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Case Report

Non-Surgical Management of a Type IIIb Dens Invaginatus in a Maxillary Lateral Incisor: A Case Report

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Abstract

Background: Dens invaginatus is a developmental anomaly that often presents significant diagnostic and therapeutic challenges, especially in Type IIIb cases. This report describes the successful non-surgical endodontic management of a maxillary lateral incisor with Type IIIb dens invaginatus.

Case Report: A 16-year-old female presented with pain and swelling associated with tooth #12. Clinical and radiographic evaluation revealed a Type IIIb dens invaginatus with a large periapical lesion. CBCT imaging confirmed the invagination extending through the root with a lateral exit. Non-surgical endodontic treatment was performed [1], including cleaning, shaping, calcium hydroxide dressing, and single cone technique obturation with bioceramic sealer.

Outcome: At 6-month follow-up, the tooth was asymptomatic with visible radiographic healing.

Conclusion: Non-surgical endodontic therapy can be an effective treatment option for Type IIIb dens invaginatus when supported by CBCT assessment and meticulous endodontic technique.

Keywords: Dens Invaginatus; Lateral Incisor; Endodontic Treatment; CBCT

Introduction

[3,5] Dens invaginatus (DI) describes an infolding of enamel and dentin into the tooth structure during development, resulting in complex internal anatomy. Type IIIb, according to Oehlers' classification [2,3], is characterized by an invagination that extends through the root and exits laterally or apically. This anatomical complexity predisposes the tooth to pulpal necrosis and periapical pathology early in life. CBCT plays a crucial role [4] in accurately determining morphology and guiding treatment planning.

Case Report

Clinical presentation

A 16-year-old female presented in our clinic with pain and swelling associated with the maxillary right lateral incisor (#12). The tooth presented no carious lesion, was tender to percussion and responsive to pulp sensibility testing which may refer us to a mixed pulp pathology. A vestibular swelling was present.

Radiographic findings

The preoperative CBCT (Figure 1,2) revealed a deep invagination [3,5,6] with a complex anatomy of the invaginated canal and a large periapical radiolucency (9mm approximately).

CBCT interpretation

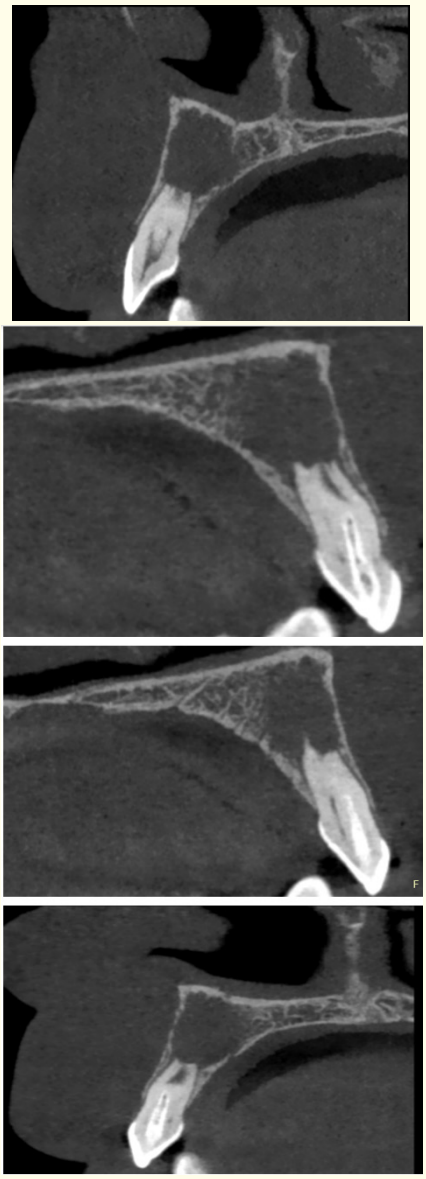

Figure 1: CBCT sagittal slices showing Type IIIb invagination and periapical lesion.

