

Dens in Dente - With a Large Radicular Cyst.

Santosh Kanwar,¹ Naresh Lingaraju,² Mahesh M.S,³ & Srisha Basappa.⁴

¹(Oral Medicine & Radiology, Farooqia Dental College and Hospital, Rajiv Gandhi University of Health Sciences, India)

²(Oral Medicine & Radiology, Farooqia Dental College and Hospital, Rajiv Gandhi University of Health Sciences, India)

Abstract: Dens invaginatus is a developmental malformation of teeth. It shows a deep invagination of enamel and dentine starting from the tip of the cusps and which may extend deep into the root. Commonly affected teeth are maxillary lateral incisors. The malformed teeth show morphologic variations and frequently results in early pulp necrosis. Root canal treatment may present severe problems because of complex anatomy of teeth. Here we present a case describing the anomalous development of maxillary permanent lateral incisor indicative of dens invaginatus with a large radicular cyst, in a twenty-year-old female.

Key words: Dens invaginatus, pulp vitality, radicular cyst.

I. Introduction

Dens invaginatus was first described in 1794 by 'Ploquet' in whale's tooth.^[1] Salter in 1855 was first to describe Dens invaginatus as "a tooth within a tooth"^[2] Socrates in 1856 was first to describe Dens invaginatus in human tooth.^[1] Dens invaginatus also been referred as dilated composite odontome, dens in dente, dilated gestant odontome, dilated composite odontome, tooth inclusion and dens telescope etc. It is an extremely rare developmental anomaly resulting from an invagination of enamel organ into the dental papilla, beginning at the crown and sometime extending into the root before calcification occurs with a widely varied morphology.^[3-4] Its prevalence rate is 1.7 to 10% where males are more commonly affected by a ratio of 3:1. It affects both permanent and primary dentition. Most commonly affected teeth are permanent maxillary lateral incisors, followed by maxillary central incisors, premolars, canines and less frequently in the molars.^[5-6] Occurrence of bilateral and multiple cases have been reported.^[6-7] Hallet 1953 suggested first classification. There are two types of invaginations demonstrated.

1. Coronal.

2. Radicular.

Most commonly accepted classification depending upon site by Ohlers which describes,

Type I -- invagination limited to the crown.

Type II — invagination extending to cement enamel junction.

Type III — invagination extends beyond the cemento- enamel junction.

It is commonly seen in 2nd premolar. (Figure - 1)

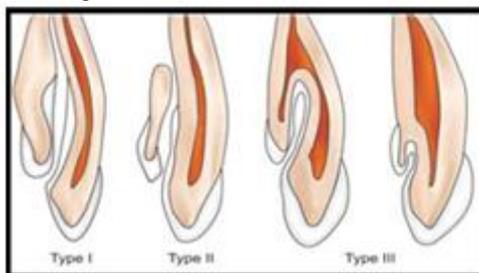


Fig. 1

II. A Case Report

A 20 year old female patient visited the department of oral medicine and radiology of Dental College and Hospital with a chief complaint of swelling in the left palatal region since 6 months. Swelling was insidious in onset and gradually increased to attain the present size. No history of pus or watery and blood discharge. No color change or paraesthesia noted over the swelling. There was history of the swelling causing discomfort during chewing and swallowing food. The medical history and extra oral examination appears normal.

Intra oral hard tissue examination revealed 22 grossly magnified cingulum rising to the level of the incisive edge of the tooth lacking the normal counter of cingulum. The labial surface of the tooth is often bulbous. The tooth was free from caries and discoloration 22.

A well defined swelling, measuring about 1x2cm, roughly oval in shape is seen on the left side of the anterior palate. The swelling extends medio laterally from the midline to the mucogingival junction of 23, 24. Anterio-posteriorly 2cm short from marginal gingival to 4 cm short of the junction of hard and soft palate. Mucosa over the swelling appeared normal with no secondary changes.

