MEDDOCS Open Access Publisher

ISSN: 2639-9210

Annals of Dentistry and Oral Health

Open Access | Case Report

Diagnosis and Management of Dentigerous Cyst in a Child: A Case Report

Soumaya Kachti[1,2]*; Jihene Zaroui[1,2]; Faten Awled brahim[1,2]; Imen Jazi[1,2]; Mohamed Ali Chemli[1,2]

[1]Pediatric dentistry department, la Rabta hospital, Tunis, Tunisia.

[2]Faculty of dental medicine of monastir, Tunisia.

***Corresponding Author(s): Soumaya Kachti**

Faculty of dental medicine of monastir University,

Department of Pediatric and preventive dentistry.

Tel: +216-50887203; Email: soumayakachti1993@gmail.com

Received: Aug 14, 2024

Accepted: Aug 30, 2024

Published Online: Sep 06, 2024

Journal: Annals of Dentistry and Oral Health

Publisher: MedDocs Publishers LLC

Online edition: http://meddocsonline.org/

Keywords: Dentigerous cyst; Conservative treatment; Tooth eruption; Child; Case reports.

Abstract

Dentigerous cysts are relatively common cystic pathologies in pediatric dentistry, particularly among children in mixed dentition stage. It develops in contact with a tooth whose roots have not yet formed. It most often constitutes a complication of the pulpal involvement of the temporary tooth, which extends to the underlying germ. It sits preferentially on the second lower premolar. This case study delves into the fortuitous discovery of a sizable dentigerous cyst associated with the mandibular right second premolar in a 9-year-old boy. Radiographic and histopathological examinations confirmed the diagnosis. The cyst was marsupialized, and a removable space regainer was confectioned to manage the necessary space for the eruptiong tooth. The patient was monitored on a regular basis. One year post-surgery, the dentigerous cyst had completely regressed, and the impacted tooth spontaneously erupted without the need for further orthodontic treatment. The case underscores the importance of early detection and intervention, particularly in pediatric patients, and contributes valuable insights to the dental community regarding effective treatment modalities and outcomes.

Introduction

The dentigerous cyst stands as the second most prevalent odontogenic cyst, trailing the periapical cyst. Typically affixed to the cervical region, it encapsulates the crown of an unerupted or impacted permanent tooth, supernumerary teeth, odontomas, and occasionally, primary teeth. The primary cause is the accumulation of fluid between the reduced enamel epithelium and the tooth crown [1]. In cases of inflammatory DC, radiographic examination often reveals the cystic lesion in association with an overlying necrotic primary tooth [2].

Dentigerous cycts frequently present as incidental findings in dental radiographs or as clinically asymptomatic swellings. Radiographically, they typically manifest as well-defined, unilocular, symmetric radiolucencies around the crown of impacted teeth [3]. Pain or discomfort is usually absent unless secondary infection occurs.

Treatment options involve enucleation or marsupialization/decompression. Both approaches have been effective, but the last one is increasingly favored due to its positive impact on preserving developing tooth structure and bone [4] [5].

This case report describes a substantial infected dentigerous cyst surrounding the second premolar in a child's lower jaw. The successful treatment involved marsupialization, leading to complete regression of the inflammatory cystic lesion. Subsequent interceptive measures facilitated the full spontaneous eruption of the premolar in the correct direction, demonstrating the efficacy of this approach.

Case presentation

The current clinical case report follows the CARE (CAse REport) Guidelines for reporting purposes.A nine-year-old male patient was referred to the department of pediatric and pre-

Cite this article: Kachti S, Zaroui J, Brahim FA, Jazi I, Chemli MA. Diagnosis and Management of Dentigerous Cyst in a Child: a Case Report. Ann Dent Oral Health. 2024; 7(2): 1054.

ventive dentistry of the university hospital LA RABTA , Tunisia by his dentist for an oral sanitation. The patient's medical history revealed no discernible systemic illnesses.

