

# Rare Case of Double Dens Invaginatus in a Supernumerary Tooth - An Unusual Case Report

N S Venkatesh Babu<sup>1</sup>,  
Kavita Rao<sup>2</sup>,  
L Shah Milind<sup>3</sup>

<sup>1</sup>Professor & Head, Department of Pedodontics, V.S Dental College & Hospital, Bangalore,  
<sup>2</sup>Professor & Head, Department of Oral & Maxillofacial Pathology, V.S Dental College & Hospital,  
Bangalore, <sup>3</sup>Post Graduate Student, Department of Pedodontics, V.S Dental College & Hospital,  
Bangalore

**Corresponding Author:** Dr. N.S. Venkatesh Babu, Department of Pedodontics, V.S Dental College & Hospital, Bangalore. E-mail: drnsvbabu@gmail.com

## Abstract

Dens invaginatus is a rare developmental malformation resulting from an alteration in the normal growth pattern of the dental papilla. Teeth in both maxillary and mandibular arches may be affected, but the permanent maxillary lateral incisors are the most frequently involved teeth. The invagination ranges from slight accentuation of a lingual pit to an anomaly occupying most of the crown and root. Many etiological factors have been determined regarding its pathogenesis. Only few cases have been reported where dens invaginatus was found to be associated with a supernumerary tooth. This paper reports an unusual case of simultaneous presence of mesiodens and supernumerary tooth with double Dens Invaginatus and its management.

**Keywords:** Double dens invaginatus, Supernumerary tooth, Mesiodens

## INTRODUCTION

Dens invaginatus is a rare developmental malformation of tooth displaying wide range of morphological alterations. It is also known as dens in dente, gestant odontome, dilated composite odontoma or deep foramen caecum. It results from an invagination in the surface of a tooth crown before its calcification.<sup>1</sup>

Teeth in both maxillary and mandibular dentition can be involved, with the permanent maxillary lateral incisors being the most commonly affected ones.<sup>2</sup> Cases of dental invaginations in supernumerary tooth have been reported.<sup>3</sup> The invagination ranges from a slight pitting to an anomaly occupying most of the crown and root. Various forms encountered are coronal and radicular variety and usually single invagination is seen in both forms; though infrequently double and triple forms have been reported.<sup>4</sup>

A rare case of a mesiodens and double dens invaginatus occurring in a supernumerary tooth, which prevented the eruption of the maxillary permanent central incisor, is presented.

## CASE REPORT

A 12-year-old girl reported to the Department of Pedodontics and Preventive Dentistry with the complaint of unerupted upper anterior tooth. Medical and dental histories were non-contributory and there was no previous trauma to the teeth or jaws.

Intraoral examination revealed the presence of unerupted maxillary right central incisor i.e 11 and an ectopic, bulbous, unusual looking supernumerary tooth (Figure 1) located in anatomical position of the permanent central incisor, high in the vestibule. There were developmental grooves on the facial surface of the supernumerary tooth. The lateral incisors had normal shape and position. Patient gave a history of extraction of mesiodens 1 month back. Radiographic investigation revealed a mesiodens and a calcified tooth like structure i.e supernumerary tooth in relation to the impacted 11 (Figure 1).

Since it was preventing the eruption of 11, the treatment option determined was to extract the supernumerary tooth. Informed consent was obtained for surgical extraction of supernumerary tooth. Routine haematological investigations were carried out and were found to be within normal limits.



**Figure 1: Clinical photograph showing the supernumerary tooth with two deep pits and unerupted permanent right maxillary central incisor. Radiograph revealing the presence of a mesiodens and a supernumerary tooth preventing the eruption of 11**

The procedure was performed under local anesthesia. Buccal flap was reflected and the supernumerary tooth was surgically exposed in order to allow for its gradual eruption in position. After 1 month follow up, 8 mm of crown was clinically seen (Figure 2). Patient is subjected for further orthodontic evaluation.



