

# Dentigerous cyst involving mandibular third molar: Conservative treatment with radiologic follow-up and review of literature

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## ABSTRACT

Dentigerous cyst is the second most common odontogenic cyst and constitutes around 20-24% of all the odontogenic cysts involving the jaws. Usually, these cysts remain asymptomatic and rarely cause enlargement and displacement of associated tooth. In this paper, we present a case of a displaced mandibular third molar, which was associated with a large dentigerous cyst. A conservative treatment modality was adopted with a 2 year radiographic follow-up of the patient. A brief review of previously reported cases with dentigerous cyst causing displacement of the mandibular impacted third molars is also discussed, highlighting the treatment modality followed in all these cases.

**Key words:** Dentigerous cyst, impacted third molar, mandible, marsupialization

## INTRODUCTION

Dentigerous cyst is the second most common odontogenic cyst affecting the jaw bone<sup>[1]</sup> and constitutes around 20-24% of all the odontogenic cysts.<sup>[2]</sup> Dentigerous cysts remain asymptomatic and are usually diagnosed incidentally during the routine radiological examination. Rarely, these cysts get secondarily infected and patient presents with symptoms such as swelling and pain. These cysts are usually unilateral, but several rare cases of bilateral dentigerous cysts have also been reported in the literature.<sup>[3,4]</sup> The impacted teeth associated with cysts are treated using extraction or non-extraction conservative methods,<sup>[3,5]</sup> although, few case reports also revealed spontaneous regression of dentigerous cysts as observed on prolonged radiographic follow-ups.<sup>[6,7]</sup> Radiologic evaluation of these cysts is mandatory to decide

the appropriate duration of decompression, the enucleation time, and also for the evaluation of the adequate new bone formation. In this paper, we present a case of a displaced mandibular third molar, which was associated with a large dentigerous cyst. A conservative treatment modality was adopted and the patient was followed-up radiographically for 2 years.

## CASE REPORT

A 22-year-old male patient reported to the Department of Oral Medicine and Radiology with a complaint of swelling present over his left side of face since 2 months. Swelling had no specific onset and had gradually increased in size. There was no history of pain or discomfort associated with the swelling. Medical history was non-contributory. There was a history of unsuccessful minor surgical intervention performed 5 days before with an attempt to extract an impacted wisdom tooth from left lower back tooth region.

Extraoral examination revealed a diffuse swelling present over the left lower side of face extending from the angle of mandible to the left temple region and was around 5 cm × 3 cm in dimensions. Skin above the swelling was of normal color. On palpation, the swelling was hard and

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was not associated with any localized rise in temperature, nor tenderness. There was no sensory deficit over the left side of face.

Intraoral examination revealed missing 38 with a surgical soft-tissue defect present in the buccal vestibule. On palpation, there was expansion of the buccal and lingual cortical plates extending posteriorly from 37.

Aspiration was performed, which revealed a viscous, straw colored fluid. Orthopantomograph (OPG) revealed presence of a large osteolytic lesion involving the left side of mandible, extending from the periapical region of 37 involving the body, angle, ramus and left coronoid process, and was around 10 cm × 4 cm in dimensions [Figure 1]. The lesion was primarily unilocular, with fine wispy trabeculae present within the lesion in the superior region of ramus. The lesion had caused thinning of the inferior border of the mandible with displacement and thinning of anterior border of ramus. There was erosion of the periapices of 37 with destruction of the inferior alveolar canal over the left side. 38 was impacted and displaced inferiorly approximating the inferior border of mandible at the angle. Expansion of the lingual cortical plate was evident on the occlusal radiograph.

Based on the clinical and radiographic features a provisional diagnosis of keratocystic odontogenic tumor and a differential diagnosis of dentigerous cyst were made. Incisional biopsy was performed and the specimen was sent for the histopathological examination.

Under scanning view (×4) a cystic lumen lined by an epithelium along with connective tissue capsule was seen. On high power (×10) examination a layer of stratified squamous epithelium, which was 2-3 cell layered thick was evident lining the cystic lumen. Within capsule lumen loose connective tissue stroma was seen with increased cellularity. Furthermore, collagen fibers, blood vessels, and areas of hemorrhage were evident within the connective tissue stroma [Figure 2]. These features were suggestive of dentigerous cyst.



