatric patients. In three patients, two boys and one girl aged between 10 and 14, diagnosed with the radicular cyst, odontogenic keratocyst, and odontogenic myxoma, treatments such as marsupialization, enucleation, and enucleation with the associated impacted tooth were performed based on the size and type of the lesions. Postoperative follow-up of the patients is ongoing. Knowing pediatric oral lesions is crucial for accurate and differential diagnosis. When determining the treatment approach for these lesions in children, factors such as ongoing maxillofacial development, high osteogenic activity, and potential cooperation issues should be taken into consideration.

Case Reports (HRU Int J Dent Oral Res 2023; 3(2): 112-116

Keywords: Biopsy, Epidemiology, Lesion, Oral Pathology, Pediatric.

Introduction

Oral lesions present a wide variety and prevalence in both adult and pediatric populations. In 1950, Boyes provided the classical definition of pediatric oral lesions, suggesting that many pathological lesions occur early in life and emphasizing the importance of lesion classification (1).

Children are considered a distinct group within the population due to their smaller physical size and the differences in the clinical course of oral pathologies (2). Examples of these differences include specific types of lymphomas, hemangiomas, and certain maxillofacial lesions such as Langerhans cell histiocytosis, as their histopathological features and clinical outcomes may vary between children and adults. (3). A study conducted in Iraq reported the presence of various pathologies in the oral cavities of children (4). The first epidemiological study examining maxillofacial changes in children and adolescents was published in 1986 (5). Although numerous epidemiological studies on oral lesions have been conducted worldwide in recent years, research specifically focused on children is limited (6).

One of the most comprehensive studies conducted in Turkey evaluated 472 oral biopsy specimens from children aged 0-15 years over 8 years. Evaluation results revealed that the 6-12 age group was most affected, and the majority of lesions (49%) fell into the category of

inflammatory and reactive lesions. The most common cause of these lesions was the presence of trauma and difficulties in maintaining oral hygiene (7).

This study aims to raise awareness regarding the diagnosis and treatment of orofacial lesions in children.

Case Reports

A thirteen-year-old boy (Case 1) was referred to our department because of swelling in the right upper maxilla. Informed consent was obtained from the child's parent. The medical history revealed no systemic illnesses. Upon clinical examination, a healthy expansion covered with mucosa was observed. Radiological evaluation revealed a radiolucent lesion measuring 6 cm*3.5 cm, including the maxillary sinus in the right maxillary region (Figure 1a). Aspiration biopsy showed the presence of cyst fluid. After local anesthesia administration, a full-thickness mucoperiosteal flap was raised, and a biopsy was performed for pathological evaluation. The results indicated a 'radicular cyst.' The tooth associated with the cyst, tooth number 16, was extracted, and marsupialization treatment was applied to the area for a period of 4 months. Due to the patient's cooperation issue, the patient underwent surgery under general anesthesia after 4 months. Local anesthesia was applied to the area for bleeding control and postoperative pain management. A full-thickness mucoperiosteal flap was raised, and the relevant tissue was excised. The area was primarily sutured. Penicillin-based antibiotics were prescribed to prevent postoperative infection, and paracetamol-based analgesics were recommended for pain control. No complications were encountered during the patient's postoperative follow-up visits (Figure 1b).

A ten-year-old female child (Case 2) was referred to our department with complaints of recurrent swelling and purulent discharge in the right upper maxilla region. Informed consent was obtained from the child's parent. The medical history revealed no systemic illnesses. Upon clinical examination, a healthy expansion covered with mucosa was observed. Radiological evaluation revealed a radiolucent lesion measuring 7 cm*4 cm, including the maxillary sinus in the right maxillary region (Figure 2a). Aspiration biopsy did not reveal any cyst fluid, and no dental cause could be identified for the lesion. After local anesthesia administration, a full-thickness mucoperiosteal flap was raised, and a biopsy was performed for pathological evaluation. The pathological evaluation determined the diagnosis as 'Odontogenic keratocyst.' Marsupialization treatment was applied to the area for a period of 5 months. Due to the patient's cooperation issue, the patient underwent surgery under general anesthesia after 5 months. Local anesthesia was applied to the area for bleeding control and postoperative pain management. A full-thickness mucoperiosteal flap was raised, and the relevant tissue was excised. The area was primarily sutured. Penicillin-based antibiotics were prescribed to prevent postoperative infection, and paracetamol-based analgesics were recommended for pain control. No complications were encountered during the patient's postoperative follow-up visits (Figure 2b). The patient's caregiver was informed about the beneficial effect of regular follow-up visits due to the aggressive nature and recurrence risk of the lesion.

