



## A Fused Supernumerary Tooth Associated with Dilated Odontoma

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**DOI:** 10.31080/ASDS.2022.06.1450

**Received:** July 15, 2022

**Published:** August 16, 2022

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### Abstract

Supernumerary teeth are denoted as those in addition to the normal number of permanent or deciduous dentitions. They may occur anywhere in the dental arch and lead to many aesthetic and functional problems. Dilated odontoma is the most severe form of dens invaginatus. Dens invaginatus is a developmental malformation that occurs due to infolding the enamel into dentine. This invagination can cause pulp necrosis and periapical lesion. In this rare case there is a fused supernumerary tooth associated with dilated odontoma in the anterior mandible, which is detected accurately by clinical features and radiographs, particularly Cone-Beam Computed Tomography (CBCT).

**Keywords:** Cone Beam Computed Tomography; Pulp Necrosis; Supernumerary Teeth; Microdontia; Dens Invaginatus

### Introduction

Supernumerary teeth are considered as extra teeth in the jaws [1]. These teeth are so diverse that can be single or multiple, unilateral or bilateral, or of different shapes and sizes [2-4]. The prevalence of supernumerary teeth is about 0.3 to 3.8% in populations [5]. Dilated odontoma, one of the important dental anomalies, is considered as a type of dens invaginatus. Infolding of the enamel organ into the dental papilla before the mineralization phase leads to the term of dens invaginatus [6]. The prevalence of dilated odontoma ranges from 0.25% to 7.74%. It occurs most frequently in maxillary lateral incisors and very rarely in the posterior region [7]. Dilated odontoma is the most severe form of tooth invagination, which has a doughnut shape with a radiolucent soft tissue center, surrounded by radiopaque dental hard tissue [8]. Dense invaginatus has various types of morphologies. According to the

depth of invagination, Oehler classified dens invaginatus into 3 categories [9]. In type I Oehlers' classification, the invagination is limited to the crown and is not extending beyond the cemento-enamel junction (CEJ). In type II, the enamel-lined invagination extends beyond the CEJ. In rare type III, the invagination extends apically beyond the CEJ and perforates the surface of the root to create a second lateral foramen (type IIIa) or apical foramen (type IIIb) [10].

We consider this case a rare situation due to supernumerary with dens in dente in the anterior mandibular region, in the central incisor.

### Case Presentation

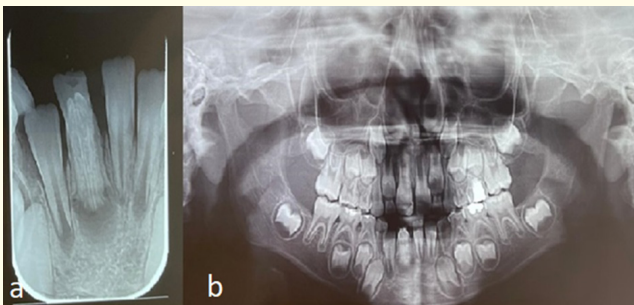
A 9-year-old girl was referred to the oral and maxillofacial radiology by her general dental practitioner regarding to an abnormal

shape of the mandibular incisor. The tooth was painless, and she was completely healthy without any kind of systematic disorders. The tooth has an increased bulgy cingulum that alters the normal morphology (Figure 1).



**Figure 1:** Clinical photographs show a bulgy cingulum in the mandibular right central incisor.

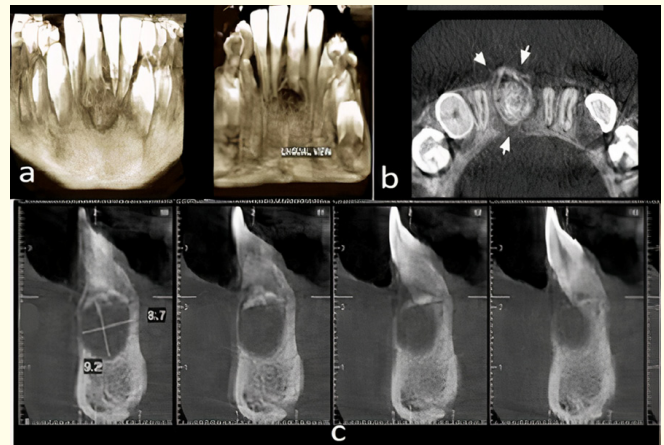
A Periapical radiograph (Kavo, Biberach, Germany) with 60 kVp, 7 mA and 0.2s and panoramic image (Promax Planmeca, Finland) with Exposure parameters of 68 KVP and 12 mA were taken. Images reveal a central radiolucent area with radiopaque surroundings (Figure 2).



