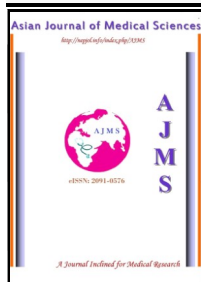


ASIAN JOURNAL OF MEDICAL SCIENCES



Dentigerous Cyst Associated with Unusual Supernumerary Teeth: A Case Report

Amita Sharma¹, Varun Pratap Singh^{2*} and Sonam Sharma³

¹Dept. of Paediatric dentistry and ²Dept of Orthodontics, College of Dental Sciences, BPKIHS, Dharan, Nepal

³Dept of Pathology, SGRDIMSR, Amritsar, India

Abstract

Dentigerous cyst is a developmental odontogenic cyst associated with unerupted teeth, odontomes or supernumerary teeth. About 95% of dentigerous cysts involve the permanent dentition and only 5% are associated with supernumerary teeth. Supernumerary teeth should be examined very carefully to prevent possible effects on adjacent regular teeth and possible cystic development. Dentigerous cysts are usually slow-growing lesions and may attain a considerable size with minimal or no symptoms. Ameloblastoma, mucoepidermoid carcinoma, and squamous cell carcinoma have also been reported to arise from the lining epithelium of dentigerous cysts, indicating the pluripotentiality of their cells. Early detection and removal of such cysts is therefore important to reduce potential morbidity. A rare case of a twelve year old boy with two supernumerary teeth, of which one was associated with dentigerous cyst is described here along with the treatment strategy employed for the patient.

Key Words: Dentigerous cyst; Supernumerary tooth; Mesiodens; Molariform; Tuberculate; Conical

1. Introduction

Dentigerous cyst is a developmental anomaly of odontogenic origin, which surrounds the crown of an impacted tooth, an odontoma, or a supernumerary tooth. It is formed by the accumulation of fluid between the reduced enamel epithelium and the crown, with consequent expansion of the tooth follicle, and is characteristically attached to the cervical area of the tooth.¹ Supernumerary teeth may be defined as teeth in excess of the usual configuration of twenty deciduous, and thirty-two permanent teeth.² Their reported prevalence ranges between 0.3–0.8% in the primary dentition and 0.1–3.8% in the permanent dentition.³⁻⁸ Dentigerous cysts around supernumerary teeth account for 5% of all dentigerous cysts, mostly developing around a mesiodens (maxillary midline supernumerary tooth).⁹ These cysts are usually slow-growing lesions and may attain a considerable size with minimal or no symptoms. Radiographically it appears as a well-defined radiolucency, usually with sclerotic borders, associated with the crown of an unerupted tooth.¹

Ameloblastoma, mucoepidermoid carcinoma, and squamous cell carcinoma have also been reported to arise from the lining epithelium of dentigerous cysts, indicating the pluripotentiality of their cells. Early detection and removal of such cysts is therefore important to reduce potential morbidity.¹⁰

The following report presents the case of a twelve year old boy with an uncommon impacted supernumerary teeth and associated dentigerous cyst.

2. Case Report

A twelve year old male patient presented with a progressively enlarging intraoral swelling on the right side of the upper jaw for the last two months. Clinical examination revealed a swelling in the right anterior maxillary vestibular region and a palatal swelling in the left anterior region (Figures 1 & 2). Both swellings were firm and fixed to the underlying tissues. The medical history was non contributory. No other abnormality was detected on complete systemic examination. Diagnostic maxillary occlusal radiograph and an orthopantomograph (Figure 3) revealed a well defined radiolucency associated with a supernumerary tooth in the alveolar process of the right anterior maxilla. The lesion was well

*Correspondence:

Dr. Varun Pratap Singh, Dept of Orthodontics, College of Dental Sciences, BPKIHS, Dharan, Nepal. E-mail: varundc@gmail.com