A 14-year-old boy (Case 3) was referred to our department because of impacted canine in the right mandible. Informed consent was obtained from the child's parent. The medical history revealed no systemic illnesses. Upon clinical examination, a healthy expansion covered with mucosa was observed, and a firm immobile swelling with shallow sulcus and palpable hardness was detected in the vestibular area of the right mandible. No purulent discharge, hyperemia, or ulceration was observed in the area. Radiological evaluation revealed a radiolucent lesion measuring 3 cm*3 cm, involving tooth number 43, in the right mandibular region (Figure 3a). The lesion was considered to be a dentigerous cyst resulting from the impaction of tooth number 43. After local anesthesia administration, a full-thickness mucoperiosteal flap was raised in an envelope-like manner, starting from tooth number 33 and extending to tooth number 45. The lesion was excised along with tooth number 43. The area was curetted until the sound bone was visualized. After bleeding control, the area was primarily closed. A biopsy was performed for pathological evaluation. Penicillin-based antibiotics were prescribed to prevent postoperative infection, and paracetamol-based analgesics were recommended for pain control. The pathological evaluation determined the diagnosis as 'Odontogenic myxoma.' No complications were encountered during the patient's postoperative follow-up visits (Figure 3b). The patient's caregiver was informed about the beneficial effect of regular follow-up visits due to the aggressive nature and recurrence risk of the lesion.

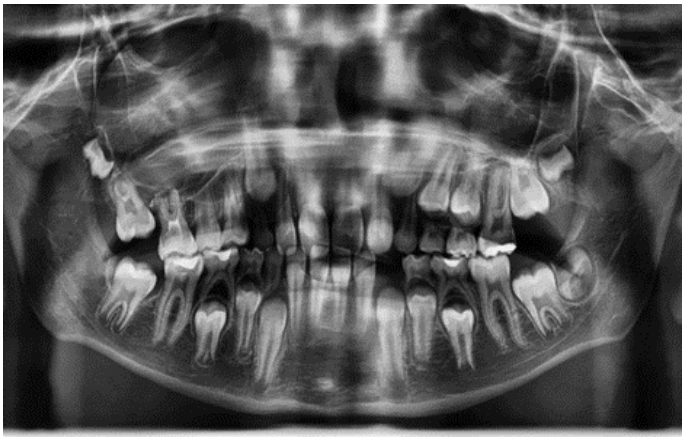

Figure 1a. Initial panoramic radiograph of the patient.

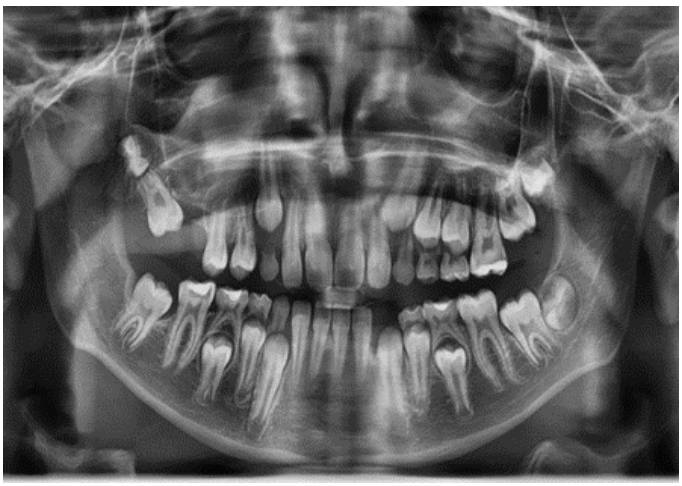

Figure 1b. Panoramic radiograph of the patient 3 months after the operation.

