Taurodontism- A Case Report

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ABSTRACT

Taurodontism leads to constriction of the cementoenamel junction, which results in vertically elongated pulp chambers, apical displacement of the pulpal floor, and bifurcation or trifurcation of the root characterised by large pulp chambers at the expense of roots. It appears more frequently as an isolated anomaly but its association with syndromes and other abnormalities have also been reported. Permanent dentition is more commonly affected than deciduous dentition. This paper presents a case report of taurodontism in relation to mandibular permanent second molars.

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INTRODUCTION

Taurodontism is a developmental anomaly in tooth morphology characterised by the lack of constriction at the level of the cementoenamel junction, vertically elongated pulp chambers and apical displacement of the pulpal floor.The term Taurodontism is derived from the Latin – tauros, for 'bull' and the Greek term odus, for 'tooth' or 'bull tooth', first introduced by Sir Arthur Keith in 1913(1). Preliminary literatures have related this anomaly to an unidentified type of ectodermal malformation. It can also be related to amelogenesis imperfecta or even genetic abnormalities. Today, it is considered as an anatomic variance that could occur in the normal population.(2) Taurodonts have pulp chambers in which the bifurcation or trifurcation is displaced apically, so the distance from the bifurcation or trifurcation of the roots to the cementoenamel junction is greater than the occlusal cervical distance, giving it a rectangular shape.(3)

Taurodontism has been found to occur either as an isolated, singular trait or in association with syndromes and anomalies, including amelogenesis imperfecta, Down's syndrome, ectodermal disturbance, Klinefelters sydrome (4–6)). It is thought to be caused by the failure of Hertwig's epithelial sheath diaphragm in invagination at the proper horizontal level, resulting in a tooth with short roots, an elongated body, an enlarged pulp chamber, and a normal dentin(7).

CASE REPORT

The patient was a 35 years old man with severe pain on the right mandibular second molar since 2 weeks.He had severe pain at night that aggravated on drinking or eating hot and cold food. Deep occlusal caries was seen with respect to 47(Figure 1). Cold test was done and pain persisted even after removal of stimulus suggesting irreversible pulpitis.Pain was present on vertical percussion.There was no tenderness on palpation and no mobility seen.

A periapical radiograph (Figure 2) of the affected tooth showed an elongated pulp chamber and two roots with the furcation area migrated towards the apex indicating hypertaurodontism (Shifmann and Chanannel classification) (8). His medical and familial history revealed no systemic disorders. The final diagnosis was acute irreversible pulpitis with symptomatic apical periodontitis with respect to 47 and a root canal treatment was indicated. After isolating the tooth with rubber dam access (figure 3) was gained using an endo access bur and the canal was explored with DG16 under Dental Operating Microscope. The orifice was enlarged using a rotary Sx file.A straight line access was gained to the three orifices the mesiobuccal, mesiolingual and distal orifice. Coronal preflaring was done using Gates Glidden drills. The canal was scouted using a hand 10 k file and patency was achieved using the same file in all three canals. The working length (figure 4) was first determined on an electronic apex locator which was later confirmed with an RVG of the tooth 47.Initial preparation of all three canals was done till 20 k

file after which the glide path file was used to establish a glide path for the rotary files. Protaper Gold files were used and canals

Figure 1:Pre operative Clinical Picture

Figure 2:Pre operative Radiograph

were prepared in the order S1,S2,F1 And F2.Recapitulation was done after every file with a 15 k file upto the working length followed by irrigation using 3 % sodium hypochlorite and saline.Final irrigation was done using 17% ETDA.Master cone x ray(Figure 5) was taken. Obturation was done with cold lateral compaction using AH PLUS sealer and post obturation restoration (Figure 6) was done using composite restoration.

Figure 3: Access opening

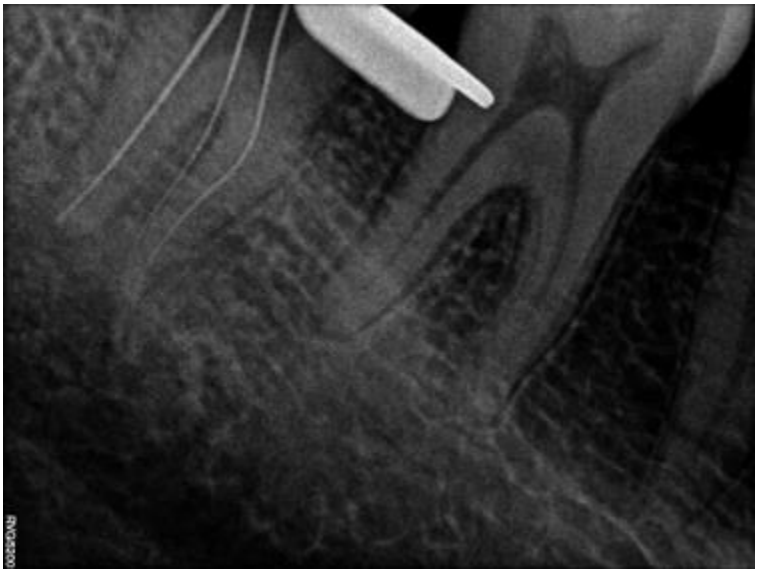

Figure 4: Working length radiograph

Figure 5: Master cone xray

Figure 6: Obturation and post obturation restoration

Discussion

Taurodontism is frequently associated with other anomalies and syndromes (9). In this case, the patient was healthy and without any known diseases. Endodontic treatment in taurodontism teeth has been described as a complex and difficult procedure.

Clinically, the taurodont crown has normal form, structure, colour and texture, so can only be diagnosed by radiographs. Taurodontism is predominantly found in the molars but has also been seen in premolars, mandibular canines and incisors (10,11). In the present case, mandibular second molar has shown taurodontism. This paper has presented a hypo taurodont which was diagnosed radiographically and confirmed by using taurodontism index proposed by Shifman and Chanannel(8). Cohen and Taintor presented 5 cases of taurodontism. Of these, 2 cases required root canal therapy which was difficult. The number of root canals varied in cases (12). Hayashi reported a case of taurodontism which had five root canals. Although all orifices were found, but only two root canals were instrumented and filled to the apex (13). Tsesis et al. reported a successful endodontic treatment of a left maxillary first molar with four root canals (14). Often taurodont form does not interfere with operative procedures; however, endodontic therapy may be more

difficult because of its morphology. The long rectangular shape of pulp chamber seems to cause difficulty in locating the canal orifices and subsequent difficulties in instrumentation and obturation.

To ensure complete removal of the necrotic pulp, 2.5% sodium hypochlorite is recommended initially to digest pulp tissue, since the pulp of a taurodont is voluminous Increased haemorrhage during access opening should not be confused with a perforation; yet, due to the apically placed pulpal floor, adequate care must be taken to prevent a perforation. A final ultrasonic irrigation may be advantageous to ensure its complete debridement (15).

Conclusion

The diagnosis of a Taurodont tooth is of utmost importance as we can render preventative care to these teeth since endodontic treatment is more difficult. Although taurodontism is a dental rarity, sometimes its discovery may help to disclose systemic conditions as well.

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