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## Premolarised maxillary lateral incisor with dens in dente: Combination of rarities

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### Abstract

In day-to-day clinical practice, we come across several oral and maxillofacial diseases and disorders of both hard and the soft tissues. It is not uncommon to find developmental disorders of teeth. A variety of developmental disorders of teeth are recognized and some are pretty much common. One such infrequent developmental disorder of the maxillary lateral incisor is premolarisation. What is even rarer is when it is associated with another anomaly such as dens in dente. A combination of these two rare dental anomalies in a single tooth is being reported.

**Clinical Relevance:** Clinical knowledge about rare dental anomaly

**Objective:** The reader is expected to recognize such rare combination of dental anomalies and effectively manage.

**Keywords:** Maxillary lateral incisor; anomaly; premolarisation; developmental disturbance; dens-in dente

### Introduction

Tooth development is a normal process which most often goes undisturbed. There are times when the process can get disturbed due to unknown causes and may result in anomalous tooth or teeth. These can be in the form of variation of number, morphology or structure <sup>[1, 2]</sup>.

Often, these anomalies are asymptomatic and go unnoticed but may at times lead to an array of clinical problems <sup>[1]</sup>. A few complications like temporomandibular disorders, malocclusion, and periodontal problems have a great bearing on the patient's well-being <sup>[1]</sup>. These anomalies can be an isolated finding, affecting a single tooth or there might be multiple teeth affliction. The maxillary lateral incisor is one tooth which commonly gets tormented by developmental anomalies <sup>[3]</sup>. Dens in dente is one such common defect that occurs predominantly in the maxillary lateral incisor <sup>[3, 4]</sup>. A combination of two or more dental anomalies affecting the same tooth is rare and this case serves as a perfect example of an amalgamation of two rare anomalies.

### Case report

A 23 year old female patient visited with a complaint of sensitivity for cold fluids in her maxillary right central incisor of 2 months duration. There was history of undergoing restoration for the same tooth 4 months back due to the same complaint. Her medical, surgical and dental histories were insignificant. Upon examination of the maxillary right central incisor, the disto-proximal surface showed presence of discolored composite restoration and the tooth was non sensitive to vertical percussion. Incidentally, the maxillary right lateral incisor tooth had been misshapen and had the morphology of a maxillary premolar. (Fig 1) The tooth normal appearance of a lateral incisor on the labial aspect, but prominent cingulum on the palatal aspect, giving a cusp form and a lingual pit and groove were noted, occlusally. (Fig 2) The overall dimensions were of a normal lateral incisor. Rest of her teeth showed no morphological alterations. An intra-oral periapical radiograph was obtained for the central and the lateral incisors. The central incisor showed presence of irregular radiolucency on the distoproximal surface with extensions into the underlying dentin. The lateral incisor showed the presence of the prominent cingulum, the groove with a radiopaque invagination into the pulp chamber, roughly oval in shape. The lamina dura and periodontal ligament space in both the teeth were normal and there were no periapical pathologies in the teeth. (Fig 3) Based on

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The above findings of the lateral incisor, it was diagnosed as a premolarised lateral incisor with dens in dente. A re-restoration for the maxillary right central incisor and an intentional endodontic treatment for the lateral incisor was suggested. The patient underwent restoration of the symptomatic tooth but denied treatment for the asymptomatic tooth.



**Fig 1:** Normal labial aspect of the maxillary right lateral incisor



**Fig 2:** Occlusal aspect of the premolarised lateral incisor



**Fig 3:** Intraoral Periapical Radiograph showing the lingual groove and dens invaginatus in the right lateral incisor and diffuse radiolucency on the distoproximal surface of the right central incisor

**Discussion**

Premolarisation of a lateral incisor is a rare phenomenon and not many reports are available in the literature. Kantaputra and Gorlin, first described the pemolarisation of a maxillary lateral incisor [5]. In their case, they also found molarisation of the maxillary central incisor along with some additional

developmental disturbances such as congenital sensorineural deafness [5]. Dens in Dente, the commoner of the anomalies, was first described by Tomes in 1859 [6]. In the present case, no additional developmental anomalies elsewhere, were noted.

