

## A clinical case report of dens in dente in an unusual location

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### Abstract:

**Introduction:** Dens in dente or dens invaginatus is an anomaly of tooth formation, result of the invagination of coronary tissue in the pulp chamber, which occurs previously to tissue calcification. The majority of dens in dente cases are discovered by routine imaging exams, in which it is possible to identify an invagination of enamel into the pulp chamber, where the enamel appears well delineated, giving the impression of “a small tooth inside the other”. **Objective:** Approach the clinical and radiographic aspects, as well as diagnose this pathology using imaging exams, through an atypical clinical case report of Oehlers type II dens in dente in the left maxillary third molar. **Case report:** Female patient, 20 years old, went to the Dental Clinic of the Odontology Scholl at PUC Minas, to have the third molars extracted. The panoramic radiograph examination showed shape change in the left maxillary third molar. Considering the atypical form, a cone beam computed tomography was requested. **Conclusion:** The case related showed how important are the image exams to do the precise diagnosis on this anomaly. The cone beam computer tomography should be ask if the conventional imaging tests aren't able to value the disease and plan the treatment.

**Keywords:** Dens in Dente; Tooth Abnormalities; Cone-Beam Computed Tomography.

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## INTRODUCTION

Dens in dente ou dens invaginatus is an anomaly of tooth formation result of the invagination of coronary tissue in the pulp chamber, with occurs previously to tissue calcification<sup>1,2</sup>.

The dens in dente incidence varies into 0,03% to 10%<sup>2-4</sup>, depending on the methodology selected, the identification discretion and the difficulties to the diagnosis. This anomaly could happen even with permanent as with deciduous tooth, and usually in the lateral and central incisors, in some cases can occur on premolars<sup>5</sup>.

The dens in dens was classified by Oehlers in 1975 in three types according to the invagination extension. The type I show a crown invagination. The type II, the invagination extend to the root and can communicate with the pulp. The type III it is the most severe which the invagination go though the cement-enamel junction and can present a second forame on the lateral periodontal ligament or on the periapical tissue<sup>2,5-7</sup>.

On clinic and radiology exam, this anomaly can diversify according the location and extension of the invagination<sup>8</sup>. Mostly cases, the tooth show a normal clinic morphology, but if the invagination is severe, can present deep groove on the posterior tooth or a fissure on the front tooth surface<sup>8,9</sup>. When the tooth showed any this clinic morphologic differences is more susceptible carious lesion, pulp necroses and future periapical lesions. That is why it is so important the previous diagnostic so the patient can have a early treatment<sup>4,5</sup>.

The majority of dens in dente cases are discovered by routine imaging exams. 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>1,10</sup>. Some cases can also reveal a complex anatomy, requiring a computed tomography to conclude the diagnosis<sup>6,10</sup>.

The present report has the objective of describing an unusual clinical case of dens in dente, presenting its radiographic and tomographic findings to emphasize the importance of these imaging exams as auxiliaries in the diagnosis, planning and treatment of this anomaly.

## CASE REPORT

Female patient, 20 years old, attended the Dental Clinic of the Odontology Scholl at PUC Minas, to have the third molars extracted. An initial panoramic

radiographs examination was requested (Figure 1) for evaluation, diagnosis, and treatment plan, in which it was verified dental inclusion of left maxillary third molar and alteration of its form. Considering the atypical form, a cone beam computed tomography (CBCT) was requested.



Figure 1. Initial Panoramic Radiography: it is observed the abnormal shape on the left maxillary third molar

In the CBCT exam of left maxillary third molar (Figure 2), done with the Kodak 9000C 3D Volumetric Tomography (Carestream Health Inc. Rochester, NY USA), with exposure parameters 74kV, 12mA, 10.8 seconds, with voxel size 76x76x76 $\mu$ m. The image reconstruction was made by the Carestream 3D Imaging Software (Atlanta, GA, USA), that identify a complex structure with a mineralize tissue on the pulp cavity, well delineation similar to the enamel. The diagnostic on this related case is dens in dente type II, according to the Oehlers's classification.