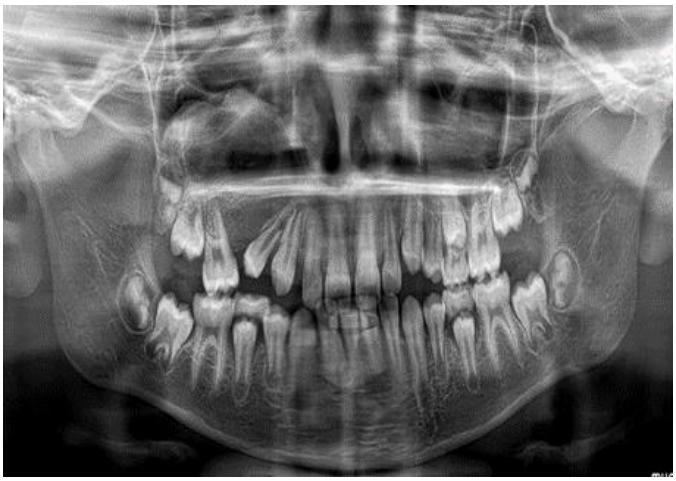

Figure 2a. Initial panoramic radiograph of the patient**.**

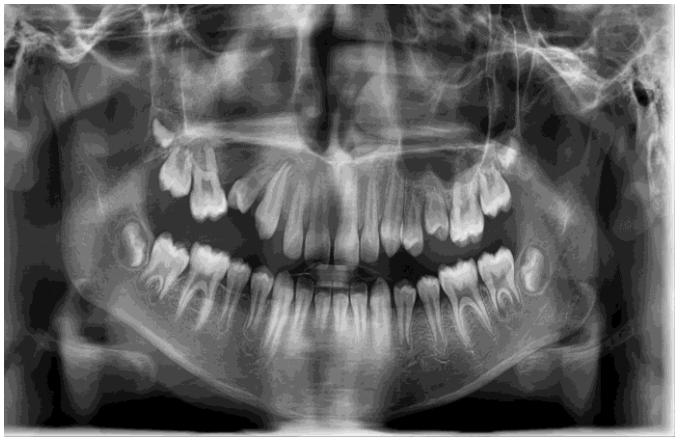

Figure 2b. Panoramic radiograph of the patient 3 months after the operation.

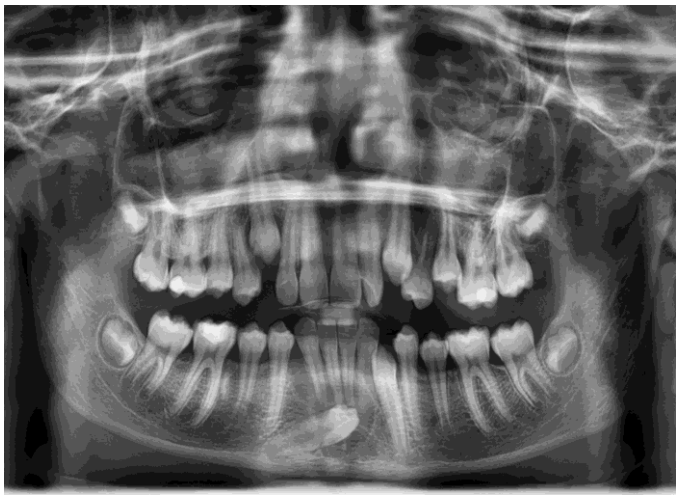

Figure 3a. Initial panoramic radiograph of the patient.

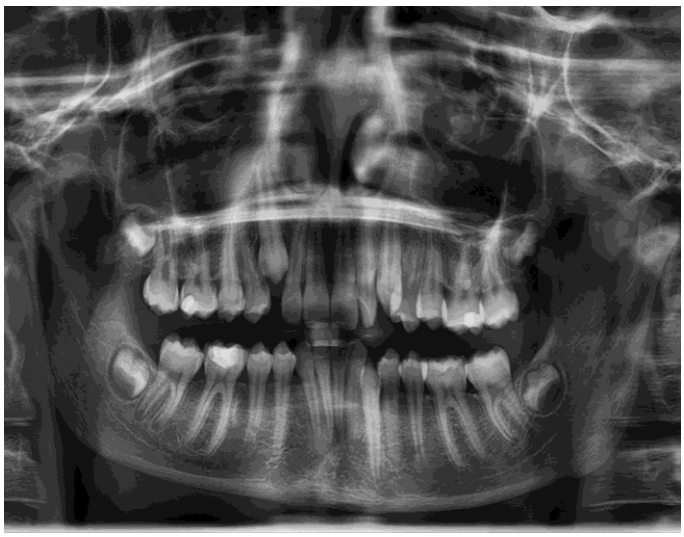

Figure 3b. Panoramic radiograph of the patient 3 months after the operation.