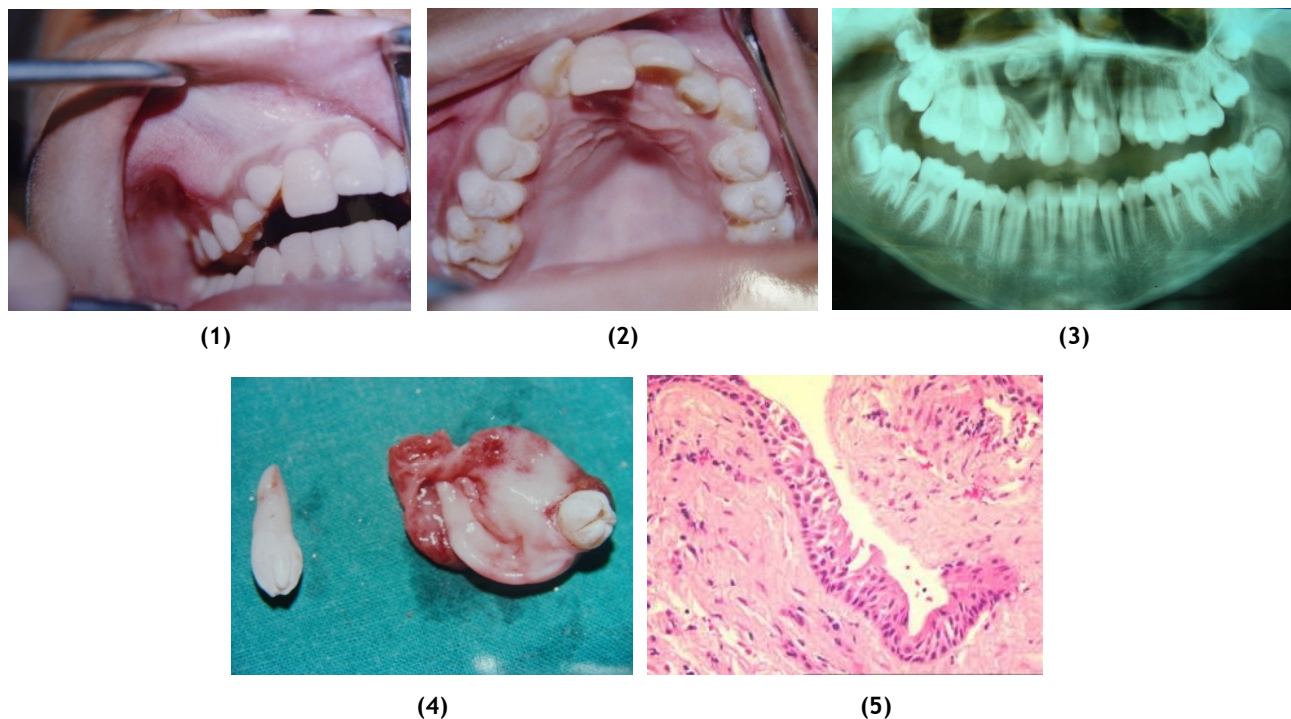


Figure: (1) Intraoral photograph showing swelling in the right anterior maxillary vestibular region. (2) Intraoral photograph showing a palatal swelling in the left anterior region. (3) Panoramic radiograph showing bilaterally impacted supernumerary teeth in the anterior maxillary region and associated well defined radiolucency on the right side. (4) Excised specimen showing cystic soft tissue associated with molariform supernumerary tooth and the extracted tuberculate supernumerary tooth. (5) Dentigerous cyst lined by non keratinized epithelium lining, connective tissue and cystic lumen [H&E, 11X400]

demarcated lying apical to the central incisor till the first molar. A supernumerary tooth was observed within the lesion having molariform crown and a short root. Another supernumerary tooth was seen impacted in the left anterior palatal region (mesiodens) having tuberculate crown form and a well developed root. There was no evidence of resorption of the roots of associated permanent teeth. Fine-needle aspiration of the swelling on the right side yielded a straw colored fluid. Microscopic examination of the fluid showed polymorphonuclear leukocytes, eosinophils, histiocytes, foam cells, and a few epithelial cells. The radiographic and histological findings were suggestive of dentigerous cyst associated with a supernumerary tooth on the right side.

Under local anaesthesia a palatal flap was raised on the left side, excessive bone loss was avoided and the supernumerary tooth was partially exposed and removed. A semilunar incision was made in the vestibule on the right side, flap raised and the cyst was enucleated. The cystic soft tissue mass was attached to molariform supernumerary tooth (Figures 4). The specimen was submitted for histopathological examination which revealed that the cystic lumina were lined by 3-5 layers of non-keratinized epithelium,

resembling reduced enamel epithelium with focal areas of proliferation. The connective tissue was myxomatous to fibrous with a infiltrate of acute and chronic inflammatory cells in some areas. A few islands of odontogenic epithelium were also seen within the connective tissue (Figure 5). All these features confirmed the diagnosis of a dentigerous cyst. The patient has remained asymptomatic and experienced no recurrence during the 14 months postoperative period.

