

CASE REPORT



## Taming the bull by its horns: A case report on bilateral primary tooth taurodontism

Sucheta Prabhu Matondkar<sup>1</sup>, Chandrashekar Yavagal<sup>1</sup>, Rajesh Anegundi<sup>2</sup>

<sup>1</sup>Department of Pedodontics and Preventive Dentistry, Maratha Mandal's Nathajirao G. Halgekar Institute of Dental Sciences and Research Centre, Belagavi, Karnataka, India, <sup>2</sup>Department of Pedodontics And Preventive Dentistry, SDM Dental College, Dharwad, Karnataka

### Keywords:

Child, primary tooth, taurodont

### Correspondence:

Sucheta Prabhu Matondkar, Department of Pedodontics and Preventive Dentistry, Maratha Mandal's Nathajirao G. Halgekar Institute of Dental Sciences and Research Centre, Belagavi, Karnataka, India.  
Phone: +91-8553450768.  
E-mail: suchetaprbh@gmail.com

Received: 16 November 2018;

Accepted: 20 December 2018

doi: 10.15713/ins.jcri.244

### Abstract

Taurodontism, particularly in the primary dentition, is a rare entity. The anatomic configuration provides a challenge to the pediatric dentist in terms of management, particularly endodontic management. Hurdles are faced by the clinician from the phase of access opening till obturation. The following case report tries to add to the existing literature in terms of quicker management strategies when faced with such a clinical scenario.

### Introduction

Taurodontism has been known to us for nearly a century when Sir Arthur Keith described this peculiar form of enlargement of the body of the tooth, at the expense of its roots. He described them as “bull teeth” referring to the dentition possessed by cud-chewing animals. The term “Tauros” refers to bull in Latin and “Odus” meaning bull tooth in Greek. The expression is thought to be a primitive pattern of tooth development.<sup>[1]</sup>

Roentgenograms of modern-day humans generally show pulp chambers contained low within the crowns of the teeth. However, this was not the case in early man. The tooth outline was quite different, with it being described in literature by Gorjanovic and Kramberger who studied the tooth patterns from archeological Neanderthal remains.<sup>[2]</sup>

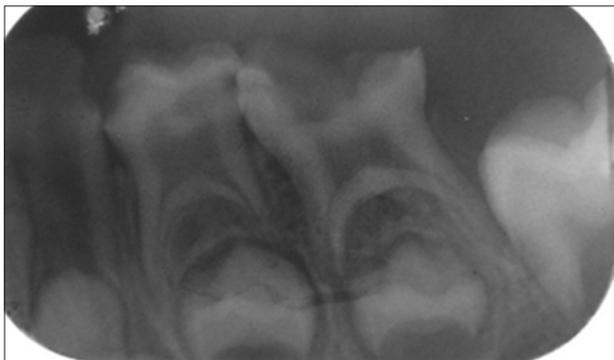
What distinguish this particular morphologic aberration is its anatomic characteristics. The pulp chamber appears to be enormous and elongated at the expense of the root, with a greater apicoocclusal height. The tooth shape resembles a rectangle due to the cemento-enamel junction constriction being less marked. In addition, there is an apical displacement of the furcation, at the expense of shorter roots and a consequently enlarged body of the tooth.<sup>[3]</sup>

The prevalence of this condition is exceedingly rare with respect to the primary dentition, accounting only about 0.54% of the primary molars.<sup>[4]</sup> Another prevalence study puts it as low as 0.3% of the population. Hence, there is a paucity of literature with respect to its presentation and clinical management.

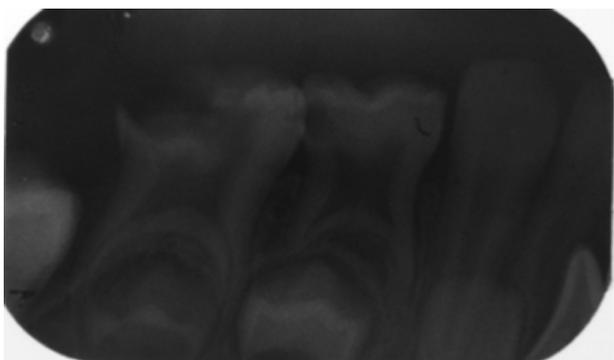
The etiology till date has been unclear. A proposed theory attributes it to the failure of Hertwig's epithelial root sheath to invaginate at a proper horizontal level, leading to shorter roots.<sup>[5]</sup> Taurodontism may present unilaterally or bilaterally, in deciduous or permanent dentitions.

