Multiple Bilateral Taurodontism: Case Report

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Abstract

Taurodontism is a tooth anomaly characterized by an enlarged pulp chamber and an apical displacement of the pulpal floor. It is more prevalent in molar teeth, with few cases reported in premolars. The importance of radiographic interpretation for the diagnosis of this alteration cannot be overlooked. This article describes two cases of multiple bilateral taurodontism involving all first and second permanent molars in a 16 year old male who presented with a chief complaint of pain from a carious lesion, and a 22 year old female who presented for a routine dental check. Clinical implications are also discussed.

Key Words: Taurodontism, Pulp chamber, Radiology, Bull's teeth

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Introduction

Taurodontism was defined by Witkop as teeth with large pulp chambers in which the bifurcation or trifurcation are displaced apically, so that the chamber has greater apico-occlusal height than in normal teeth and lacks the constriction at the level of cemento-enamel junction (CEJ)[1].

The prevalence of taurodontism was reported from as low as 2.65% in a Croatian population[2] to as high as 48% in a Senegalese population[3].

The severity of taurodontism is classified according to the degree of apical displacement of the pulpal floor. Shifman and Chanannel[4] proposed an index to calculate the degree of taurodontism as shown radiographically. According to this index, taurodontism is present if the distance from the lowest point at the occlusal end of the pulp chamber to the highest point at the apical end of the chamber, divided by the distance from the occlusal end of the pulp chamber to the apex of the longest root and multiplied by 100 is 20 or above (hypotaurodontism TI 20-29.9, mesotaurodontism TI 30-39.9 and hypertaurodontism TI 40-75).

Case Report 1

A16-year boy reported at a specialist dental clinic in Lagos, Nigeria with complaint of spontaneous pain aggravated by eating in the lower right posterior region. The patient appeared healthy and of normal physical development for his age. Detailed intra-oral examination showed a late permanent dentition with Angles class 1 malocclusion with skeletal pattern I complicated by lower anterior crowding and carious 47.

An intraoral periapical radiograph of the symptomatic tooth 47 showed that it had a carious lesion with enlarged pulp chamber and short roots suggestive of taurodontism. A panoramic radiograph was taken to confirm the diagnosis and for the radiographic evaluation of the other teeth. This revealed that the floor of the pulp chamber of all the first and second permanent molars was displaced apically (Figure 1). 17, 26, and 47 were hypertaurodontic, while 16, 27, 36, 37, and 46 were classified as mesotaurodontic based on methods given by Shifman and Chanannel[4] (Figure 2).



Figure 1: Panoramic Radiograph for Case Report 1

No other remarkable dental findings were observed clinically or radiographically. Past medical history was non-contributory. General physical examination did not reveal any significant findings. The symptomatic 47 tested positive for vitality using

thermal tests. A diagnosis of reversible pulpitis of 47 was made. Subsequently, local anaesthesia (2% Lignocaine hydrochloride with 1:80,000 Adrenaline) was administered and the tooth was isolated with rubber dam. Tooth was restored temporarily with interim restorative material sublined with calcium hydroxide (Dycal, Dentsply Ltd). He was given a 6-week follow up appointment for resin filling. Resin filling was done 8 months later when he came for his follow up and the tooth was asymptomatic. He was referred to the orthodontist; however no orthodontic treatment was done.

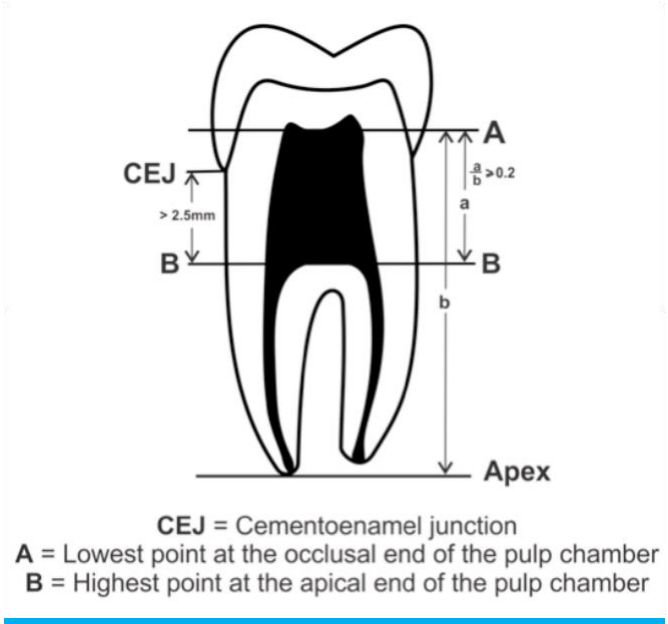


Figure 2. Measurement of Crown and Root Lengths on a Mandibular Permanent Molar

Case Report 2

A 22-year old lady presented at a specialist dental clinic in Lagos, Nigeria for a routine dental check. The patient appeared healthy and of normal physical development for her age. Detailed intra-oral examination showed a late permanent dentition with Angles class 1 malocclusion with skeletal pattern I complicated by lower anterior crowding.

A panoramic radiograph was taken as part of her routine investigation. This revealed that the floor of the pulp chamber of all the first and second permanent molars was displaced apically(Figure 3). 16, 17, and 27 were mesotaurodontic, while 26, 36, 37, 46 and 47 were classified as hypotaurodontic based on methods given by Shifman and Chanannel[4] (Figure 2). No other remarkable dental findings were observed clinically or radiographically. Past medical history was non-contributory. General physical examination did not reveal any significant findings. She was referred to the orthodontist; however no orthodontic treatment was done.



Figure 3. Panoramic Radiograph for Case Report 2

Discussion

Taurodontism has been reported either as an isolated trait or as a feature of multiple system malformation syndromes, such as ectodermal dysplasia, Klinefelter syndrome Down syndrome, tricho-dento-osseous syndrome and X-linked hypophosphatemic rickets[5]. The trait can be seen in deciduous as well as permanent teeth or in both dentitions. The most frequently affected teeth are the molars though premolars are also known to be affected[6].

Clinical Implications

Taurodontism should not be neglected by Orthodontists when it comes to making treatment plans. The shorter and thinner roots of taurodont teeth are considerably more susceptible to resorption when orthodontic forces are applied for their movement[7].

Because less surface area of the tooth is embedded in the alveolus, a taurodont tooth may not have as much stability as a cynodont when used as an abutment for either prosthetic or orthodontic purposes[8].

In Endodontics, it was suggested that morphology of a taurodont could hamper the location of the orifices, thus creating difficulty in instrumentation and filling[8].

The extraction of a taurodont tooth is usually complicated because of a dilated apical third[9]. In contrast, it has also been hypothesized that because of its large body, little surface area of a taurodont tooth is embedded in the alveolus. This feature would make extraction less difficult as long as the roots are not widely divergent[8].

From a periodontal standpoint, taurodont teeth may, in specific cases, offer favourable prognosis.

Where periodontal pocketing or gingival recession occurs, the chances of furcation involvement are considerably less than those in normal teeth because taurodont teeth have to demonstrate significant periodontal destruction before furcation involvement occurs[10].

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Conclusion

This report presented two occurrences of multiple bilateral taurodontic molar teeth. The findings in these cases strongly suggest the importance of radiographs in the diagnosis of alterations like taurodontism, which can have multiple appearance and bilateral presence.

Contributors

Yemitan TA was responsible for concept and design; acquisition, analysis and interpretation of data; drafting the article; final approval of the version to be published. Adediran VE was responsible for acquisition of data; revising the article critically for important intellectual content; final approval of the version to be published.

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Conflict of Interests

Nil

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