3. Discussion

Next to the radicular cyst, the dentigerous cyst is the second most common type of odontogenic cyst and is always associated with the crown of an impacted, embedded, or otherwise unerupted tooth.¹⁰ They account for about 16.6% of all such jaw lesions. They occur more frequently in males with a male to female ratio of about 1.6:1.¹ Dentigerous cysts are typically asymptomatic and may be large, destructive, expansile lesions of bone. The highest incidence of dentigerous cysts occurs during the second and third decades.^{11,12}

Radiographically, the dentigerous cyst appears as a unilocular radiolucency of variable size with well-defined sclerotic borders, associated with the crown of an unerupted tooth. In an infected cyst the borders may be ill-defined. There may be difficulty

distinguishing a small cyst from a normal tooth follicle. It has been suggested that any follicular space of >4 mm should be suspected to be a dentigerous cyst.¹³ The radiographic appearance of such a cyst, though quite typical, is not diagnostic. Other lesions may mimic their radiographic appearance including: odontogenic keratocyst, radicular cyst, and some odontogenic tumors like ameloblastoma, Pindborg's tumor, adenomatoid odontogenic tumor, calcifying odontogenic cyst, and ameloblastic fibroma. In most instances, microscopic evaluation is therefore necessary to reach a definitive diagnosis. Histologically, the dentigerous cyst displays a thin fibrous cyst wall with a myxomatous appearance. The epithelial lining consists of 2-4 layers of flat or cuboidal cells, which in fact is the reduced enamel epithelium and is characteristically non-keratinized. Nests, islands or strands of odontogenic epithelium are often seen in the fibrous capsule. Localized proliferation of epithelial lining may occur in response to inflammation. Hyaline (Rushton) bodies may be found in the epithelium, especially in cysts exhibiting inflammation. Sometimes mucous secreting cells and rarely ciliated cells form a part of the epithelial lining, and occasionally sebaceous cells and lymphoid follicles with germinal centers are seen in the connective tissue.^{1,14}

The incidence of supernumerary teeth in the primary dentition is 0.2-0.8%, while the incidence of the condition in the permanent dentition is 1.5-3.5%, with a male:female ratio of 2:1.³⁻⁸ Clinically, supernumerary teeth are able to cause different local problems such as retention of the primary tooth, delayed/failure of eruption of the permanent tooth, ectopic eruptions, tooth displacements, follicular/dentigerous cysts and other alterations requiring surgical or orthodontic intervention.¹⁵ Primosch reported an enlarged follicular sac in 30% of anterior supernumerary cases, but histological evidence of cyst formation was found in only 4-9% of cases.¹⁶ According to Asami et al¹⁷ dentigerous cyst formation arising from supernumerary teeth comprises 11% of the cases while other authors have observed it in 6-7% of cases.¹⁸⁻²⁰ Dentigerous cysts mostly develop around a mesiodens which are usually conical in shape however in the present case report a rare presentation of the bilateral mesiodentes with tuberculate form on the left side and molariform associated with dentigerous cyst on the right side were seen. Our report further documents an unusual early

presentation of dentigerous cyst associated with supernumerary teeth.

