PREVALENCE OF TAURODONTISM IN MANDIBULAR SECOND MOLARS

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ABSTRACT

The study was undertaken to assess the prevalence of taurodontism and gender differences in mandibular permanent second molars of patients who visited Punjab Dental Hospital. Taurodontism is the morpho-anatomical change in the shape of a tooth, and it is a rare dental anomaly which involves enlargement of the body of the tooth and shortening of the roots. Endodontic treatment of a taurodont tooth is challenging and requires special handling because of the proximity and apical displacement of the roots. It has been reported in permanent and deciduous teeth, in premolars and molars and are associated with certain syndromes, particularly in those involving an ectodermal defect. It has clinical implications which are relevant to both the general dental practitioner and the orthodontist. The prevalence of taurodontism was 12% in this study.

Key Words: Taurodontism, mandibular second permanent molars.

INTRODUCTION

Taurodontism is a developmental disturbance of a tooth that lacks constriction at the level of the cemento-enamel junction (CEJ) and is characterized by vertically elongated pulp chambers, apical displacement of the pulpal floor and bifurcation or trifurcations of the roots.1,2,3

The term taurodontism is derived from the Greek words ‘tauros’, meaning ‘bull’, and ‘dontia’, meaning ‘teeth’.4,5,6 Therefore, taurodontism literally means ‘bull-like teeth’. It is used to describe molar teeth in which the pulp chamber is vertically enlarged at the expense of the roots.6,7,8 The normal constriction of a tooth at the level of the amelo-cemental junction (CEJ) is frequently reduced or absent.9,10 This can have implications for the general dental practitioner when treatment planning, particularly in respect to endodontic and orthodontic treatment. Taurodontism was first described in 1913 by Sir Arthur Keith based on studies on multi-rooted teeth of Neanderthal man.11,12

However, an increasing number of workers have reported taurodontism in permanent dentitions, deciduous dentitions or both.13,14

In 1928, Shaw further classified teeth as hypotaurodont, mesotaurodont and hypertaurodont, in terms of increasing degree of severity. Hypotaurodontism refers to teeth with slightly enlarged pulp chambers, mesotaurodontism applies to teeth with more enlarged pulp chambers and hypertaurodontism describes teeth with much enlarged pulp chambers.15,16 Diagnosis of taurodontism has been based on features that are characteristically best visualized on the radiograph.17,18

Taurodontism is a dental anomaly that is diagnosed most often in molars and occasionally in premolars. Taurodontism has been reported in association with certain syndromes and some genetic defects like hypodontia, Mohr syndrome, Down syndrome, Van der Woude’s syndrome and cleft lip/palate, but its true significance is still obscure.18,19 The reported prevalence of taurodont molars and premolars ranges from 0.25–11.3% (Table 1) which means that an endodontist seeing 100 patients a week could expect an average of 5 patients a week to show features of taurodontism. However, the criteria for the diagnosis of taurodontism differs in various studies.20
Prevalence of taurodontism in mandibular second molars

METHODOLOGY

This study was carried out on 500 adult patients (1000 mandibular second permanent molars) of both genders aged 15-40 years, recruited from Operative Department, Punjab Dental Hospital Lahore. Both right and left mandibular second molars were carefully examined on OPG and periapical radiograph for the presence of taurodontism, the taurodontism was categorized into hypotaurodontism (normal pulp chamber), mesotaurodontism (moderately enlarged pulp chamber) and hypertaurodontism (severely enlarged pulp chamber). Mentally retarded patients were not included in the study.

RESULTS

The prevalence of taurodontism was 12% for overall (Table 1) 20% for hypotaurodontism, 65% for mesotaurodontism and 15% for hypertaurodontism. (Table 2) In male patients the prevalence was 40% and in female patients was 60% regardless of the type of taurodontism. (Table 3)

DISCUSSION

Taurodontism can be defined as a change in tooth shape caused by the failure of the Hertwig’s epithelial sheath diaphragm to invaginate at the proper horizontal level. An enlarged pulp chamber, apical displacement of the pulpal floor, and no constriction at the level of the cementoenamel junction are the characteristic features. Permanent molars are most commonly affected. Endodontic treatment of a taurodont tooth is challenging and requires special handling because of the proximity and apical displacement of the roots. The etiology of taurodontism is unclear. The possible causes of taurodontism have been enumerated by Mangion as follows: 1) A specialized or retrograde character 2) A primitive pattern 3) A Mendelian recessive trait, 4) An atavistic feature and 5) A mutation resulting from odontoblastic deficiency during dentinogenesis of the roots. From an endodontist’s view, taurodontism presents a challenge during negotiation, instrumentation and obturation in root canal therapy. Due to which negotiation of these orifices was very difficult. During instrumentation, as the canals were very short, they were instrumented with only the apical third of the file. Therefore, instrumentation was time-consuming. Many studies have been conducted evaluating the prevalence of taurodontism.

The prevalence of this study was almost equal to the study done in Iran show as 7.5% prevalence rate

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<th>TABLE 1: PREVALENCE OF TAURODONTISM</th>
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<th>TABLE 2: PREVALENCE OF TAURODONTISM ACCORDING TO CLASSIFICATION</th>
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<td>Frequency</td>
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<tr>
<td>Hypotaurodont</td>
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in Yazd which is not clearly defined which teeth were included in the study.¹

The differences between the results of the present study and previous data might have arisen from racial or genetic variations or sample selection and study methods.

In the present study a higher prevalence of taurodontism was found in females, similar to a study in China which might be attributed to an overall higher number of females in this study.

Mandibular second molars were the most affected as reported in studies of Americans of European heritage and African Americans

CONCLUSION

The prevalence of taurodontism was 12% in this study. Regardless of the prevalence, it is very important for an endodontist to be familiar with taurodontism not only due to clinical complications but also due to probable related syndrome and its management.

REFERENCES