Taurodontism of First Deciduous Molars: Report of A Case and Literature Review

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Abstract
Taurodontism is a developmental disturbance of teeth which has a rare occurrence in deciduous dentition and very few cases have been reported in literature. This paper describes a case of bilateral taurodontic tooth of deciduous first molar of a 7 year old female patient and also discusses the various treatment plans that can be carried out in case of such teeth.

Keywords: Taurodontism, deciduous first molar


1. Introduction
Taurodontism is a developmental disturbance of teeth that lacks the constriction at the level of the cementoenamel junction and is characterized by elongated pulp chambers and apical displacement of bifurcation or trifurcation of the roots, giving it a rectangular shape (Brkic’ & Filipovic’ 1991, Hargreaves & Goodis 2002, Neville et al. 2002, Rao & Arathi 2006).

The term taurodontism originates from the Latin word “tauros” which means bull and Greek word “odus” which means tooth. Taurodontism was first described by Gorjanovic’-Kramberger in 1908; however, the term taurodontism was coined by Arthur Keith in 1913 to describe molar teeth resembling those of bulls [1].

Shaw in 1928 classified this condition as hypotaurodont, mesotaurodont and hypertaurodont based on relative displacement of the floor of pulp chamber.

![Figure 1. Shaw’s Classification of Taurodontism](image)

In 1977 Feichfinger and Rossiwall stated that the distance from bifurcation of the root to the CEJ should be greater than occlusoservical distance for a taurodontic tooth. Shifman and Chanannel in 1978 proposed the following criteria:- Taurodontism is present, if the distance (a) from the lowest point (A) at the occlusal end of the pulp chamber to the highest point at the apical end of the chamber (B), divided by the distance (b) from the occlusal end of the pulp chamber to the apex (C) is 0.2 mm or greater, that is, a/b = 0.2 mm and if the distance from the highest point of the pulp chamber floor to CEJ is more than 2.5 mm. Its occurrence in permanent teeth is common but is quite rare in deciduous dentition. This paper describes a case of taurodontic tooth in deciduous dentition.

2. Case Report
A 7 year old female patient reported to Department of Pediatric and Preventive Dentistry, Bharti Vidyapeeth Dental College and Hospital, Pune, with a chief complaint of pain in the lower left posterior region. The first deciduous molar on left side was found to be carious. IOPA of teeth revealed unusual long pulp chamber which had no constriction at the cemento-enamel junction. No distinct roots were found but large canal openings, ending at the apex were observed. This led us to the confirmation of diagnosis of taurodontism of deciduous mandibular first molar on left side. Further evaluation revealed that even the right deciduous mandibular first molar was also taurodontic.

The deciduous first molar on left side was hypertaurodont whereas the right deciduous first molar was mesotaurodont. The second deciduous molars in the lower arch and both the first and second molars in the upper arch were of normal shape and configuration.

Rubber dam application was done and complete excavation of caries was done. After confirmation of non pulpal exposure restoration of the affected tooth was carried out. The right deciduous first molar was found to be non cariogenic.
3. Discussion

Taurodontism is a rare dental anomaly of deciduous dentition in which the tooth resembles a bull-like heavily bodied tooth in which crown tends to enlarge at the expense of root due to which the pulp chamber has a greater apico-occlusal height. This causes apical displacement of bifurcation/trifurcation of the roots. Also the crown of these teeth lacks cervical constriction giving it a heavy rectangular shape to the taurodontic tooth.

The incidence of taurodontism has been reported as 2.5-5.6% in adult population. It is reported to be lower than 1% in modern man and 3% in primitive man, Eskimos and American Indians. Taurodontism can occur as an isolated case or as a component of specific syndromes like Down’s syndrome, Klinefelter’s syndrome, Apert’s syndrome, Mohr’s Syndrome. In the present case, the patient had no systemic diseases or syndromes.

Theories concerning the pathogenesis of taurodontic tooth formation include, an unusual developmental pattern, a delay in the calcification of the pulp chamber floor, an odontoblastic deficiency, an alteration in Hertwig’s epithelial root sheath, with an apparent failure of the epithelial diaphragm to invaginate at the normal horizontal level and “a delayed or incomplete union of the horizontal flaps of the epithelial diaphragm” [3,4,5].

Most reports reveal that permanent teeth are more frequently affected than deciduous teeth. Also studies carried out by Keene in 1966, Shiffman in 1978, Park in 2006 stated that mandibular molars are found to be affected more often than maxillary molars. In the present case, the mandibular first deciduous molar of both sides were involved.

A study carried out by Llamas & Jimenez–Planas stated that premolars were commonly affected teeth, but since the premolars were still in the developing stage they could not be evaluated.

As a taurodont shows wide variation in the size and shape of the pulp chamber with varying degrees of obliteration and canal configuration, root canal therapy becomes a challenge. As taurodont shows wide variation in the size and shape of the pulp chamber with varying degrees of obliteration and canal configuration, more care should be taken during root canal therapy. Increased hemorrhage during access opening may be mistaken for perforation. Since the roots are short and pulpal floor is placed apically, care should be taken to prevent perforation [6].

The pulp contents of these teeth are voluminous and hence to ensure complete removal copious irrigation with 2.5% sodium hypochlorite should be done to soften the pulp [7].

Furthermore, conventional obturating materials like Zinc oxide eugenol in bulk may take longer time to resorb which may delay the natural exfoliation of the tooth. So in such cases combination of calcium hydroxide along with iodoform as an obturating material can act as a wonderful material due to its added advantage of faster rate of resorption [7].

More emphasis should be given on its occurrence in both dentitions of the same patient, it occurrence in families, and its association with other abnormalities. Importance should be given for careful diagnosis and treatment modalities.

References