



# Conservative Management of Dentigerous Cyst in a Young Adult Male Patient-A Case Report

Dr.Amandeep Kaur, Dr.Tejinder Kaur, Dr.Ramandeep Singh and Dr.Kirandeep Kaur

Department of oral and maxillofacial surgery Sri Guru Ramdas Institute of Dental Sciences and Research, Amritsar

## ARTICLE INFO

### Article history:

Received: 11 July 2023;

Received in revised form:

20 October 2023;

Accepted: 30 October 2023;

### Keywords

Dentigerous cyst,

Odontogenic cyst.

## ABSTRACT

This report describes the case of 39 year old male patient who presented with asymptomatic large unilateral dentigerous cyst related to impacted mandibular third molar. Dentigerous cyst is the most common developmental odontogenic cyst which encloses the crown of unerupted / impacted tooth by expansion of its follicle and is attached to cementoenamel junction(CEJ) .Due to its extension , marsupialization was performed under local anesthesia(LA) together with histopathological analysis which suggested dentigerous cyst. Later on once the lesion was reduced in size, enucleation was done.The mandibular right second and first molar were also extracted. This report illustrates a conservative surgical approach for the management of dentigerous cyst.

© 2023 Elixir All rights reserved.

## Introduction

Dentigerous cyst is defined as cystic lesion involving the crown of impacted teeth caused by fluid accumulation between the follicular epithelium and crown of the tooth [1].The dentigerous cyst is the second most common cyst of the jaws comprising 14-20% of all jaw cysts, and is more frequently found in males in the age group between 20 and 40 years commonly in mandible [2]. These lesions are subclassified into two groups, developmental and inflammatory. Dentigerous cysts progress slowly, are usually asymptomatic and discovered accidentally as radiolucencies on panoramic radiographs taken for general dental treatment or from investigations of the reason for delayed tooth eruption [3].These cysts present as slow painless swelling and can cause the teeth displacement and bone resorption. Large cysts, however, may be associated with pain. Histopathologically, these lesions are represented by a cavity lined by the non keratinizing thin epithelium without retepegs their wall is usually fibrous and devoid of inflammatory cells.

Unilateral and multiple cysts have been reported in patients with syndromes or systemic diseases such as mucopolysaccharidosis and cleidocranial dysplasia [3].

The Dentigerous cyst can produce asymmetry, nerve function alterations by compression, move teeth and even malignant ameloblastoma, mucoepidermoid, or epidermoid carcinoma. For this reason therapeutic approach becomes important [2].

Most common treatment method followed is the surgical enucleation for smaller cystic lesions and marsupialization for larger lesions followed by enucleation [4].

## Case report

A 39 year old male patient was referred to the department of Oral and Maxillofacial Surgery for evaluation of pain in the right lower posterior region of jaw. On percussion of teeth, patient had pain in 47.At evaluation, no relevant findings within his past medical history were observed. Patient was suggested a panoramic radiograph (figure1a) and CBCT

(figure 1(b) and1(c)) which revealed the presence of a unilocular, well circumscribed lesion enveloping the impacted mandibular third molar. The radiolucency extended superioinferioly from the alveolar crest to inferior border of mandible leaving a thin margin of bone of about 1mm at inferior border. The anteroposterior extent involved the cervical third of horizontally impacted mandibular third molar in the ramus to the mesial root of mandibular second molar. As radiograph revealed carious crowns of right first and second mandibular molars patient was advised vitality testing of these teeth, which further excluded the diagnosis of the radicular cyst. As Patient did not want to go for root canal treatment, so extraction of these teeth was planned .Aspiration of the lesion revealed straw coloured fluid thus excluding the diagnosis of odontogenic keratocyst. Also based on these forementioned findings, it was provisionally diagnosed as dentigerous cyst with the differential diagnosis of odontogenic keratocyst or radicular cyst .As the cyst was large with thin inferior border of mandible, the first approach was incisional biopsy together with marsupialization to decrease the size of the osseous defect along with histopathological examination.

Under strict aseptic conditions, right mandibular second molar was extracted under local anesthesia, along with extension of posterior crestal incision. Marsupialization of the cystic lesion was done(Fig 2).Cavity was packed with iodoform gauge, which was changed after every 5 days for 2 months.As Histopathological examination revealed final diagnosis of dentigerous cyst, the lesion was enucleated along with the removal of impacted tooth and extraction of 46.After achieving haemostasis the cavity was packed with platelet rich fibrin and suturing of mucosa done with 3-0 vicryl rapid sutures .Postoperatively patient did not complain of any paraesthesia involving lower lip and chin . Postop OPG at 1 year interval showed complete healing of bone. Patient has been advised prosthetic rehabilitation.(Fig 3)



Figure 1(a). unilocular radiolucent lesion in right body-angle region



Figure 2. OPG after 2 months of marsupialization



Figure 1(b). Preoperative CBCT showing the lesion



Figure 3. Postoperative OPG showing complete healing one year later



Figure 1(C) . Preoperative CBCT showing the lesion

#### Discussion

Dentigerous cyst is an odontogenic cyst which encloses the crown of unerupted/ impacted tooth by the expansion of its follicle and is attached to the cemento-enamel junction. Dentigerous cysts commonly involve mandibular third molars, maxillary canines, mandibular premolars, and rarely involve deciduous teeth. Dentigerous cysts can cause the displacement of the adjacent teeth and the resorption of the roots. The most common clinical complication is paresthesia of the inferior alveolar nerve [5].

