

DENS INVAGINATUS WITH AN OPEN APEX: REVIEW OF A CASE



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Anatomic variations of the root canal system are a commonly occurring phenomenon. Conditions like developmental tooth disturbances pose a challenge to the clinician in diagnosis as well as treatment because of its complex crown and root canal morphology. One such developmental anomaly of teeth is dens invaginatus, which results from the invagination of the enamel organ into the dental papilla before calcification has occurred¹. Salter first described this anatomical anomaly in 1855 as "a tooth within a tooth". DI in human tooth was first described by a dentist named Socrates in 1856.²

SYNONYMS:

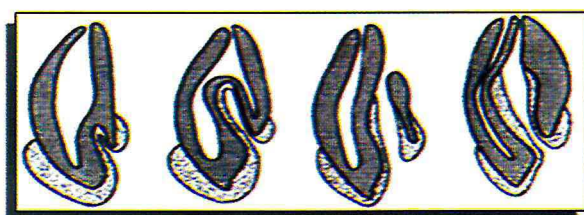
Dens in dente, invaginated odontome, dilated gestant odontome, dilated composite odontome, tooth inclusion, dentoid in dente.³

The incidence of dens invaginatus is reported to range from 0.04% to 10%. Maxillary lateral incisors are the most commonly involved teeth with commonly bilateral occurrence.

ETIOLOGY- The etiology is controversial and remain unclear; The presumed etiology of this phenomenon has been related to focal growth retardation, growth pressure of the dental arch, localized external pressure in certain areas of the tooth bud, infection, and trauma.¹

CLASSIFICATION: The first documented attempt to classify dens invaginatus was by Hallet (1953). Many authors gave classification latter most accepted is Oehlers as Types I, II and III depending on its extension from crown to root radiographically.

Type 1 Type 2 Type III A Type III B



Type I: an invagination into the crown only;

Type II: an invagination into the root that ends in a blind sac⁴ and

Type IIIA: The invagination extends through the root and communicates laterally with the periodontal ligament space through a pseudo-foramen. There is usually no communication with the pulp, which lies compressed within the root.

Type IIIB: The invagination extends through the root and communicates with the periodontal ligament at the apical foramen. There is usually no communication with the pulp.⁷

The clinical appearance of dens invaginatus may vary from normal form to more unusual forms such as greater labio-lingual or mesio-buccal diameter, peg shaped, barrel- shaped and conical, talons cusp or grooving of the palatal enamel coincident with the entrance of the invaginatus.⁵

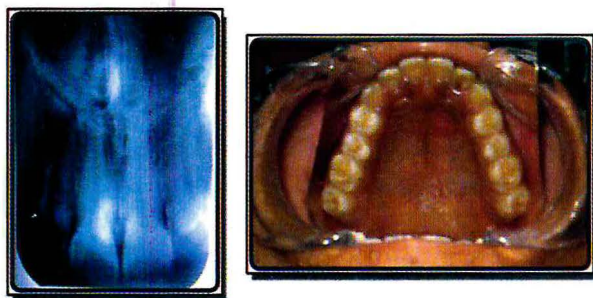
A deep foramen caecum might be the first clinical sign indicating the presence of an invaginated tooth. The symptomatology spectrum of a patient affected by DI can vary from completely asymptomatic (even if a rarefaction of the periapical bone is present) to clinically evident signs including malformation and mottling of the crown, tumefaction of the soft tissue etc. Dens invagination allows entry of irritants, such as bacteria, predisposes to the development of dental caries, usually leading to pulpal necrosis and development of a periradicular lesion.⁴

TREATMENT OPTIONS

An invaginated tooth presents technical difficulties in its clinical management because of its abnormal anatomical configuration. Depending on the degree of malformation and the presence of clinical symptoms, various treatment techniques have been reported such as prophylactic treatment, conservative restorative treatment, non surgical root canal treatment, endodontic surgery and extraction. In immature invaginated teeth with necrotic pulp, Apexification technique using calcium hydroxide and MTA to achieve apical barrier has also been reported. The successful management of dens invaginatus depends mainly on the ability to gain access to and disinfect and seal the root canal system in presence of its complex and variable presentation and unpredictable morphology⁶.

CASE

A 17 year old female patient reported to Department of Conservative dentistry and Endodontics College of Dental Sciences, Davangere with chief complaint of palatal swelling since 3 days. Patient gives history of discomfort with respect to upper front teeth due to food lodgement. Patient had habit of using stainless pins for removal of food particles.



Medical history was not contributory. Extra oral examination revealed no significant findings. Intra oral examination showed palatal swelling in relation to 12. Deep class I dental caries with clinical pulp exposure was present with 12. This tooth was neither sensitive to percussion and palpation nor responsive to Electric pulp testing. On examination exaggerated palatal cingulum was present with 22. A periapical radiograph with respect to 12 demonstrated. Type 2 dens invaginatus, incomplete root end formation and periapical radiolucency. A diagnosis of Bilateral dens invaginatus with necrotic pulp and chronic apical abscess in relation to maxillary right lateral incisor (12) was established.

TREATMENT PLAN: A pulp revascularization therapy in relation to 12 was the treatment planned.

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