



## A RARE OCCURRENCE OF DENS INVAGINATUS WITH MANDIBULAR THIRD MOLAR AND ITS CBCT EVALUATION

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### ABSTRACT

**Introduction**-Dens in dente shows an abnormal crown morphology or there is deepening of the cingulum. In majority of cases it is only detected on routine examination as the patient may not have any signs and symptoms. Oehlers in 1975 classified dens invaginatus into three categories based on the extent of the invagination from the crown portion into the root radiographically. **Case report**- when a 35 year old patient reported with complaint of impacted third molar tooth, conventional radiograph was done which presented an unusual appearance of the tooth. On CBCT evaluation diagnosis of dens in dente type IIIa was given, treatment was then planned accordingly. **Conclusion** – The case shows the importance of CBCT examination of such cases to allow precise diagnosis and treatment planning.

**KEYWORD:** Dens invaginatus, Cone beam computed tomography, rear occurrence, third molar.

### INTRODUCTION

Dens invaginatus (DI), also termed as dens- in -dente or dilated composite odontoma, is one of the most common dental developmental malformations. It results from infolding (full or partial) of enamel organ into the dental papilla before the start of the calcification stage.<sup>[1]</sup>

Dens in dente shows an abnormal crown morphology or there is deepening of the cingulum. In majority of the cases, it is only detected on routine clinical or radiological examination as the patient may not have any signs and symptoms. Bilateral involvement of teeth has also been reported, so if a tooth has been found to be affected with DI, the contralateral tooth should also be examined. The incidence of dense in dente varies from 0.003% to 10%<sup>[2]</sup>, which may involve permanent as well as deciduous teeth. Most commonly affected teeth are central or lateral incisors followed by premolars, canines and molars.

Oehlers in 1975, classified dens invaginatus into three categories based on the extent of the invagination from the crown portion into the root radiographically as<sup>[3]</sup> Type I, which shows invagination which is confined within the crown and does not extend beyond the cemento-enamel junction. In type II, an invagination lined by enamel is seen that extends beyond the CEJ and may or may not communicate with the pulp, but does not reach the apical tissues. Type IIIa, an invagination which extends through the root communicates with the periodontal ligament. There is usually no communication

with the pulp, which lies compressed within the root. Type IIIb, includes permeation of the root by the invagination, forming an additional apical foramen; usually, there is no communication with the pulp.<sup>[4]</sup>

Dens in dente appears as a deep invagination which has a thin layer of dentin covering over the pulp which makes these teeth more susceptible for carious, pulpal necrosis, periapical or periodontal abscess. On clinical and radiology examination, this anomaly can diversify according to the location and extension of the invagination.<sup>[5]</sup> Early diagnosis is very important to determine the treatment plan for such cases.

Radiographically, it appears as a radiopaque line well outlined, inside the dental organ, suggesting the presence of enamel in the pulp chamber, giving the impression of “a small tooth inside the other”, reason for the expression dens in dente.<sup>[9]</sup> Some cases show much more complex structure which require three dimensional evaluation using cone beam computed tomography (CBCT). This article describes the unusual case of dens in dente which was discovered accidentally during the cbct evaluation of an impacted 3<sup>rd</sup>.

### CASE REPORT

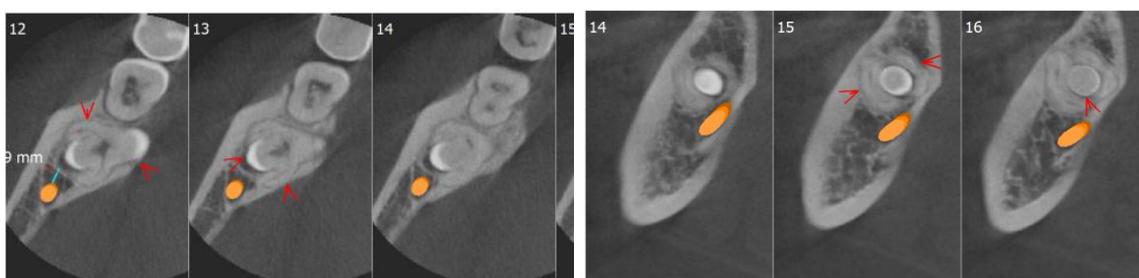
A 35-year-old patient reported with the complaint of pain in lower right back teeth region since 8 days. On clinical examination pericoronitis with 48 was seen. Initially orthopantomogram was requested for further diagnosis,