**Figure 2: Follow up after 1 month showing 8 mm of clinical crown**

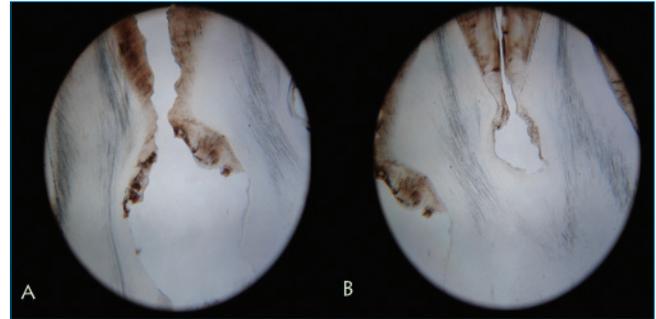
On gross examination the supernumerary tooth resembled a molar tooth with cuspal pattern. Presence of two deep pits on the occlusal surface of the tooth was seen (Figure 1). It had a single short and stunt root with incompletely formed apex.

#### Ground section features of the tooth (Figure 3)

It showed two cusps lined by enamel of variable thickness. Deep invagination lined by enamel is seen from the surface till CEJ in one cusp and the other cusp shows superficial invagination. Base was deficient of enamel.

Enamel showed irregular thickness and presence of gnarled enamel. Few enamel lamellae were present. Dentin was tubular in nature with DEJ scalloped and flat in some areas. There was loss of DEJ in focal areas. Fusion of dentin

was seen. Uniform thickness of cementum was present and CEJ was not distinct. Pulp chamber and pulp canals were not seen.



**Figure 3: Ground section showing A. Deep invagination from surface till CEJ seen in one cusp. B. Superficial invagination seen in other cusp**

## DISCUSSION

Dens invaginatus is a rare developmental malformation characterized by deep enamel lined pit that extends to varying depths into the underlying dentin, displacing the pulp chamber.<sup>5</sup>

Dens invaginatus can occur in all dentitions with a prevalence ranging from 0.25% to 7.74%.<sup>6</sup> It has been reported in maxillary central and lateral incisors, canines and bicuspid, and mandibular incisors and bicuspid. Maxillary lateral incisors are most frequently involved and the occurrence of dens invaginatus in supernumerary teeth is comparatively rare.<sup>7</sup> As per the literature available, only 11 cases of dens invaginatus involving supernumerary teeth have been reported.<sup>8</sup> In the present case, radiographically there were 2 supernumerary teeth, a mesiodens and a supernumerary tooth associated with double dens invaginatus.

The invaginations may vary from a slightly accentuated cingulum (foramen caecum) to deep foldings reaching the apical foramen.<sup>7</sup> Several classifications have been proposed.<sup>9</sup>

The invaginations presented in this case belonged to type 1 of Oehler's classification which is the most commonly used classification system for Dens Invaginatus.<sup>3</sup>

In the present case there was presence of conical mesiodens and a supernumerary tooth associated with double Dens invaginatus which appears to be unusually rare.

Although several theories have been proposed to explain the etiology of this malformation, it is controversial and remains unclear. Most probably the invagination has its origin in a deep folding of the foramen caecum during

tooth development, which in some cases may even result in a second apical foramen. It may be caused by increased localized external pressure, focal growth retardation or focal growth stimulation in certain areas of the tooth bud.<sup>10</sup>

The invagination allows entry of irritants into an area separated from pulpal tissue by a thin layer of enamel and dentin and presents a predisposition for the development of dental caries. Channels may also exist between the invagination and the pulp. Hence, pulp necrosis often occurs early, within a few years of eruption, sometimes even before root end closure. The invagination may also present a predisposing site for apical periodontitis, cyst formation, abscess formation and internal resorption. Other complications include malformation resulting in delayed eruption of the involved tooth as it was observed in the present case.

Various treatment options have been suggested. This includes preventive and restorative treatment, root canal therapy, surgical treatment or extraction.<sup>3</sup> The choice of treatment depends upon various factors which include the type of invagination, configuration of the root canal system, prosthetic requirements, function and esthetics, economic and psychological considerations. Extraction is indicated as a last choice of treatment only in teeth with severe anatomical irregularities and in supernumerary tooth that cannot be treated non-surgically or with apical surgery.<sup>3</sup> In this case, extraction was considered in order to facilitate the eruption of the central incisor.

## CONCLUSION

This case report highlights the simultaneous occurrence of mesiodens and supernumerary tooth with double Dens invaginatus and its associated complications. Close observation of radiographs is a must prior to establishing a treatment plan. Since it affects the path of eruption of permanent teeth, extraction of mesiodens and orthodontic treatment is a recommended treatment option in treating such cases.

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