Discussion

Cysts are defined as pathological cavities lined with epithelium, surrounded by a distinct connective tissue wall and filled with fluid (8). The distribution of cystic lesions in the jaws during childhood differs from that in adults, which can be attributed to the odontogenesis, and three-dimensional growth of the maxillofacial bones (9). The most common cystic lesions encountered in children include radicular cysts, dentigerous cysts, eruption cysts, odontogenic keratocyst, and calcifying odontogenic cysts (10). While radicular cysts are described as the most common inflammatory odontogenic cysts in the jaws, some researchers argue that developmental odontogenic cysts may be more frequent (10). Indeed, the presence of a radicular cyst in our first case is consistent with the literature. Radiologically, radicular cysts are described as sclerotic-bordered unilocular radiolucent areas at the apex of the relevant tooth. When they reach larger sizes, they can cause resorption of adjacent tooth roots. If the cyst becomes infected, its well-defined and distinct structure may be lost. In our case, although a significant radicular cyst was observed, no root resorption was detected in neighboring teeth. Additionally, the differential diagnosis of radicular cysts is crucial. While they may resemble periapical granulomas when small in size, periapical granulomas can be distinguished by the absence of a radiopaque border around the radiolucent area and the typically smaller size of the lesion (usually less than 2 cm). They may also show similarities to lateral periodontal cysts and periapical cemental dysplasia (11). In terms of treatment, depending on the condition of the lesion and the tooth, endodontic treatment, apical resection, and enucleation can be preferred. Enucleation can be performed in conjunction with tooth extraction for large cysts. It is known that the recurrence rate is low when the cyst is completely removed (12). In our case, the significant size of the lesion led us to opt for tooth extraction and enucleation of the lesion.

Previously classified as a tumor, odontogenic keratocysts were redefined as cysts in the 2017 World Health Organization (WHO) classification. These cysts are believed to originate from remnants of the dental lamina. However, the exact mechanism of their formation is still debated (13). Various studies conducted on pediatric patients have yielded different results regarding the prevalence of odontogenic keratocysts (9, 10). In Case 2, the pathological diagnosis revealed an odontogenic keratocyst. While it is typically found in the ramus and posterior regions of the mandible, in our case, it was observed in the maxilla. It is reported to occur more frequently in males than females and often manifests in the second and third decades of life. Our case, however, contradicts the literature as it involves a female child in the first decade of life. Additionally, it is often asymptomatic according to the literature (14). However, unlike this situation, the reason that brought our case to us was the complaint of swelling and pain. Odontogenic keratocyst generally appears as a sclerotic-bordered unilocular radiolucent area, but in larger cysts, a multilocular appearance can be observed. In our case, despite the significant size of the lesion, the unilocular appearance stands out. The differential diagnosis includes ameloblastoma, traumatic bone cyst, lateral periodontal cyst, and odontogenic myxoma. In small-sized cysts, enucleation can be preferred alone or with curettage, while for larger cysts, enucleation following marsupialization is recommended. Due to their thin walls and the potential for reaching large sizes, these cysts can be fragmented during excision, leaving residual cystic tissues that may lead to recurrence (15). In our case, we initially chose marsupialization, followed by enucleation, due to the size of the lesion.

Myxomas are tumors that are characterized as benign but exhibit aggressive infiltration and a high recurrence rate. They can occur in various locations in the body, including the mandible and maxilla, as well as the heart, skin, and subcutaneous tissues of the head and neck (16). Although benign, their aggressive nature and high recurrence rate often bring ameloblastomas to mind in the differential diagnosis (17). Myxomas can occur in both males and females, predominantly in the age range of 20-30. While they are more commonly found in the mandible, they are rarely reported in the maxilla (18). Radiologically, they can exhibit a multilocular appearance resembling a honeycomb or soap bubble, but they can also appear unilocular, and they are completely radiolucent as they do not produce calcified material (19). In our case, the occurrence in the mandible is consistent with the literature, although it stands out due to its early onset. The radiological examination of our case reveals a unilocular radiolucent lesion. Odontogenic myxomas are described as the rarest tumors among jaw tumors (20).

Conclusion

It has been seen that cystic lesions, which are commonly observed in the jaws in children, are mostly asymptomatic and can be detected by routine dental examination. For this reason, with a detailed dental

examination, the distribution, localization, clinical and radiological findings of cystic lesions should be emphasized enough so that adequate treatment can be provided while developing the clinical differential diagnosis in the early period. In determining the treatment approach for these lesions in children, it should be taken into account that maxillofacial development continues, there is high osteogenic activity and there may be cooperation problems.

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