

Management of Oehler’s Type III Dens Invaginatus

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Abstract

Dens Invaginatus is a developmental anomaly which arises as result of an invagination into surface of the tooth crown before calcification has occurred.¹The condition results in invagination of ameloblastic cells within the pulp. Kronfeld (1934) proposed this infoldings of enamel and dentin is related to focal growth retardation. Some of causes are infections (Fischer 1936, Sprawson 1937), rapid proliferation of a part of the inner enamel epithelium into dental papillae (Ruston 1937), increased localized external pressure (Euler 1939, Atkinson 1943), fusion of germ buds (Bruszt 1950), distortion and protrusion of

enamel organ during tooth development (Oehler 1957).²

Casamassimo et al and Grahnen et al 1959 found out the role of genetics and absence of signaling molecules for morphogenesis also results in this condition.³

The most commonly affected is maxillary lateral incisor, one of the reasons being external forces on lateral incisor tooth bud by developing central incisor or canine which develops 6 months priorly.⁴

Many classifications were elaborated on clinical and radiographic appearances. However, Oehlers classification is mostly widely used due to its ease of application with

only one disadvantage being that it fails to explain the true extent and complexity of invagination.

A wide variety of treatment modalities ranging from sealant placement to retrograde fillings is rendered on the severity of invagination. Success of such tooth can be only achieved by prediction the morphology and debriding it 3 dimensionally and filling it 3 dimensionally.

Case Report

A female patient aged 14 years referred to our clinic in Hyderabad. Patient gives a chief complaint of constant pain in relation to maxillary anterior tooth [figure 1].

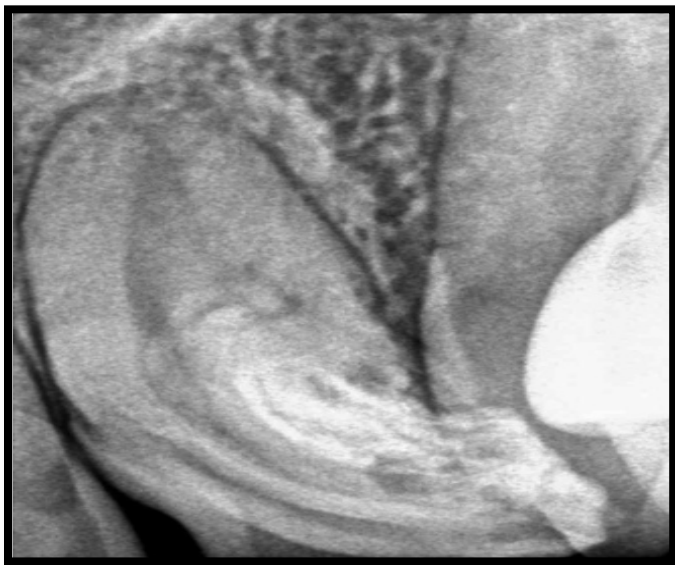


Figure 1: Preoperative View

Clinical examination reveals tender on percussion and redness in buccal mucosa associated with maxillary left lateral incisor. The radiographic examination shows complex anatomy with periapical radiolucency and most of dens in dente root dilation resembles as an open umbrella, but our tooth was different and had distinct appearance called **FLEUR-DE-LYS** which resembles like a French emblem.⁷Medical and family history was noncontributory.

On clinical and radiographic evaluation, the diagnosis was established as Dens invaginatus / dens in dente type III.

On access preparation we could see onecanal, the canal was prepared using rotary instrumentation (NeoendoS) till file no. 25.06 after establishment of working length 17mm by Propex Pixi apex locator (DENTSPLY) [Figure 2]. The canal was intermediately irrigated with 5.25% NaOCl for 1 min in the canal then we observed there was confluence associated with the canals.

The irrigation protocol was performed using 5.25% NaOCl then followed by 17% edta solution then by 40% citric acid and finally by 2% chlorhexidine solution. Each irrigant was activated using sonic activator for 1 min in each of the canal.

After the canals were cleaned and dried, we started performing obturation using bio ceramic sealer CERASEAL B [BIOMED] Guttacore and Therma fill (DENTSPLY). [Figure 3] and the orifice was sealed with bulk fill composites [SHOFU BEAUTIFUL BULK] as post endodontic filling. [Figure 4]

The patient was recalled after a month for observation.

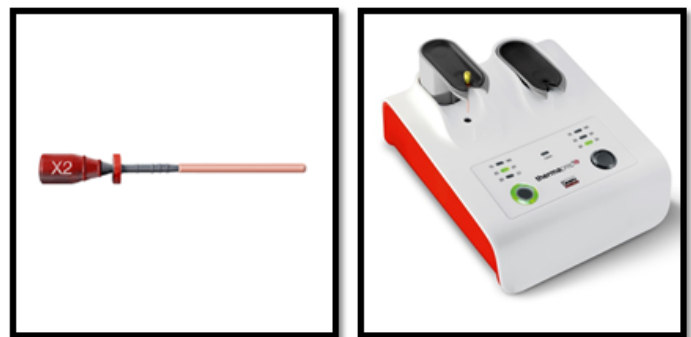


Figure 2and 3: Guttacore And Thermafill



Figure 4: Postoperative Radiographic Showing 3d Fill and Fleur De Lys Appearance

Discussion

Dens invaginatus is a rare developmental anomaly of tooth characterized by invagination of enamel organ into dental papilla that begins at the crown and often extends to the root even before the calcification of dental tissues. Dens in dente has more common occurrence in permanent maxillary lateral incisor (0.25-5.1%), but rare in molars.⁵ Dens in dente is classified by Oehlers into three types, depending on extent into crown, root and root apex.

Various treatment modalities are present in today's scenario including conservative restorative treatment, non-surgical approach and surgical approach like retrograde procedure, intentional reimplantation and extraction.⁶ Generally type 1 and 2 are treated with simple endodontic treatment as invagination doesn't reach the apex, even type 3 variants are also treated in anterior region through conventional endodontic treatment. Most often in this variety research suggests to opt retrograde procedures.

In this case report the maxillary lateral incisor showed canal confluence and patient was in between orthodontic

therapy we didn't suggest the retrograde procedures as we suspected poor prognosis in this case. Therefore, tooth was treated with advanced endodontic method like gutta-core so we could achieve perfect seal by filling the entire complex anatomy.

Thus, concluded that this type of Dens invaginatus is carefully assessed and appropriate treatment modalities as to opt to prevent from further complications.

Conclusion

Treatment of dens in dente has categorized into endodontic phase, but with advent of newer tools. Clinically, one should visualize these types of cases in microscopes which aids in massive success of endodontic therapy not only in atypical canal morphology but also in normal canal morphology.

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