**Figure 1:** Orthopantomograph revealing a large cystic lesion involving the left side of mandible

A conservative treatment was planned for the patient comprising of marsupialization of the cyst with decompression using iodoform dressings for 10 months followed by enucleation. The cyst showed regression in size by the end of 8 weeks and the displaced tooth, i.e., 38, showed signs of superior migration. Further, dressings resulted in sustained decompression of the cystic contents and occlusal migration of 38. Cyst was enucleated along with extraction of the impacted tooth after a span of 12 months. Patient was followed for another 1 year during, which the lesion healed completely with an organization of bone at the site of pathology [Figure 3].

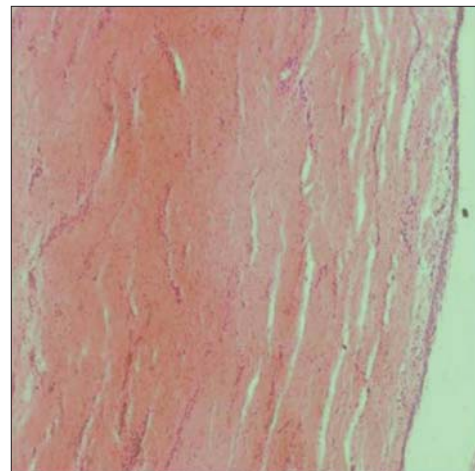
## DISCUSSION

Dentigerous cyst is a pathologic entity which is seen attached to the tooth cervix and encloses the crown of the unerupted tooth. It develops from proliferation of the enamel organ remnant or reduced enamel epithelium.<sup>[1]</sup>

As with other cysts, expansion of the dentigerous cyst is related to epithelial proliferation, release of bone-resorbing factors, and an increase in cyst fluid osmolality.<sup>[8]</sup> Continued expansion of this cyst can have possible sequelae like expansion of bone with subsequent facial asymmetry, extreme displacement of teeth, and less commonly pain.

Cystic lesion associated with impacted third molar can result in “hollowing-out” of the entire ramus, due to pressure exertion by the lesion. The same reaction is associated with displacement of the impacted third molars to such an extent that they sometime come to lie compressed against the inferior border of mandible<sup>[1]</sup> as was reported in our case.

Radiographically, the most important point aiding diagnosis of dentigerous cyst is that these cysts attach at the cemento-enamel junction of the tooth. Some dentigerous cysts are eccentric and develop from the lateral aspect of



**Figure 2:** Histopathological picture of the pathology

the follicle and hence that they occupy an area beside the crown instead of above the crown.<sup>[9]</sup>

At times, a circumferential variety of dentigerous cyst is also reported, which envelops the whole tooth.<sup>[11]</sup> This variety is difficult to differentiate radiographically from keratocystic odontogenic tumor and clinical findings such as expansion of the cortex in the involved area and radiographic appearance of attachment of the cyst to the cemento-enamel junction helps in discriminating the lesions, whereas histopathology must always be carried out to eliminate the possibility of other lesions in the location.<sup>[9]</sup>

Discrimination of dentigerous cyst from an enlarged dental follicle, keratocystic odontogenic tumor, ameloblastic fibroma, unicystic ameloblastoma, adenomatoid odontogenic cyst, and calcifying odontogenic cysts is difficult and

hence careful observation of size, site of attachment with the involved tooth, and internal contents aids in proper diagnosis of the pathology.<sup>[9]</sup>

Conservative treatment modality like “marsupialization” of histopathologically proven large cystic lesions should be considered as the treatment of choice. Procedures like enucleation involves larger morbidity of the lesional site, at times leading to formation of bone defect, which necessitates the use of bone graft placement at the morbid site.<sup>[10]</sup>

Pubmed database for the last 2 decades was reviewed using key words “dentigerous cyst, impacted teeth;” “dentigerous cyst, third molars,” and “dentigerous cyst, displaced tooth.” 21 cases of dentigerous cyst associated with impacted and displaced mandibular third molars were found to be documented [Table 1]. Among these patients