It can present as an isolated anomaly or has been documented to be associated with syndromes such as Mohr's syndrome, Down's syndrome,<sup>[6]</sup> Apert syndrome, Klinefelter syndrome, Trichodontosseus syndrome, Lowe syndrome, Wolf-Hirschhorn syndrome, Hypophosphatemia, Van der Woude syndrome, and Kabuki syndrome to name a few.<sup>[7]</sup>

Diagnosis is usually coincidental in isolated cases, by virtue of a routine diagnostic radiograph. Clinically, the tooth appears rather innocuous, but endodontic treatment poses a herculean challenge. The following case report aims to contribute to the existent body of literature pertaining specifically to its management in primary molars.



**Figure 1:** Pre-operative IOPA 74 and 75 region



**Figure 2:** Pre-operative IOPA 84 and 85 region

### Case Report

A 5-year-old girl reported to the Department of Pedodontics and Preventive Dentistry, MMDC, with a chief complaint of pain in relation to her lower right and left back tooth regions for several months. Medical history was noncontributory and developmental milestones were normal. Clinical examination revealed deep carious lesions in relation to 75 and 85. Both teeth were tender to vertical percussion and presented no visible swelling or sinus tract. IOPA revealed enlarged pulp chambers and small roots in relation to 74, 75, 84, and 85. Multivisit pulp therapy was planned for affected teeth followed by a full coronal restoration with a stainless steel crown. Teeth were first reduced out of occlusion, anesthetized, and an access opening performed. Pulp contained was voluminous and hyperemic. Thorough irrigation was performed using 2.5% sodium hypochlorite intermittently, following copious saline irrigation. On completion, the floor of the pulp chamber was difficult to visualize. Working length radiograph was taken followed by biomechanical preparation and obturation using Endoflas. This was then followed up by restoring with a stainless steel crown. Figure 1-4.

### Discussion

Taurodontism is usually considered to be a syndromic manifestation. However, in this case, it was found to be an isolated anomaly.



**Figure 3:** Post-operative radiovisiography 74 and 75 region



**Figure 4:** Post-operative orthopantomogram

Over the years, there have been several authors classifying taurodontism. Shaw, in 1928, classified it in an arbitrary, subjective manner based on the displacement of the floor of the pulp chamber. He termed them as hypo-, meso-, and hyper-taurodontism.<sup>[8]</sup> This has often led to a misdiagnosis in terms of a normal tooth to falsely be labeled as a taurodont. The most notable and widely accepted classification was given by Shifman and Chanannel, in 1978.<sup>[9]</sup>

In his review, Mangion summarized the possible causes to be:

1. A specialized or retrograde characteristic.
2. A primitive pattern
3. A Mendelian recessive trait
4. An atavistic feature
5. A mutation resulting from odontoblastic deficiency during dentinogenesis of the roots.<sup>[3]</sup>

In the Chinese study, it was determined that early detection of taurodontism could possibly help diagnose Klinefelter's syndrome at an early age and thus improve the quality of life of the patient.<sup>[10]</sup>

It has been proposed that taurodontism may be a genetically determined trait and more advantageous than cynodontism in people with heavy masticatory habits or in populations in which teeth were used as tools.<sup>[11]</sup>

Preventive treatment must be rendered effectively to prevent caries attack on such teeth as they are more vulnerable to pulpal involvement.

Endodontic management especially that of primary taurodonts poses to be a great challenge. The access opening results in a large volume of pulp being encountered often misleading the clinician to believe it to be a perforation. Irrigation is time consuming. The biomechanical preparation is challenging as the canal orifices are difficult to visualize. Literature supports magnification in these cases in permanent teeth; however, this is very cumbersome in children; hence, it is recommended to reduce the tooth occlusally to help in better visualization, canal preparation, and subsequent obturation.<sup>[12]</sup> With regard to obturation, past literature reflects on Vitapex being used as opposed to zinc oxide eugenol. A better option, in this regard, would be the use of Endoflas since it is the closest material available to us today that has an advantage of a broad-spectrum antibacterial efficacy, resorption of extruded material, and absence of hollow tube effect seen post-usage of calcium hydroxide. On the other hand, zinc oxide eugenol does not resorb, thus acts as a periapical irritant, and very limited antibacterial activity.<sup>[13]</sup>

The extraction of a taurodont can prove to be a double-edged sword. The dilated apical third could cause an apical third fracture. Other authors hypothesize that due to the limited root divergence and large body, little amount of tooth structure can be embedded in the alveolus, thereby making the toothless challenging to extract.

Thus, the importance of taking a diagnostic radiograph cannot possibly be understated. A clinically normal appearing tooth may present to be morphoanatomically deviant from the normal. This can very well be evidenced in the case highlighted above.

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**How to cite this article:** Matondkar SP, Yavagal C, Anegundi R. Taming the bull by its horns: A case report on bilateral primary tooth taurodontism. *J Adv Clin Res Insights* 2018;5:200-202.

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