During the intraoral examination, it was observed that the patient presented with multiple decayed teeth, indicating an early mixed dentition stage in dental development. A panoramic radiograph, initially conducted for oral cavity sanitation, incidentally revealed a substantial, well-defined, radiolucent lesion in the right mandibular body region. The lesion involves the permanent mandibular right second premolar, with its crown positioned horizontally, along with the roots of the decayed primary right second molar (Figure 1).

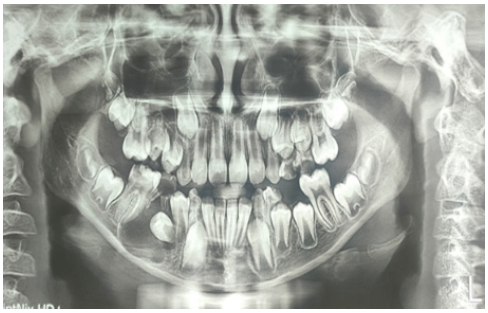

Figure 1: The panoramic radiograph: An incidental finding of a large , well-defined ,radiolucent lesion in the right mandibular body region.

Further examination unveiled that the primary mandibular right second molar was necrotic, and its crown had been compromised by a carious lesion. Notably, mucosal examination depicted a normal appearance (Figure 2).

Figure 2: Intraoral view: The decayed primary mandibular right second molar and a normal appearing mucosa.

Palpation elicited no pain, and no sensory or motor deficits were identified in the orofacial structures.

To further investigate the identified lesion, a cone-beam computed tomography (CBCT) was deemed necessary. The sagittal (Figure 3-A) and coronal (Figure 3-B) views of the CBCT affirmed the well-defined limits of the lesion, repressing without invading the neighboring anatomical structures. Locally, the vestibular cortex of the mandibular right region exhibited resorption, with the adjacent tooth showing no signs of resorption. The panoramic section of CBCT disclosed that the apices of the primary right second molar extended into the cystic cavity without any signs of resorption (Figure 3-C).

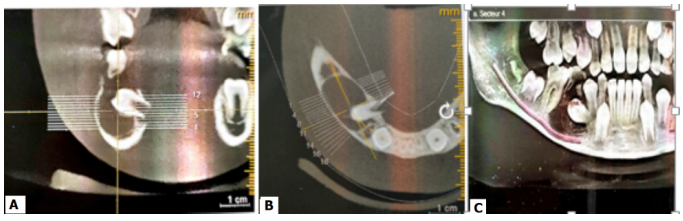

Figure 3: CBCT sagittal, coronal and panoramic sections.

Regarding the clinical and radiological findings, a provisional diagnosis of an inflammatory dentigerous cyst associated with the unerupted permanent mandibular right second premolar was established, pending confirmation through pathological examination. During the surgical intervention, five tissue fragments, ranging from 5 to 7 mm in length, were collected and subsequently sent for histopathological examination.

Microscopically, these fragments are provided with a largely abraded coating, in the few preserved territories, it appears to be made up of a non-keratinized pluristratified squamous epithelium of variable thickness. It contains in places a few mucus cells. The underlying connective tissue is remodeled by a dense and polymorphic inflammatory granuloma dissociating islands of odontogenic epithelium. Histopathological examination confirmed appearance of a dentigerous cyst with intense inflammatory reaction with the absence of histological signs of malignancy.

Considering the patient's age and motivation, a conservative treatment approach was chosen. This involved the extraction of the decayed primary mandibular right second molar under local anesthesia, coupled with cyst decompression aimed at preserving the impacted tooth and facilitating its eruption. To maintain drainage and keep the cystic cavity open, a shortened stent was inserted and securely sutured at the site (Figure 4).

Figure 4: The shortened stent inserted and sutured at the site.

The patient's mother received detailed postsurgical instructions, which included irrigating the cavity with chlorhexidine three times daily. Once the extraction site had healed, impressions of the patient's upper and lower arches were taken. Subsequently, a removable space regainer was crafted to straighten the axis of the permanent mandibular right first molar and create adequate space for the eruption of the permanent mandibular right second premolar (Figure 5).

Figure 5: The removable space regainer.

