

## Taurodontism: A case Report

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### Abstract :

*Taurodontism is considered a rare dental anomaly in modern men. It is a morpho-anatomical variation, which is characterized by enlarged body and pulp chamber, as well as apical displacement of the pulpal floor. It mainly affects permanent dentition and the involved teeth are posteriors, mostly molars. One or several teeth in the same quadrant are affected. Clinically, taurodonts appear as normal teeth and are detected by routine radiographic examination during dental treatment. Although taurodontism is a dental rarity, this unusual radicular form merits circumspect considerations in planning and treatment. Endodontic treatment of a taurodont tooth is challenging because it requires special care in identifying and handling the number of root canals.*

**Key words:** Taurodontism, Anomaly, Mandibular molar

### Introduction

Taurodontism has been recognized as a clinical entity for almost a century. It is a dental anomaly characterised by enlargement of the pulp chamber, which may approximate that of the root apex. The body of the tooth enlarges at the expense of the roots and its apically displaced furcation areas[1]. 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 of this condition. The term taurodontism comes from the Latin term tauros, which means 'bull' and the Greek term odus, which means 'tooth' or 'bull tooth' [2]. Keith (1913), Terezhalmly et al. (2001) discovered this condition in a 70,000 year old pre-neanderthal fossil, discovered in Kaprina, Croatia . It was first described by Gorjanovic'-Kramberger in 1908[3]; however, the term taurodontism was first introduced by Sir Arthur Keith (Keith 1913) to describe molar teeth resembling those of ungulates, particularly bulls. Keith defined taurodontism as "a tendency of the body of the

tooth to enlarge at the expense, of the roots"[3]. Keith termed the "opposite condition", where the body of the tooth is above that of the alveolar border as "cynodontism" or doglike teeth.

Shaw in 1928, classified subtypes of the condition as "hypotaurodontism," "mesotaurodontism," and "hypertaurodontism" to more accurately define the degree to which this condition is manifest(fig. 1) [4]. Witkop defined taurodontism as follows: "Taurodont teeth have pulp chambers in which the bifurcation or bifurcation is displaced apically so that the chamber has a greater apico-occlusal height than in normal teeth and lacks a constriction at the level of the cemento-enamel junction[5].

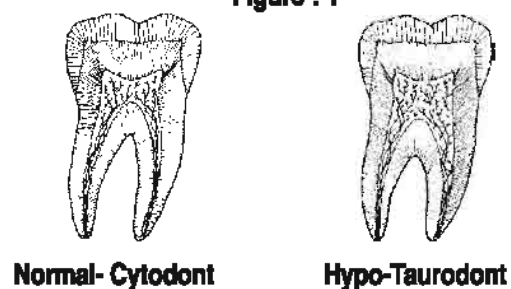
The incidence of taurodontism has been reported to be lower than 1% in modern man, 3% in primitives, Eskimos & American Indians. This anomaly can appear either as an isolated trait or may be associated with certain disease such as hypophosphatasia or alteration of the sex chromosomes such as Klinefelter's syndrome, Trisomy 21, Down's syndrome, X Chromosomes Aneuploid syndrome with ectodermal defects[6,7].

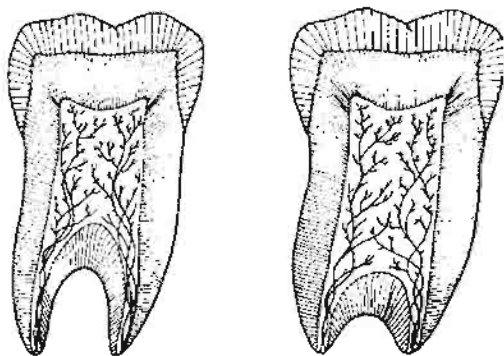
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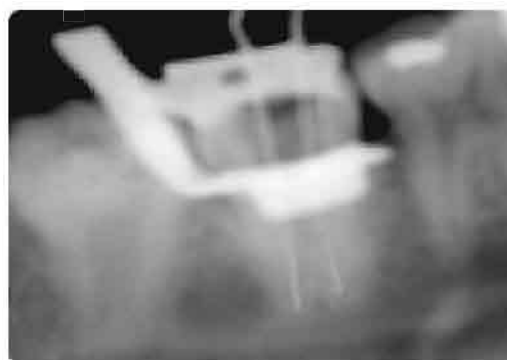
Figure : 1





Meso-Taurodont

Hyper-Taurodont



Working length determination



Obturation radiograph

### Case Report :

A 24 year old male patient presented with severe pain in right mandibular molar. On examination a large carious lesion was seen # 47, which was tender on percussion. Radiograph revealed carious involvement of pulp in taurodontic teeth # 47. The periapical limit was within normal limits. A provisional diagnosis of irreversible pulpitis with acute apical periodontitis was made and root canal therapy was planned.

An enlarged pulp chamber, apical displacement of the pulpal floor, and no constriction at the level of the cemento enamel junction were the characteristic features of this condition

### Management and Outcome of Treatment :

Access cavity preparation was initiated after administration of local anaesthetic followed by biomechanical preparation using circumferential filing technique with use of 0.5% sodium hypochlorite as irrigant. Obturation was carried out after a week using warm vertical condensation. Six month follow up radiograph revealed the tooth to be asymptomatic and functional.



Figure 2: Pre-Operative IOPA

### Discussion :

A taurodont tooth shows wide variations in the size of the pulp chamber, varying degrees of obliteration, variations in the number of canal configuration and apically positioned canal orifices. Therefore, in such cases, root canal treatment becomes a challenge [8,9]. Roots often bifurcate or trifurcate at a low level. They are thought to result from failure of the Hertwig's epithelial root sheath to invaginate at the proper time [10]. The most frequently affected teeth are the molars [10]. The distance between the baseline connecting the two cement enamel junction and the highest point in the floor of the pulp chamber are used in determining taurodont teeth. Taurodontism is diagnosed in molars when this distance exceeds 2.5 mm [11].

Taurodontism is associated with several developmental syndromes and anomalies including amelogenesis imperfecta, Down's syndrome, ectodermal disturbance, Klinefelter syndrome, tricho-dento-osseous syndrome, Mohr syndrome, Wolf-Hirschhorn syndrome and Lowe syndrome [11]. Taurodontism presents a challenge to the endodontist during negotiation, instrumentation and obturation in root canal therapy. In the case presented above the mesial and distal canal orifices were very narrow and close to each other, due to which, negotiation of these orifices was very difficult. During instrumentation, as the canals were very short, they could be instrumented with

only the apical third of the file. The obturation procedure employed in this case was different from the conventional one. A combination of lateral condensation technique and warm vertical condensation technique was performed to achieve results. Because of the complexity of the root canal anatomy and a very low lying bifurcation, complete filling of the root canal system in taurodont teeth is challenging. A modified filling technique, which consists of combined lateral compaction in the apical region with vertical compaction of the elongated pulp chamber, is recommended [8].

### Recommendations :

Taurodontism is one of the rare dental anomalies in modern man which needs special attention while performing endodontic therapy specially because of elongated pulp chamber, apically positioned bifurcation trifurcation and the number of canals and canal configurations present.

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