evaluation and treatment planning. Through panoramic radiograph it was confirmed that lower right 3<sup>rd</sup> molar was impacted and it was also noted that it had unusual radiopaque appearance. So, for the further examination cbct scan was requested. The CBCT scan of lower right 3<sup>rd</sup> molar region using Kodak CS 9300 system; the point care CT imaging, with exposure parameters at 70-74 kV, 12 sec and 200  $\mu\text{m}^3$  voxel size. Acquired volume was reformatted into image of thickness of 200  $\mu\text{m}^3$  and viewed on 15 inches of slices on high resolution. The scan was analysed in three planes namely sagittal, coronal and axial and 3d images were also constructed. On examination of the axial view it was found that the orientation of the tooth was buccolingually with crown placed lingually and roots buccally. Two roots mesial and distal were noted. Tooth like structure is seen placed within the furcation area of 48, which shows enamel, dentin and pulp chamber cavity not completely formed. The root canals of the mesial and distal root can be differentiated from that of the dens invaginatus. Depending on the appearance of the tooth like structure

radiologic diagnosis of dens invaginatus type IIIa, according to the Oehlers's classification was given. After the thorough radiological examination, surgical extraction with the following tooth was carried out under local anaesthesia which was carried out without any complications and patient was called after a week for suture removal and follow-up.



**Figure 1: 3D image of impacted tooth.**



**Figure 1-Axial view showing lingual orientation and Coronal view showing tooth like structure between two roots.**



**Figure 3: Sagittal section showing morphology of the tooth.**

## DISCUSSION

Early diagnosis of such anomalies is necessary to prevent further pulpal degeneration and necrosis in certain cases. Many theories are described about this anomaly etiology, but it is not a common consensus about it. The literature believes on some cell defect or genetic that affect on the crown formation, but nothing is for concluded.<sup>[6]</sup> The commonly involved teeth are maxillary lateral and central permanent incisors, premolars, canines and mandibular tooth occurrence is not so common but can happen.<sup>[7]</sup> According to the Oehlers's classification the

dens in dente type I it is the most common (94%), after it is the type III (33%) and the rare one it is the type II (4%).<sup>[8]</sup> As this related case show a third mandibular molar type IIIa, it becomes a rare clinic case and showed be reported.

The development of radio-diagnostics has contributed to an increased treatment success rate for developmental malformations, meaning that patients can preserve their own dentition for a longer period of time.<sup>[4]</sup> Normally DI can be diagnosed using conventional radiographic examination. A periapical X-ray can clearly show the anomaly but does not depict its three-dimensional nature. It gives insufficient diagnostic information for the practitioner, hence to get its complex morphology and the extension CBCT is necessary for precise diagnosis. A case report presented by Patel<sup>[10]</sup> showed the particular advantage of CBCT.

CBCT allows for assessment of all necessary information regarding teeth with malformations such as DI, and this, in turn, facilitates the planning of treatment in all fields of dentistry. CBCT is particularly valuable in patients with type III DI for whom an endodontic treatment plan must be developed.<sup>[11]</sup>

The treatment for case of DI are different, some simple as a restoration and some more complex as a surgery. When the tooth is healthy use of sealant or restoration is the option. If there is a pulp exposition the best option it is a endodontic treatment. In the following presented case extraction of impacted third molar was preferable.

## CONCLUSION

Dens invaginatus is malformation of clinical significance. The case related showed how important are the image exams to do the precise diagnosis on this anomaly. The third mandibular molar was diagnostic with dens in dente type IIIa by Oehlers's classification using the cone beam computer tomography, showing that this exam should be ask if the conventional imaging tests aren't able to value the disease and plan the treatment. In conclusion, CBCT allows for precise diagnosis of DI. CBCT allows the clinician to distinguish the type of abnormality, which is essential during treatment planning.

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