The patient was recalled every two weeks and periodic activation of the space regainer was done.The space regainer was removed when the eruption of the permanent mandibular right second premolar was visualized using a subsequent evaluation. The follow-up appointments were scheduled every two months postsurgery. The permanent mandibular right first molar was non vital, hence an endodontic treatment was carried out.

After one year, Clinical inspection revealed a gradual spontaneous eruption of the tooth (Figure 6).

Figure 6: one-year follow-up clinical view: spontaneous eruption of the tooth.

The panoramic radiograph revealed complete bone remodeling of the area with no recurrence of the cyst (Figure 7).

Figure 7: One year follow-up panoramic radiograph: Complete bone remodeling of the area with no recurrence of the cyst

Discussion

Dentigerous cysts rank among the most prevalent cysts affecting the jaws, constituting 14-20% of mandibular cysts and accounting for 15.2% to 33.7% of all odontogenic cysts [2]. Typically, these cysts manifest in the late second and third decades of life, with minimal prevalence in children. However, 4-9% of Dentigeros cyst cases can arise within the first 10 years of life [5].

The pathophysiology of dentigerous cysts is associated with the pressure exerted by an erupting tooth on the follicle, leading to the rapid transudation of serum across capillary walls. The increased hydrostatic pressure in the pooling fluid results in the separation of the follicle from the crown [1].

Inflammatory dentigerous cysts are commonly found in mixed dentition. They develop when inflammation at the root apex of a non-vital primary tooth extends to involve the follicle of the unerupted immature permanent successor [6]. In the current case, the cyst was linked to the crown of the mandibular second permanent premolar in a 9-year-old child. These cysts are frequently asymptomatic and are typically discovered incidentally during routine radiographic examinations. Radiographic imaging, including panoramic radiographs or cone-beam computed tomography (CBCT), plays a vital role in diagnosing dentigerous cysts. These imaging techniques enable a comprehensive assessment of the cyst's size, location, and impact on adjacent structures [7]. However, radiographs alone are insufficient to differentiate these lesions, necessitating a histological examination [8].

Histologically, dentigerous cysts of typical non-inflammatory origin exhibit a relatively thin and non-keratinized lining of stratified squamous epithelium. However, variations in the thickness of the lining epithelium may be observed depending on the type and intensity of any associated inflammation [9]. The importance of early detection and treatment is underscored by the potential for alternative diagnoses, such as unicystic ameloblastoma, odontogenic keratocyst, and ameloblastic fibroma [10,11].

Dentigerous cysts have the capacity to cause bone destruction, alter the position of nearby teeth, and resorb the roots of affected teeth. Furthermore, they can lead to a delay in the eruption of permanent teeth associated with the cyst [7]. Several factors, including the size, position, integrity of the cystic epithelial lining, patient's age, proximity to healthy teeth, and connection to anatomical structures, influence the therapeutic approach for cysts [10].

The primary treatment goal is the complete elimination of the disease while preserving dentition with minimal surgical intervention. Various therapeutic options exist for the removal of dentigerous cysts, with total enucleation or marsupialization being viable choices for managing these cysts in infants [11]. Enucleation is typically recommended for small cysts as it completely removes the cyst without causing rupture. However, for larger cysts, this procedure carries the risk of weakening the jaw, leading to potential fractures, devitalization of surrounding teeth, or the loss of critical impacted teeth connected to the lesion. Enucleation should only be considered when there is no risk of harming anatomical structures like developing permanent teeth, the maxillary sinus, essential tooth apices, or neurovascular bundles [1].

While enucleation and removal of the affected tooth constitute a radical surgical treatment, resulting in the loss of a valuable tooth, such as the premolar in our case [5], two more conservative procedures, marsupialization and decompression, offer better chances of preserving the impacted tooth. Marsupialization involves converting a cyst into a pouch by suturing the cyst lining to the oral mucosa [12]. This method is preferred for treating cysts in children due to their greater and faster potential for bone regeneration compared to adults, and immature teeth's enhanced capacity for eruption [6]. However, it has drawbacks, including high recurrence rates influenced by factors such as the length of the follow-up period, treatment modality, lesion size, histopathological presence of daughter cysts, and the number of cases investigated [13].

