

## MANAGEMENT OF TEETH WITH TAURODONTISM

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### ABSTRACT:

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.<sup>1</sup>An enlarged pulp chamber, apical displacement of the pulpal floor, and no constriction at the level of cemento-enamel junction are the characteristic features. Endodontic treatment of a taurodont tooth is challenging because of the proximity and apical displacement of the roots. This paper presents a successful endodontic treatment of hypertaurodontic mandibular right second molar.

**Key Words:** Taurodontism, Mandibular second molar, Hypertaurodont.

### INTRODUCTION

The term taurodontism comes from the Latin term tauros, which means 'bull' and the Greek term odus, which means 'tooth' or 'bull tooth' (Keith 1913, Terezhalmay et al. 2001). It was first described by Gorjanovic-Kramberger (1908); however, the term taurodontism was first introduced by Sir Arthur Keith (Keith 1913) to describe molar teeth resembling those of particularly bulls caused by the failure of Hertwig's epithelial sheath diaphragm to invaginate at the proper horizontal level.<sup>[1-2]</sup> 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.<sup>[2]</sup>

### CASE DETAIL

A 17 years female patient was referred to the Department of Conservative and Endodontics with chief complaint of pain in lower right back region of jaw since one week. Pain was sharp, intermittent and no associated symptoms seen. Her medical history was not contributory. On intra oral clinical examination deep occlusal caries seen with 47. On detailed clinical examination 47 was tender on percussion and vestibular tenderness was absent. Vitality tests ((both heat and cold) revealed positive response. On detailed Radiographic examination caries was involving the pulp and Periodontal widening seen with 47. The tooth was presented with an altered anatomy i.e. an

elongated pulp chamber was seen which bifurcated in the apical third of the tooth into two roots with lower second molars. Based on the subjective and objective findings, a diagnosis of acute irreversible pulpitis with symptomatic apical periodontitis was made.<sup>[3]</sup>



Access was gained to the pulp chamber after local anesthesia was administered and the tooth was isolated with rubber dam. In this case, a large pulp chamber was encountered, which bifurcated into two canals at the apical one-third of the root. Pulp was extirpated using of 2.5% sodium hypochlorite and hand files. Working length determined radiographically, initial glide path achieved with hand files ISO size 15 no k file, followed by Cleaning and shaping of canals till F2 Protaper rotary file. Because of complexity of root canal, Obturating technique consists of lateral compaction in the apical region with AH Plus sealer followed by sealing of orifices with GIC then composite resin restoration was given.



## DISCUSSION

Taurodontism is caused by the failure of Hertwig's epithelial sheath diaphragm to invaginate at the proper horizontal level. Interference in the epitheliomesenchymatose induction has also been proposed as a possible aetiology.<sup>[1,2]</sup> Anatomic and radiographic characteristics of tooth are different in taurodontism, the pulp chamber is extremely large and elongated with much greater apicoocclusal height than normal and, thus, extends apically below the CEJ. The CEJ constriction is less marked than that of the normal tooth, giving the taurodont a rectangular shape. Also, the furcation is displaced apically, resulting in shorter roots while enlarging the body of the tooth.<sup>[5]</sup>

The conditions which mimic taurodontism are the early stages of dentinogenesis imperfecta, in which the tooth appearance may resemble the large pulp chambers found in taurodontism. However, an identification of wide apical foramina and incompletely formed roots helps in the differential diagnosis.<sup>3</sup> In some metabolic conditions including pseudo-hypoparathyroidism, hypophosphatasia, and hypophosphatemic vitamin D-resistant and dependent rickets, the pulp chamber may be enlarged but the teeth are of relatively normal form.<sup>[1,4]</sup>

In many cases, precise biometric methods are essential in diagnosis of taurodontism using orthopantomograms by measuring the distance between the baseline (connecting the mesial and distal points of

the CEJ) and the highest point of the floor of the pulp chamber. They concluded that this technique is reliable in epidemiologic investigations for assessing taurodontism in a developing dentition.<sup>[6]</sup>

The first quantitative study of taurodontism was done by Shaw (1928), based on external morphological criteria where relative amount of apical displacement of floor of the pulp chamber.

He classified taurodont as

- (a) Cynodont: normal tooth
- (b) Hypotaurodont: moderate enlargement of the pulp chamber at the expense of the roots
- (c) Mesotaurodont: pulp is quite large and the roots short but still separate

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(d) Hypertaurodont: prismatic or cylindrical forms where the pulp chamber nearly reaches the apex and then breaks up into 2 or 4 channels.

## CONCLUSION

Taurodont teeth show wide complexity and variations in the size and shape of pulp chambers, treating taurodont teeth is challenging for endodontics.

For performing successful root canal treatment of taurodont tooth, careful exploration of all orifices with magnifications such as dental loupes, surgical microscope followed by ultrasonic irrigation and a modified obturating technique are recommended.