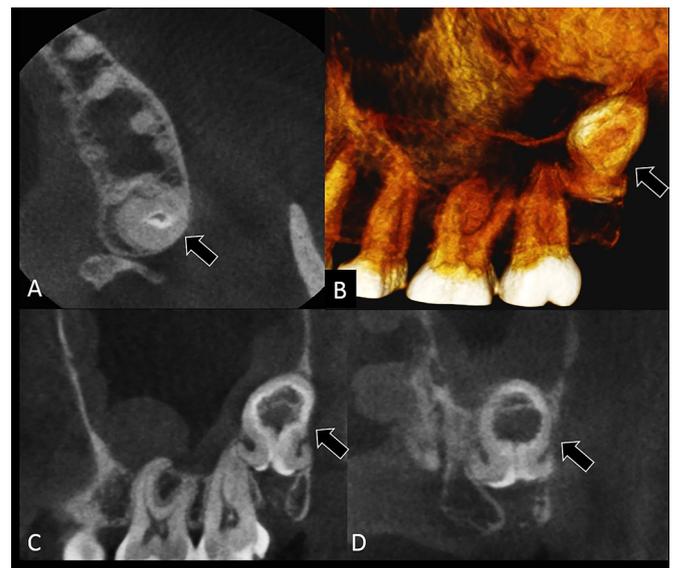
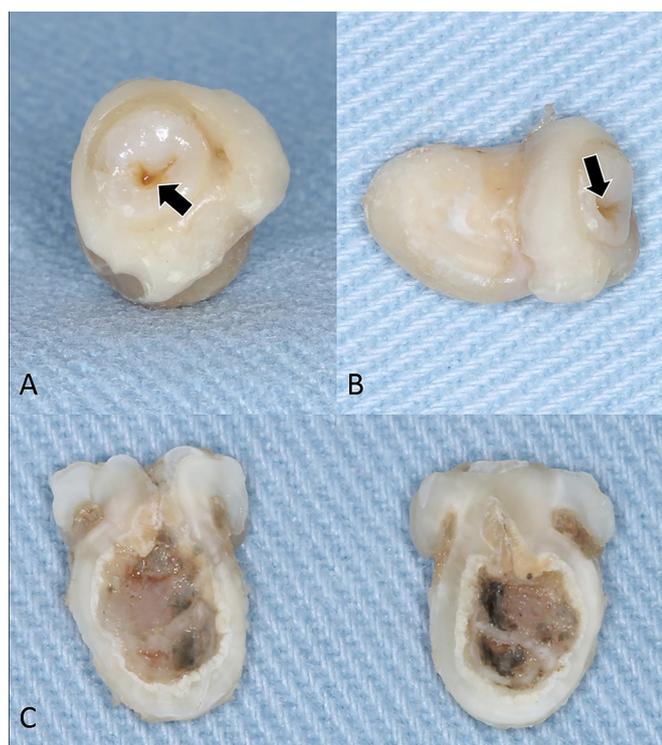


Figure 2. Cone beam computed tomography in the region of left maxillary third molar - A) Axial View; B) 3D Reconstruction; C) Sagittal View; D) Transverse Lateral View)

Through imaging exams evaluation, planning and extraction surgery of left maxillary third molar were made. For the surgical procedure it was used prophylactic antibiotic (Amoxicillin 500mg, 4 capsules, one hour before the surgical procedure), local anesthesia with vasoconstrictor (adrenaline), anti-inflammatory (Nimesulide 100mg, every 12 hours, for 2 days) and analgesic (Paracetamol 500mg, every 6 hours for 2 days), for relief of the postoperative symptoms. The patient returned to the clinic 7 days after the procedure, for suture removal and postoperative control. In Figure 3 it is possible to see the complex anatomy of the third left maxillary molar, with Oehlers's type II dens in dente.



**Figure 3.** A) and B) Altered morphology with dental crown depression C) Picture of sectioned of left maxillary third molar. It is possible to observe the invagination of mineralized tissue into the interior of the tooth.

## DISCUSSION

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>4,6</sup>.

The dens in dente occur normally of maxillary lateral and central permanent incisors, premolars, caninos and mandibular tooth occurrence is not so common but can happen<sup>5</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 onde it is the type II (4%)<sup>11,12</sup>. As this related case show a third maxillary molar type II, it becomes a rare clinic case and showed be reported.

The dens in dente can present many different morphology. Depending on the severity, this anomaly can facilitate carious lesion, pulp changes, pulp necrosis and periapical lesions<sup>5,13</sup>. The pulp contamination could occur even without a direct communication with the oral cavity, that is why the early diagnostic it is important to prevent and plan a treatment<sup>10</sup>.

Usually, this anomaly it is diagnosed by a normal image exam. On the conventional image exam, the radiography aspect it is a radiopaque line in the pulp cavity, making an impressing that there is a "tooth inside the other tooth"<sup>10</sup>. However, conventional radiography are limited on define the dens in dente's type, their complex morphology and the extension, been necessary a cone beam computed tomography (CBCT) to get a precise diagnostic<sup>6</sup>.

The CBCT brings benefits to the planning of any endodontic treatment or surgical considering the dens in dente structure<sup>4</sup>, with this exam we can look into the internal structure details on a 3D vision, helping on the treatment planning and the precessions with some future problems. On this specific case, the panoramic radiography showed a classic anomaly evidence, however, because of the modify morphology was necessary a CBCT to confirm the diagnostic and plan better a third maxillary molar surgery.

The dens in dente treatment include deferents clinic procedures, some simple as a restoration and some more complex as a surgery. When it is a healthy tooth, the best option is the sealant to protect future lesions<sup>1</sup>. If there is a pulp exposition the best option it is a endodontic treatment and some cases remove the tooth<sup>10</sup>. This presented case, the dens in dente treatment was the extraction of the third maxillary tooth.

## CONCLUSION

The case related showed how important are the image exams to do the precise diagnosis on this anomaly. The third maxillary molar was diagnostic with dens in dente type II by Oehlers's classification using the cone bean 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.

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