

Taurodontism

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Abstract: *Taurodontism is a morpho-anatomical change in the shape of the tooth in which the body of the tooth is enlarged and the roots are reduced in size. Taurodontism is recognized as a clinical entity for almost a century. It has been reported in permanent and deciduous teeth, in premolars and molars and 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*

Keywords: Taurodontism, taurodont, Hertwig's epithelial root sheath (HERS), bull teeth, enlarged pulp chamber

1. Introduction

Taurodontism is the morpho-anatomical change in the shape of the tooth which usually occurs in the multirooted teeth. The term was first described by Gorjanovic-Kramberger in 1908. The term was derived from the Greek word tauros - bull and odontos - bull¹. Taurodontism can be defined as a change in tooth shape caused by the failure of 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 cemento-enamel junction are the characteristic features. Although permanent molar teeth are most commonly affected, this change can also be seen in both the permanent and deciduous dentition, unilaterally or bilaterally, and in any combination of teeth or quadrants. Whilst it appears most frequently as an isolated anomaly, its association with several syndromes and abnormalities has also been reported. It seems taurodontism is a great deal more prevalent than it was previously thought. Seow and Lai found that 38.4% of 66 patients with hypodontia had at least one mandibular first permanent molar that showed taurodontism compared with only 7.5% of a control group without hypodontia (8). Etiology and Pathogenesis Theories regarding the etiology of taurodontism have been many. It has been suggested that the anomaly represents a primitive pattern, stimulation, a specialized or retrograde character, an atavistic feature, an X-linked trait, familial or an autosomal dominant trait.

2. Etiology

There are many theories regarding the etiology of taurodontism. It has been suggested that the anomaly represents a primitive pattern, a specialized or retrograde character, an X-linked trait.

It appears most frequently as an isolated anomaly but also associated with several developmental syndromes and anomalies including

Amelogenesis imperfecta,
Down's syndrome,
Ectodermal dysplasia,
Klinefelter syndrome,
Mohr syndrome,
Wolf – hirschhorn syndrome,
Lowe syndrome,
Rapp hodgkins syndrome,
Tricho – onycho-dental,
Cranioectodermal,
Oculo-dento-digital dysplasia,
Hypophosphatasia
Hyperphosphatasia
Sex chromosomal aberrations^{2,3}.

3. Pathogenesis

Theories concerning the pathogenesis of the taurodontic root formation are also varied: an unusual developmental pattern, delay in the calcification of the pulpal chamber, an odontoblastic deficiency, an alteration in Hertwig's epithelial root sheath. It is most likely the result of disrupted developmental homeostasis⁴.

Classification:

Shaw (1928) – hypotaurodontism, mesotaurodontism, hypertaurodontism

Shifman and channel included an index to calculate the degree of taurodontism which measures the vertical height of the pulp chamber, distance between the lowest point of roof of the pulp chamber to the apex of the longest root, and the distance between the baseline connecting the two cemento-enamel junctions⁵.

Clinical features:

This condition is characterized by the enlargement of the body and the pulp chamber of the multirooted tooth with the apical displacement of the pulpal floor and bifurcation of the roots⁶. -affected teeth tend to be rectangular & exhibit pulp chambers with increased apico-occlusal height-it may be unilateral or

bilateral and affects permanent teeth more frequently than deciduous teeth. There is no sex predilection.

4. Radiographic Features

Identification of the condition can only be made by radiographic examination as the external morphology of the teeth is within normal configurations. The radiographic examination is the only way to visualize a rectangular configuration of the pulp chamber. Diagnosis of taurodontism has been based on subjective radiographic evaluation. Appearance of the taurodont tooth is very characteristic and the unusual nature of this condition is best visualized on the radiograph. Involved teeth assume a rectangular shape rather than tapering towards the roots. The pulp chamber is extremely large with a greater apico-occlusal height than normal and lacks the usual constriction at the cervical region of the teeth with exceedingly short roots. The bifurcation or trifurcation may be only a few millimetres (mm) above the apices of the roots^{7,8}

5. Treatment

Patients with taurodontism require no specific therapy if endodontic therapy is required then the shape of the pulp chamber increases the difficulty of locating, instrumenting and obturating the pulp canals.

6. Summary and Conclusion

Taurodontism is a morpho-anatomical change in the shape of the tooth in which the body of the tooth is enlarged and the roots are reduced in size. Taurodontism is recognized as a clinical entity for almost a century. Taurodontism has been found in the dentition of modern races⁹. It is characterized by enlargement of the pulp chamber, which may approximate of the root apex, with the body of the tooth enlarged at the expense of the roots and apically displaced furcation areas¹⁰

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