**Etiology**

The basic cause for alteration of morphology is believed to be due to a defect in the developing mesenchyme [7]. Some genes have been detected which participate in tooth development and when one of these are mutated, developmental alterations are believed to occur. The genes are MSX 1 – Muscle Segment Homebox 1, DLX 1 & 2 – Distal-less Homebox, PAX 9 – Paired Box Gene and PIT X 2- Pituitary Homebox Transcription factor 2 [7].

Dens in dente occurs as a result of invagination of enamel organ into the dental papilla and this in-folding can occur due to the cells of enamel organ which are actively proliferating or an abnormal pressure from the surrounding tissues [8, 9].

**Epidemiology**

Reiterating the fact that premolarisation of a lateral incisor is of rare occurrence, the exact prevalence is not known. Very few cases have been described so far in the literature, affecting the maxillary lateral incisor or central incisor teeth [5, 7, 10]. Comparatively, dens in dente is a fairly common anomaly and mostly affects the maxillary lateral incisors [3, 4]. The prevalence varies from 0.25-10% in general population and shows no gender predilection [6, 8].

The occurrence of dens in dente in a tooth which is also showing another morphological alteration such as premolarisation is a very rare occurrence and has only been described twice in the literature, that too in association with other systemic abnormalities [5, 10]. The patient in the present case was otherwise healthy but had a combination anomaly in the maxillary lateral incisor.

**Clinical features**

Maxillary lateral incisors show developmental alterations more often than the other teeth, the reason for which has not been identified [3]. The common variations that can affect the maxillary lateral incisors can be microdontia, macrodontia, hypodontia, dens invaginatus or evaginatus [3]. Premolarised lateral incisor has been described as having a morphology of a premolar tooth, with an accessory cusp on the lingual side and a transverse groove present, occlusally [10]. Dens in dente does not clinically show its presence and mostly often is a chance discovery on the radiograph [9]. But sometimes, a deep lingual pit can be all that may provide a hint of its presence [3, 9, 10]. In the present case, the lateral incisor had normal appearance labially, but a prominent cingulum palatally, pit and groove on the occlusal aspect.

**Radiographic Features**

The radiographic appearance of a premolarized lateral incisor has not been adequately described. One previous case found a double dens in dente with abnormal root curvature [10]. Dens in dente appears radiographically as a pear shaped radio opacity of enamel density, invaginating into the dentin with a narrow opening on the tooth surface. This can be approximating or involving the pulp [6]. The present case, the lateral incisor showed a prominent cingulum and dens invaginatus.

**Consequences**

A tooth when affected by a developmental anomaly may

completely be asymptomatic or may pose diverse clinical problems. There can be compromise of esthetics, interference with occlusion, may be prone for caries development or periodontal pathology, may cause temporomandibular joint pain or pulpal and periapical pathologies<sup>[1, 10]</sup>. Presence of dens in dente increases the risk of pulpal or periapical infection as it establishes a communication between the pulp and the external environment<sup>[6]</sup>. The patient in the present case was totally asymptomatic and had no associated pathologies.

### Management

The premolarised maxillary incisor when associated with another anomaly such as dens in dente, may need endodontic treatment, as there is always a pulpal communication secondary to occlusal tooth wear.<sup>[10]</sup> If a tooth is severely morphologically altered, then extracting it may be only remedy.<sup>[8]</sup> Intentional endodontic treatment, although suggested to the patient, was denied by her due to lack of motivation.

**Conclusion** Rare developmental disorders advance our clinical knowledge and acumen to a great extent. It is not an everyday phenomenon to notice a combination of developmental disorders affecting a single tooth. Premolarisation of the maxillary lateral incisor is the rarest of rare developmental disorders. Proper diagnosis and prompt treatment can prevent and resolve many a problems the patient may experience.

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