4. References

1. Shear M. Dentigerous cyst. In: Shear M, editor. Cysts of the oral regions. Mumbai: Varghese Publishing House; reprinted in 1996; originally published in 1992.
2. Schulze C. Developmental abnormalities of the teeth and jaws. In: Gorlin RJ, Goldman HM, eds. Thoma's oral pathology. StLouis: CV Mosby, 1970:112-22.
3. Rajab LD, Hamdan MAM. Supernumerary teeth: review of the literature and a survey of 152 cases. *Int J Paediatr Dent* 2002; 12: 244-54. [doi:10.1046/j.1365-263X.2002.00366.x](https://doi.org/10.1046/j.1365-263X.2002.00366.x) PMID:12121534
4. Yusof WZ. Non-syndrome multiple supernumerary teeth: literature review. *J Can Dent Assoc* 1990; 56: 147-9. PMID:2407326
5. Stafne, EC. Supernumerary teeth. *Dent Cosmos* 1932; 74: 653-9.
6. Scheiner MA, Sampson WJ. Supernumerary teeth: a review of the literature and four case reports. *Aust Dent J* 1997; 42:160-5. [doi:10.1111/j.1834-7819.1997.tb00114.x](https://doi.org/10.1111/j.1834-7819.1997.tb00114.x) PMID:9241925
7. von Arx T. Anterior maxillary supernumerary teeth: A clinical and radiographic study. *Australian Dental Journal* 1992; 37(3): 189-95. [doi:10.1111/j.1834-7819.1992.tb00741.x](https://doi.org/10.1111/j.1834-7819.1992.tb00741.x)
8. Garvey MT, Barry HJ, Blake M. Supernumerary teeth: an overview of classification, Diagnosis and Management. *Journal of the Canadian Dental Association* 1999; 65(11): 612-6. PMID:10658390
9. Dinkar AD, Dawasaz AA, Shenoy S. Dentigerous cyst associated with multiple mesiodens: A case report. *Journal of the Indian Society of Pedodontics and Preventive Dentistry* 2007; 25(1): 56-9. [doi:10.4103/0970-4388.31994](https://doi.org/10.4103/0970-4388.31994) PMID:17456972
10. Odontogenic cysts. In: Regezi JA, Sciubba JJ. *Oral Pathology: Clinical-Pathologic Correlations*. Philadelphia: Saunders, 1989; p 306.
11. McDonald JS. Tumors of the oral soft tissues and cysts and tumors of the bone. In: McDonald RE, Avery DR, Dean JA, editors. *Dentistry for the Child and Adolescent* [8th ed]. St. Louis: Mosby, 2004; 159-61.
12. Brannon RB. The odontogenic keratocyst: a

- clinicopathologic study of 312 cases. Part I. Clinical features. *Oral Surgery, Oral Medicine and Oral Pathology* 1976; 42(1): 54-72. [doi:10.1016/0030-4220\(76\)90031-1](https://doi.org/10.1016/0030-4220(76)90031-1)
13. Daley TD, Wysocki GP. The small dentigerous cyst. A diagnostic dilemma. *Oral Surg Oral Med Oral Pathol Oral Radiol Endod* 1995;79:77-81. [doi:10.1016/S1079-2104\(05\)80078-2](https://doi.org/10.1016/S1079-2104(05)80078-2)
 14. Shafer WG, Hine MK, Levy BM. Cysts and tumors of odontogenic origin. In: Shafer WG, Hine MK, Levy BM, editors. *A textbook of oral pathology*. 4th ed. Philadelphia: W.B. Saunders Co.; 1983:260-5.
 15. Hogstrom A, Andersson L. Complications related to surgical removal of anterior supernumerary teeth in children. *ASDC Journal of Dentistry for Children* 1987; 54(5): 341-3. PMID:3478360
 16. Primosch RE. Anterior supernumerary teeth: assessment and surgical intervention in children. *Pediatric Dentistry* 1981; 3: 204-15. PMID:6945564
 17. Asaumi JI, Shibata Y, Yanagi Y, et al. Radiographic examination of mesiodens and their associated complications. *Dentomaxillofacial Radiology* 2004; 33(2): 125-7. [doi:10.1259/dmfr/68039278](https://doi.org/10.1259/dmfr/68039278) PMID:15314006
 18. Kessler HP, Kraut RA. Dentigerous cyst associated with an impacted mesiodens. *General Dentistry* 1989; 37(1): 47-9. PMID:2599319
 19. Hurlen B, Humerfelt D. Characteristics of premaxillary hyperdontia. A radiographic study. *Acta Odontologica Scandinavica* 1985; 43(2): 75-81. [doi:10.3109/00016358509046490](https://doi.org/10.3109/00016358509046490) PMID:3863448
 20. Ustuner E, Fitoz S, Atasoy C, Erden I, Akyar S. Bilateral maxillary dentigerous cysts: a case report. *Oral Surg Oral Med Oral Pathol Oral Radiol Endod* 2003;95:633 [doi:10.1067/moe.2003.123](https://doi.org/10.1067/moe.2003.123)