Conclusion

The marsupialisation technique aims to preserve and promote the eruption of the teeth involved in the cyst, as well as maintaining the integrity of the neighboring anatomical structures. A multidisciplinary approach involving radiographic imaging, histopathological analysis, and surgical intervention is essential for the diagnosis and management of these cysts. Dental practitioners must be vigilant in detecting and addressing dentigerous cysts to ensure optimal patient outcomes.

In this case, the positive outcome, with complete regression of the cystic lesion and spontaneous eruption of the impacted tooth without the need for orthodontic treatment, underscores the effectiveness of the chosen approach. This highlights the importance of tailored and conservative management strate-

gies in pediatric dentistry, emphasizing the significance of precise diagnostics and vigilant postoperative care for optimal patient outcomes.

Acknowledgements

Consent for publication: Signed informed consent was obtained from the legal guardian.

Standards of reporting: CARE guideline has been followed.

Availability of data and materials: All the data and supporting information are provided within the article.

Funding: None.

Conflict of interest: The authors declare no conflict of interest, financial or otherwise.

All authors have made substantive contribution to this study and manuscript, and all have reviewed the final paper prior to its submission.

References

1. Sardana D, Goyal A, Gauba K. (n.d.). Management of an inflamed dentigerous cyst in a patient with an anterior cross-bite, using a modified obturator. S. Afr. dent. j. 2016; 71(6).

2. Benn A, Altini M. Dentigerous cyst of inflammatory origin. Oral Surg Oral Med Oral Pathol Oral Radiol Endod. 1996; 81: 203-209.

3. Rajae EG, Karima EH. Dentigerous cyst: Enucleation or marsupialization? (a case report). Pan Afr Med J. 2021; 40: 149.

4. Ugurlu F, Akyuz S, Mentes A. Outcome of mandibular dentigerous cysts 1-10 years after decompression using a custom-made appliance, J Oral Maxillofac Surg. 2021; 79(1): 152-163.

5. Deboni MC, Brozoski MA, Traina AA, Acay RR, Naclério-Homem Mda G. Surgical management of dentigerous cyst and keratocystic odontogenic tumor in children: a conservative approach and 7-year follow-up. J Appl Oral Sci. 2012; 20(2): 282-5.

6. Shivaprakash P, Rizwanulla T, Baweja DK, Noorani HH. Save-a-tooth: Conservative surgical management of dentigerous cyst. J Indian Soc Pedod Prev Dent. 2009; 27(1): 52.

7. Zerrin E, Husniye DK, Peruze C. Dentigerous cysts of the jaws: Clinical and radiological fi ndings of 18 cases. J Oral Maxillofac Radiol. 2014; 2: 77-81.

8. Bharath K, Poornima S, Revathy V, Subba Reddy V. Dentigerous cyst in an uncommon site: A rare entity. J Indian Soc Pedod Prev Dent. 2011; 29(6): 99.

9. Shafer WG, Hine MK, Levy BM. A Textbook of Oral Pathology. Philadelphia: WB Saunders 12. Company.1993; 154-8.

10. Tuwirqi AA, Khzam N. What do we know about dentigerous cysts in children: A review of literature. J Res Med Dent Sci. 2017; 5(2): 67-79.

11. Mohapatra PK, Joshi N. Conservative management of a dentigerous cyst associated with an impacted mandibular second premolar in mixed dentition: A case report. J Dent Res Dent Clin Dent Prospects. 2009; 3(3): 98-102.

12. Khandeparker RV, Khandeparker PV, Virginkar A, Savant K. Bilateral maxillary dentigerous cysts in a nonsyndromic child: A rare presentation and review of the literature. Case Rep Dent. 2018; 7583082.

13. Kolokythas A, Fernandes RP, Pazoki A, Ord RA. Odontogenic keratocyst: to decompress or not to decompress? A comparative study of decompression and enucleation versus resection/peripheral ostectomy. J Oral Maxillofac Surg. 2007; 65: 640-4.