All inspector finding were confirmed on palpation swelling was soft to firm in consistency .The swelling was non tender on palpation. (Figure - 3)



Fig. 2



Fig. 3

On thermal pulp testing 12, 22 shows negative response. Aspiration of the content of the cystic lesion revealed pus with blood tint. (Figure - 4)



Fig. 4

Occlusal radiograph shows in folding of radio opacity seen in the incisal 1/3rd of the crown extending up to the cemento enamel junction. A well defined radiolucency is seen in the periapical region of 22 extending from the mesial root surface of 21 to mesial root surface of 23. The radiolucency has uniform internal architecture surrounded by sclerotic border. (Figure -5)

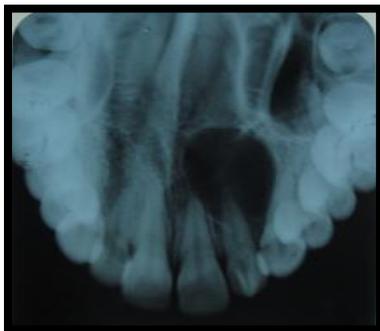


Fig. 5

Based on history clinical and radiographic finding it was diagnosed as Type 11-dens invaginatus with radicular cyst.

Following root canal treatment, surgical enucleation of the lesion was done and specimen was sent for histopathological examination. (Figure -6)



Fig. 6

Histopathological examination revealed epithelium which is stratified squamous non keratinized in nature showing arcading pattern in few area .The connective tissue capsule consists of fibers, fibroblast, blood vessels, inflammatory infiltrate and extravasated RBCs.

III. Discussion

Densinvagination is a developmental variation which is thought to arise as a result of invagination in the surface of the crown before calcification occurs.^[8]

Development of Dens invaginated tooth has been explained based on a number of hypotheses. According to Kronfeld, there is relative retardation in growth portion of the enamel organ. Due to this, part of the tooth remains stationary and the remaing grows around it causing invagination.

According to Swanson and McCarthy, it occurs due to proliferation of enamel organ at the inner epithelium apically into dental papilla during the stage of differentiation of developing tooth germ. It grows into dental papilla, as a sort of adenoma.

Rabinowitch said that, it may be formed by continued differentiation of some cell of inner enamel epithelium.

Other proposed theory is increased pressure shows that there is presence of extra vascular fluid in the soft tissue that fills the potential invagination cavity of the tooth. Sometimes due to local causes and trauma to the deciduous teeth.

The invagination allows entry of irritants into pulpal tissues by only a thin layer of enamel and dentin and presents a predisposition for the development of infection. There is no history of caries, or trauma, irritants and microorganisms from the oral cavity causing inflammation.^[9]

Some time fine canals between the invagination extend to the pulp chamber resulting in pulpal and periapical pathology even in the absence of dental caries.^{[10].}

The treatment varies from a prophylactic fissure sealing to root canal or extraction depends upon the severity of the malformation of the tooth. Previously the extraction of the teeth was the treatment of choice , so

non surgical root canal treatment should be attempted first followed by the surgical intervention, which must be the second option depending upon the extent of periapical lesion .

IV. Conclusion

Dens invagination presents with a high incidence of caries and pulp infection. So because of the complication , root canal treatment is difficult .So early diagnosis with timely treatment is necessary for the prevention of large lesion occurring in association with dens invaginatus , such as that seen in the present case.

References

- [1]. Hulsmann M. Dens invaginatus: aetiology, classification, prevalence, diagnosis and treatment considerations. *IntEndod J* 1997; 30:79-90.
- [2]. Silberman A, Cohenca N, Simon JH. Anatomical redesign for the treatment of dens invaginatus type III with open apices: a literature review and case presentation. *JAm Dent Assoc* 2006; 137(2):180-5.
- [3]. Alani A, Bishop K. Dens invaginatus. Part 1: classification, prevalence, aetiology. *IntEndod J* 2008; 41(12):1123-1136.
- [4]. Reddy YP, Karpagavinayagam K, Subbarao CV. Management of Dens invaginatus diagnosed by spiral computed tomography. *J Endod* 2008; 34:1138-1142.
- [5]. Dens invaginatus in a maxillary Canine: A rare case report. *J Endod* 2007; 33:64-68
- [6]. Er K, Kustarci A, Ozan U, Tasdemir T. Non surgical endodontic treatment of Dens invaginatus in a Mandibular premolar with large Peri-radicular lesion: A case report. *J Endod* 2007; 33:322-324.
- [7]. Steffen H, Splieth C. Conventional treatment of dens invaginatus in maxillary lateral incisor with sinus tract: one year follow-up. *J Endod* 2005; 31:130-3.
- [8]. Anil govindrao Ghom. *Oral Medicine* 2nd edition 2010 ;117-119.
- [9]. Case Report : Endodontic treatment of dens invaginatus type III with three root canals & open apical foramen, *IEJ* 2004, 37, 205-213.
- [10]. White SC, Pharoah MJ. *Dental anomalies, oral Radiology principal of interpretation* 5th edition Mosby 2004;340-42