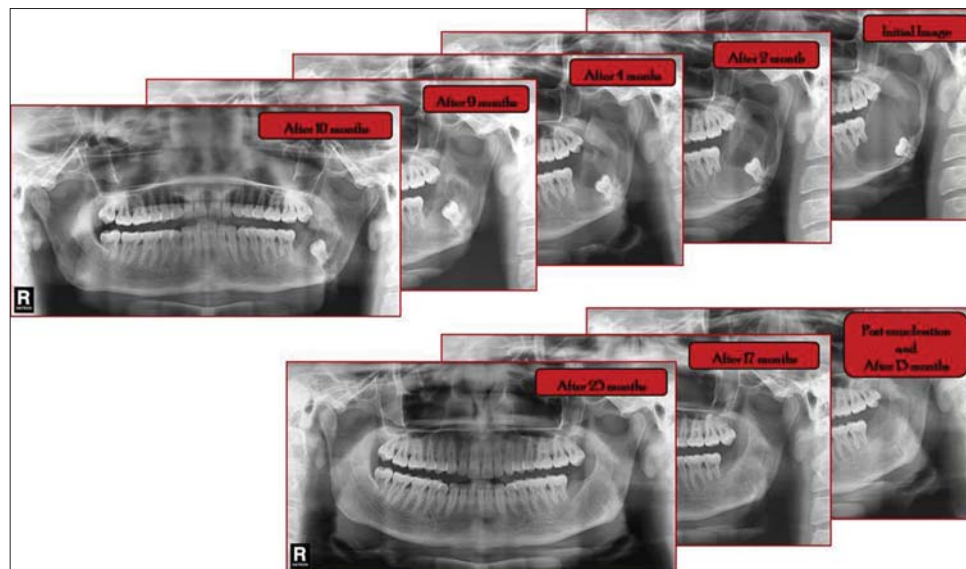


Figure 3: Series of orthopantomograph displaying the treatment progress

| Table 1: Review of cases of dentigerous cyst associated with impacted and displaced mandibular third molars |  |                 |                        |  |
|---|--|-----------------|------------------------|--|
| Year  | Author   | No. of patients | Tooth involved         | Treatment adopted                        |
| 1991  | Chongruk <i>et al.</i> <sup>[4]</sup>                | 1               | Mandibular third molar | Spontaneous regression                   |
| 1992  | Toranzo Fernandez and Terrones Meraz <sup>[11]</sup> | 1               | Mandibular third molar | Enucleation                              |
| 1993  | Girod <i>et al.</i> <sup>[12]</sup>                  | 3               | Mandibular third molar | Spontaneous regression                   |
| 1994  | Bux and Lisco <sup>[13]</sup>                        | 1               | Mandibular third molar | Enucleation                              |
| 1996  | Adams and Walton <sup>[14]</sup>                     | 1               | Mandibular third molar | Spontaneous regression                   |
| 1997  | Keros and Susić <sup>[15]</sup>                      | 1               | Mandibular third molar | -  |
| 1999  | Ko <i>et al.</i> <sup>[16]</sup>                     | 1               | Mandibular third molar | Enucleation                              |
| 2001  | Medici <i>et al.</i> <sup>[17]</sup>                 | 1               | Mandibular third molar | Enucleation                              |
| 2002  | Tümer <i>et al.</i> <sup>[18]</sup>                  | 1               | Mandibular third molar | Enucleation                              |
| 2002  | Aziz <i>et al.</i> <sup>[19]</sup>                   | 1               | Mandibular third molar | -  |
| 2002  | Shah <i>et al.</i> <sup>[6]</sup>                    | 1               | Mandibular third molar | Spontaneous regression                   |
| 2003  | Wassouf <i>et al.</i> <sup>[20]</sup>                | 1               | Mandibular third molar | Enucleation                              |
| 2004  | Marchetti <i>et al.</i> <sup>[5]</sup>               | 1               | Mandibular third molar | Marsupialization followed by enucleation |
| 2005  | Düker <sup>[21]</sup>                                | 1               | Mandibular third molar | -  |
| 2008  | Wang <i>et al.</i> <sup>[22]</sup>                   | 1               | Mandibular third molar | Enucleation                              |
| 2008  | Chew and Aghabeigi <sup>[7]</sup>                    | 1               | Mandibular third molar | Spontaneous regression                   |
| 2009  | McCrea <sup>[23]</sup>                               | 1               | Mandibular third molar | Enucleation                              |
| 2011  | Tamgadge <i>et al.</i> <sup>[24]</sup>               | 1               | Mandibular third molar | Enucleation                              |
| 2011  | Cakarar <i>et al.</i> <sup>[10]</sup>                | 1               | Mandibular third molar | Marsupialization followed by enucleation |

nine were treated with enucleation and two of them with marsupialization followed by enucleation. Spontaneous regression of the cystic contents was seen in seven patients observed over a prolonged radiographic follow-up.

We adopted a conservative modality including marsupialization of the cyst followed by enucleation and have received drastic change in the cyst size before its removal thereby limiting the morbidity at the surgical site. The method is acceptable for the patient as well as for the surgeon.

## CONCLUSION

In our case, we have revealed the gradual improvement of jaw bone cyst enclosing an impacted third molar over the span of 2 years. Conservative treatment modality with a careful and consistent radiographic follow-up displayed a non-traumatic approach toward treating large cysts of jaws, with salvation of the displaced third molar tooth.

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