**Figure 1:** Clinical photographs show a bulgy cingulum in the mandibular right central incisor.

Cone beam computerized tomography (CBCT) with Planmeca ProMax 3D unit was ordered for a more precise study. The selected scan had an exposure parameter of 96 kV, 8.0 mA, and the exposure time was approximately 12 s. In 1 mm CBCT slice thickness,

a fused supernumerary tooth concomitant with dilated odontoma was detected (Figure 3). The supernumerary tooth showed an oval radiolucent interior surrounded by a well-defined radiopaque border and open root apex with a periapical lesion (8.7 × 9.2 mm) and thinning of buccal and lingual cortex exist. After taking patient’s guardian’s consent and performing a presurgical physical health status evaluation, it was decided to extract the fused supernumerary tooth under local anesthesia. The patient was referred to an orthodontist for accurate space management.



**Figure 3:** a: CBCT 3D image of buccal and lingual view, b: CBCT axial, c: CBCT cross-sectional view demonstrating a fused supernumerary tooth concomitant with dilated odontoma.

### Discussion

Since in dilated odontoma pulp involvement and its subsequent complications are possible, special attention should be paid to its diagnosis and treatment [11]. invagination in the early stages of morpho differentiation can lead to abnormal crown and root shape of a tooth [6]. Pulpal involvement is one of the most important complications in dens invaginatus. Invagination can communicate with the oral cavity. despite the thin enamel, the microorganisms can penetrate the pulp chamber and leads to pulp necrosis and periapical lesions [12].

In children and orthodontic patients, supernumerary teeth are one of the most common developmental abnormalities. Some possible relationships have been noted between supernumerary teeth and other developmental anomalies such as dens invaginatus [13].

There are many discussions on the etiological and genetical reasons for supernumerary teeth. Several theories had been suggested for the etiology but the theory of independent local hyperactivity of the dental lamina is more accepted [14-15].

The association of dens invaginatus with the supernumerary tooth is very rare. In this study, there was a fused supernumerary central incisor in the anterior mandible. Due to the interior invagination, the permeable membrane can cause the microorganisms to access the pulp chamber [11]. Radiographic imaging such as panoramic x-ray and periapical imaging can be helpful in the diagnosis of dens invaginatus [10,12,16-19].

But for a more precise investigation, CBCT can be suggested. In this case report, the clinical and radiological examinations allowed us to rule out the diagnosis of gemination and to identify a supernumerary tooth with dilated odontoma in the tooth 25. For a more accurate diagnosis of the relationship between the invagination with the pulp chamber, canals, and periodontal ligament can be perceived by CBCT [16]. Sulabha, *et al.* presented a case with mesiodens associated with dens invaginatus in a 13-years-old child. The mesiodens teeth were extracted [20].

Pallivathukal, *et al.* reported a case with Dens invaginatus in a geminated maxillary lateral incisor. The tooth presented clinical features of gemination and radiographic features of dens invaginatus, and overall, it was diagnosed as dens invaginatus in geminated maxillary lateral incisor. Endodontic treatment and orthograde surgery were planned. After 6 months the patient was recalled for follow-up. The radiographs revealed remission of the periapical lesion and the tooth was asymptomatic [21].

## Conclusion

Dilated odontoma and supernumerary teeth are developmental anomalies that can cause many complications for patients who are suffering from them. Intraoral examinations and panoramic radiographs are critical in the initial diagnosis of these patients and moreover, CBCT can be requested for better study of the details.

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