

## CASE REPORT

# Management of an Impacted Dilacerated Permanent Maxillary Central Incisor

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## ABSTRACT

The impacted maxillary incisor is rare and detrimental for problems related to esthetics and occlusion in permanent dentition stage. The diagnosis of an impacted incisor with dilaceration refers to a dental deformity characterized by an angulation between the crown and the root, causing noneruption of the incisor. The most common cause of dilaceration in a tooth is trauma to its primary predecessor like avulsions, intrusions, or gross displacement of primary incisors. This study presents a case with overretained mobile deciduous teeth that were diagnosed radiographically with an impacted dilacerated maxillary central incisor surrounded by a large radiolucency. History of trauma to the same region was given at the age of 1 year. On examination, multiple missing permanent teeth were noted. The management of the case was carried out by surgical enucleation and histopathologic examination confirmed diagnosis of an infected dentigerous cyst.

**Keywords:** Dentigerous cyst, Dilaceration, Maxillary permanent central incisor.

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**Conflict of interest:** None

## INTRODUCTION

Esthetics and body function of a person is essentially affected by the absence of maxillary anterior teeth. There are several causes of failure or delayed eruption of maxillary incisors cited in the literature. The unerupted tooth may be associated with various factors like presence of supernumerary teeth, odontoma, cysts, crown or root malformation, or ectopic development of tooth germ. Other possible causes of lack of eruption of maxillary incisors are nonvital or ankylosed primary teeth, early extraction (or loss) of deciduous teeth, mucosal barriers in the path of eruption

that acts as a physical barrier to eruption, endocrine abnormalities, and bone disease. Among these, dentigerous cyst is one of the most commonly reported factor.<sup>1</sup> According to Mac Phee,<sup>2</sup> the incidence of impacted maxillary central incisor in the age group of 5 to 12 years has been reported as 0.13%. The prevalence has been estimated as 2.6% in a referred population to regional hospitals.

A dentigerous cyst is defined as one that encloses the crown of an unerupted tooth by expansion of its follicle and is attached to its neck. They are the most common developmental odontogenic cysts accounting for more than 24% of the jaw cysts.<sup>3</sup> Most of the dentigerous cysts involve the mandibular third molars and the maxillary permanent canines, followed by the mandibular premolars, maxillary third molars, and rarely the central incisors, supernumerary teeth, and mesiodens. Dentigerous cysts most commonly occur in second and third decades of life and have a male predilection. The incidence rate of dentigerous cysts involving the maxillary central incisors was 1.5% as compared with 45.7% involving the mandibular third molar.<sup>4</sup> Daley and Wysocki<sup>3</sup> reported an incidence rate of 0.1 to 0.6% after conducting a comparative study of 1,662 dentigerous cysts and 824 dental follicles. Shear<sup>4</sup> found this incidence to be 1.5%. Mourshed<sup>5</sup> also stated that only 1.44% of impacted teeth undergo dentigerous cyst transformation. All these studies indicated the rare incidence of dentigerous cysts involving the maxillary central incisors.<sup>3</sup>

Dilaceration is characterized by an angulation in the crown and root of the tooth and such cases pose a clinical dilemma. Surgical and orthodontic treatment modalities can be used in collaboration to successfully manage a dilacerated maxillary central incisor and thus to get the best functional and esthetic results. The prognosis of such teeth depends on the ankylosis, external root resorption, and root exposure after traction.<sup>6</sup>

This article presents the case of a 14-year-old female patient with impacted permanent maxillary left central incisor, which was found to be dilacerated after radiographic examination. The case was surgically managed.

## CASE REPORT

A 14-year-old female patient reported to the Department of Pedodontics and Preventive Dentistry, Mahatma Gandhi Dental College & Hospital, Jaipur, Rajasthan, India, with the chief complaint of overretained teeth and

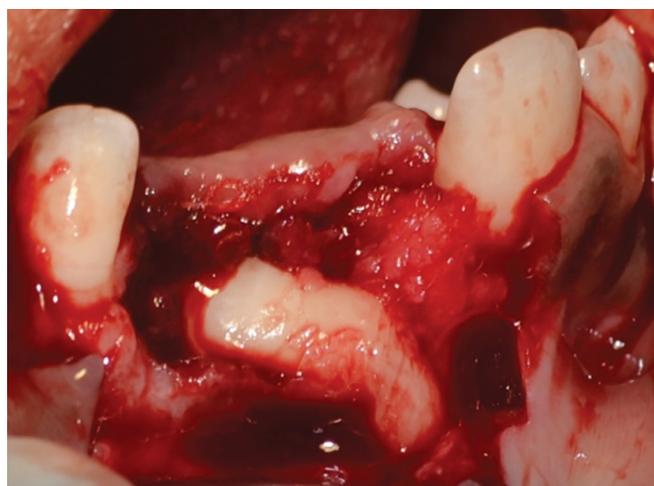
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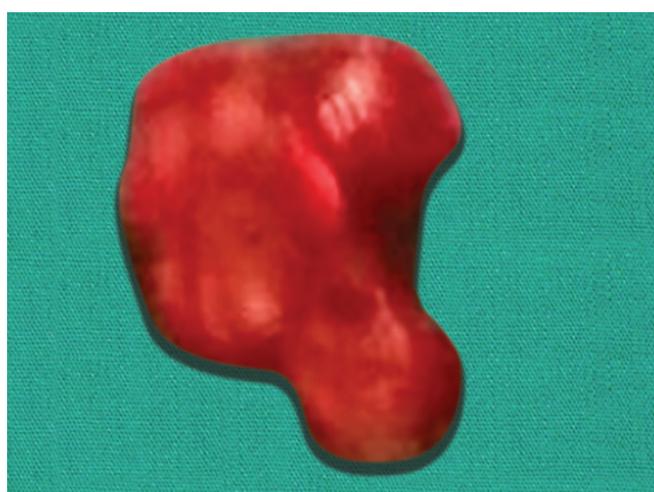
**Fig. 1:** Occlusal radiograph showing position of impacted maxillary central incisor and canine with well-defined radiolucent lesion