The cystic cavity is lined by epithelial cells derived from the reduced enamel epithelium of the tooth forming organ [5]. Regarding its pathogenesis, it has been suggested that the pressure exerted by an erupting tooth on the follicle may obstruct venous flow, inducing accumulation of exudate between the reduced enamel epithelium and tooth crown [6]. Dentigerous cysts usually arise from the follicular epithelium,

and they have an increased potential for growth, differentiation, and degeneration. These cysts are lined by non-keratinized stratified squamous epithelium. Radiographically dentigerous cysts are suspected when the size of follicular space is larger than 5mm. The lesion appears to be radiolucent and unilocular or multilocular with well-defined sclerotic borders and is associated with the crown of unerupted teeth. Differential diagnosis of unilocular radiolucent lesions in the mandible includes giant cell tumor, odontogenic tumor, fibrous dysplasia, radicular cyst, ameloblastoma [7].

The choice of treatment depends on various factors such as age of patient, location of the cyst, tooth position in relation to the cyst, and the degree of the axial inclination [8].

Depending on lesion size and diagnosis, enucleation, marsupialization and decompression could be the forms of treatment chosen. In our case marsupialization followed by enucleation of the lesion along with extraction of right mandibular third molar, first and second molar was done under local anesthesia.

These are various materials which can be packed into cavity. These are patch type (including gauze, non-woven fabric, filaments, sponges), and particle powder type (including mineral hemostatic particles). Absorbable materials include gelatin, collagen, oxidized cellulose, regenerated oxidized cellulose [9].

In our case, platelet rich fibrin was put in the form of membrane into the cavity. Platelet rich fibrin is an immune and platelet concentrate collected as a single fibrin membrane that contains all the constituents of a blood sample favorable to healing and immunity [10].

Using this as surgical additive there is low risk of disease transmission as it is (homologous) byproduct of patients blood. Platelet rich fibrin can be considered a natural fibrin based biomaterial favorable to the development of microvascularization and able to guide cell migration into a wound. Such a membrane can accelerate wound healing [10]. Slow polymerization which is observed during platelet rich fibrin processing leads to intrinsic incorporation of platelet cytokines and organic chains in the fibrin mesh to bring about efficient cell migration. This implies that platelet rich fibrin, unlike the other platelet concentrates would be able to release more cytokines during fibrin matrix remodeling [11]. It does not require the addition of external thrombin because polymerization is a completely natural process, without any risk of suffering from an immunological reaction. Its preparation is simplified and efficient technique, with centrifugation in a single step, free and openly accessible to all clinicians [12].

## References

- [1] Martinelli-Kläy CP, Martinelli CR, Martinelli C, Macedo HR, Lombardi T. Unusual imaging features of dentigerous cyst: a case report. *entistry journal*. 2019 Aug 1;7(3):76.
- [2] Valdes Reyes JM, Espinoza Bermudez JA, Ghannam Ruisánchez YE. Dentigerous Cysts: Case Report. *Journal of Advanced Oral Research*. 2016 Jan 1;7(1).
- [3] Rajae EG, Karima EH. Dentigerous cyst: enucleation or marsupialization? (a case report). *Pan African Medical Journal*. 2021 Sep 1;40.
- [4] Ghandour L, Bahmad HF, Bou-Assi S. Conservative treatment of dentigerous cyst by marsupialization in a young female patient: a case report and review of the literature. *Case reports in dentistry*. 2018 Jun 28;2018.
- [5] Vasiappan H, Christopher PJ, Kengasubbiah S, Shenoy V, Kumar S, Paranthaman A. Bilateral dentigerous cyst in impacted mandibular third molars: a case report. *Cureus*. 2018; 10 (12): e3691.
- [6] Sindi AM. Bilateral mandibular dentigerous cysts presenting as an incidental finding: A case report. *The American Journal of Case Reports*. 2019; 20: 1148.
- [7] Avril, L., Lombardi, T., Ailianou, A., Burkhardt, K., Varoquaux, A., Scolozzi, P., & Becker, M. (2014). Radiolucent lesions of the mandible: a pattern-based approach to diagnosis. *Insights into imaging*, 5(1), 85–101. <https://doi.org/10.1007/s13244-013-0298-9>
- [8] Bhardwaj B, Sharma S, Chitlangia P, Agarwal P, Bhamboo A, Rastogi K. Mandibular dentigerous cyst in a 10-year-old child. *International journal of clinical pediatric dentistry*. 2016 Jul;9(3):281.
- [9] Xiao X, Wu Z. A Narrative Review of Different Hemostatic Materials in Emergency Treatment of Trauma. *Emergency Medicine International*. 2022 Oct 21; 2022.
- [10] Zhao JH, Tsai CH, Chang YC. Clinical and histologic evaluations of healing in an extraction socket filled with platelet-rich fibrin. *Journal of Dental Sciences*. 2011 Jun 1;6(2):116-22.
- [11] Vidhale G, Jain D, Jain S, Godhane AV, Pawar GR. Management of radicular cyst using platelet-rich fibrin & iliac bone graft-A case report. *Journal of Clinical and Diagnostic Research: JCDR*. 2015 Jun;9(6):ZD34.
- [12] Borie E, Oliví DG, Orsi IA, Garlet K, Weber B, Beltrán V, Fuentes R. Platelet-rich fibrin application in dentistry: a literature review. *International journal of clinical and experimental medicine*. 2015;8(5):7922