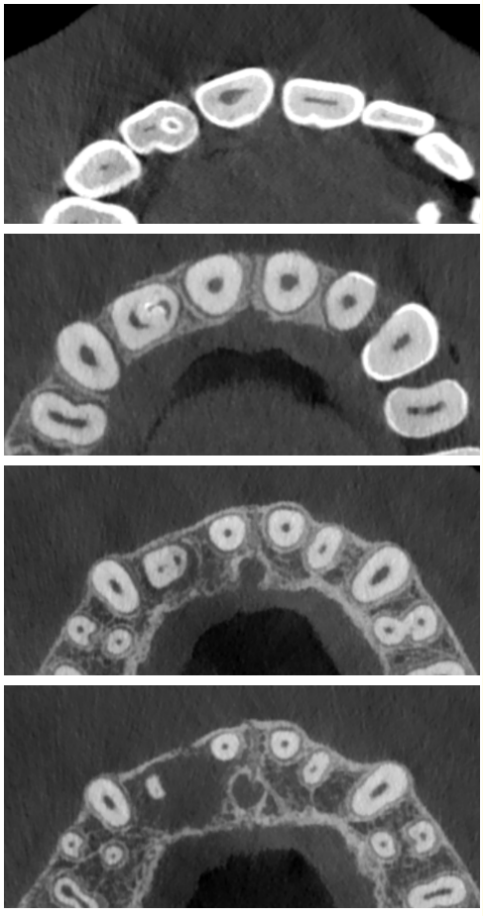

Figure 2: CBCT axial slices demonstrate invagination morphology at different levels and the axial size of the periapical lesion.

Treatment

Non-surgical endodontic treatment was performed [1] under rubber dam isolation. Access to the main canal (Figure 3) was achieved by removing the invaginated enamel–dentin complex. Mixed pulp pathology assumption was confirmed in-situ: the main canal was vital, the invaginated canal necrosed (Figure 3).

Cleaning and Shaping was performed using ProTaper Next rotary files.

Irrigation using sodium hypochlorite (NaOCl 5.25%), EDTA 17%, Cold Saline and Ultrasonic activation. At the end of the first

Figure 3: Clinical access cavity showing invagination and mixed pulp status.

Figure 4: Calcium Hydroxide dressing.

appointment, Calcium Hydroxide (CaOH2) dressing was inserted in both canals to enhance disinfection (Figure 4).

During the second appointment, abundant irrigation and ultrasonic activation using the same protocol as at the first appointment was performed. The main canal and the invaginated one were obturated using single cone technique with gutta percha points and Bio ceramic Sealer (Figure 5).

Permanent coronal seal using composite resin restoration was the final step of the treatment.

Figure 5: Final obturation radiograph.

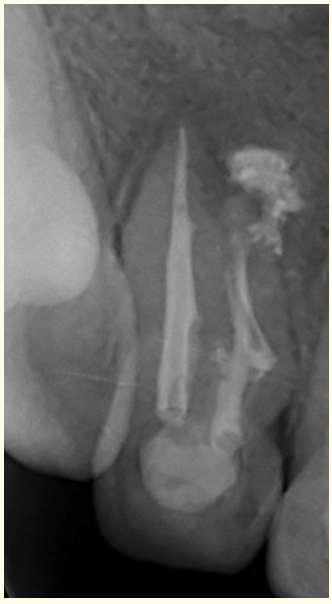

Figure 6: Six months follow up radiograph.

Outcome

At the 6-month follow-up, the patient was asymptomatic and radiographic evaluation revealed significant healing of the periapical lesion (figure 6).

Discussion

Type IIIb dens invaginatus presents [3,5,6] a significant treatment challenge due to its complex morphology. CBCT imaging is indispensable [4] for understanding the invagination path and planning treatment. In this case, conservative non-surgical endodontic therapy resulted in complete symptom resolution and radiographic healing.

Conclusion

This case demonstrates that non-surgical endodontic treatment can be successful in managing Type IIIb dens invaginatus when guided by CBCT interpretation and executed with precise cleaning, disinfection, and obturation techniques.

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