**Fig. 2:** Impacted maxillary central incisor with dilacerated root

mobility in respect to maxillary upper front region since 2 to 3 days. The girl was physically healthy and had no contributory medical history although she gave history of a traumatic fall at the age of around 1 year in which there was an injury to her maxillary front tooth region. Hard tissue examination revealed missing permanent left maxillary central incisor and canine and overretained root pieces of deciduous left maxillary central and lateral incisor and canine. On radiographic examination, an occlusal projection showed a unilocular, well-defined radiolucent lesion in the left maxilla (Fig. 1). A provisional diagnosis of dentigerous cyst was made based on radiographic examination. The intraoral radiographs revealed that the permanent left central incisor was obliquely placed with dilacerated root. Permanent left lateral incisor showed malpositioning, i.e., distal to over-retained deciduous canine and also showed a slight root dilaceration. The impacted canine was seen to be close to the nasal antrum and in the vicinity of the permanent left second premolar. There was no sign of root resorption associated with these permanent teeth. Possibility of orthodontic extrusion of the impacted central incisor was ruled out after consultation with the Department of Orthodontics. However, the impacted canine presented a favorable prognosis for the orthodontic treatment. The planned surgical procedure for central incisor was done under local anesthesia (Fig. 2).

The lesion was surgically enucleated and extraction of the impacted tooth was done. Thorough curettage and irrigation with copious saline was carried out. The wound was closed using a 3-0 nylon silk suture. The surgical specimen was sent for histopathological examination (Fig. 3) and the diagnosis of an infected dentigerous cyst was confirmed. The patient remained asymptomatic after the surgery. Regular clinical and radiographic evaluation revealed normal healing with no evidence of recurrence.



**Fig. 3:** Cystic lesion

As the patient also had a skeletal class III malocclusion, she was sent to the Department of Orthodontics for further treatment.

## DISCUSSION

A cyst is defined as an epithelial-lined pathological cavity. Odontogenic cysts arise from the tissues involved in the process of odontogenesis (tooth development). The term dentigerous means "tooth bearing." A dentigerous cyst circumscribes the crown of an unerupted tooth, expands the follicle, and is peculiarly attached to the cemento-enamel junction of the unerupted tooth. Most commonly, dentigerous cysts are seen with mandibular third molar followed by maxillary canines, mandibular premolars, maxillary third molars, and supernumerary teeth. However, on rare instances, deciduous teeth may also be associated with a dentigerous cyst.<sup>7</sup> An interesting case of dentigerous cyst associated with an impacted inverted mesiodens was reported by Hasan et al.<sup>8</sup> But

very rarely, dentigerous cyst has been reported to have been associated with permanent central incisor.<sup>9</sup>

Dentigerous cyst most frequently affects individuals between 20 and 30 years of age with a slight male predilection. However, children and adolescents are often affected.<sup>10</sup>

Dentigerous cyst is the most common developmental cyst of oral region and it accounts for more than 24% of the jaw cysts.<sup>7</sup>

Benn and Altini<sup>10</sup> reported three possible mechanisms for the pathogenesis of dentigerous cyst:

- The first type develops from the dental follicle, usually from a vital tooth and becomes secondarily inflamed.
- The second type arises when a developing permanent tooth encounters a radicular cyst from a vital primary tooth. Dentigerous cyst of extrafollicular origin forms as the permanent tooth erupts into radicular cyst.
- Third variant develops due to inflammatory exudates, usually from periapical inflammation from nonvital deciduous tooth or other sources.

Radiographically, the dentigerous cyst presents as a well-circumscribed, unilocular, symmetric radiolucency around the crown of an impacted tooth. Peculiar diagnostic radiographic feature of this cyst is that it attaches at the cemento-enamel junction of the tooth. The internal aspect of the cyst is completely radiolucent except for the crown of the involved tooth.<sup>11</sup>

The treatment protocol of a dentigerous cyst is highly influenced by the location, extent, and disfigurement caused by the lesion. Complete removal of the larger cysts may necessitate a variable amount of bone removal. Enucleation of the cyst and removal of the associated tooth is the most common treatment plan for dentigerous cysts. Marsupialization forms the treatment modality of choice for large dentigerous cysts where enucleation and curettage might result in neurosensory disturbances or pathological fractures.<sup>12</sup>

Killian et al<sup>13</sup> have suggested that trauma to the primary teeth can result in odontogenic disturbances, and hypoplastic defects of crown and dentigerous cyst associated with the permanent teeth may form as a result.

## CONCLUSION

The patient in our case had a history of trauma to the primary dentition, so dentigerous cyst may have most

likely developed due to trauma to the primary teeth such that it may have resulted into impaction and dilaceration of permanent central incisor. Impaction of central incisor is rare and it may have ill effects on esthetics, speech, mastication, and psychology of the patient. In cases of dilaceration depending upon the location and degree of dilaceration, a number of treatment modalities are available. One of the most commonly accepted treatment modality is surgical exposure of the impacted tooth followed by orthodontic extrusion when prognosis of the tooth is good, but if orthodontic prognosis is poor it has to be surgically removed.

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