

## **Bilateral Taurodontism in Primary Molars: A Case Report**

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**Abstract:** Taurodontism is a morpho-anatomical developmental anomaly, which is seen infrequently in teeth only. It is characterized by a deficiency in the constriction at the cement-enamel junction, with lengthened pulp chamber and apical displacement of the pulpal floor. This report presents a case of bilateral taurodontism which were pulpally involved. Endodontic treatment was done for both the teeth and stainless steel crown was placed.

**Keywords:** Bilateral, Hypotaurodontism, Endodontic challenge.

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### **I. Introduction**

Taurodontism is a dental anomaly of shape caused by developmental disturbance. Sir Arthur Keith (1913) coined the term 'taurodontism' to describe this unusual tooth form. It is derived from the Latin word *tauros*, a bull, and the Greek word *odous*, a tooth<sup>[1,2]</sup> Witkop (1971) defined taurodontism as 'teeth with large pulp chambers in which the bifurcations and trifurcations are displaced apically, so that the chamber has greater occlusoapical height than in normal teeth and lacks the constriction at cervico enamel junction. The distance from the trifurcation and bifurcation from the roots to CEJ is greater than the occluso-cervical junction. The aetiology of taurodontism is unclear. It is thought to be caused by the failure of Hertwig's epithelial sheath diaphragm to invaginate at the proper horizontal level.<sup>[3,4]</sup> Interference in the epitheliomesenchymatose induction has also been proposed as a possible cause.<sup>[5]</sup>

Taurodontism can be seen either in combination with a syndrome, such as Down syndrome, ectodermal disturbance, Klinefelter syndrome, oral-facial-digital syndrome II, osteoporosis, and trichonychodontal syndrome or isolated.<sup>[6,7]</sup> Many authors have diagnosed taurodontism subjectively, based only on the radiographs and the internal features of the teeth. In the oral cavity, a taurodont appears as a normal tooth.

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 is very rarely seen in primary dentition.<sup>[8]</sup>

Taurodontism, although not common, is an important occurrence that may influence dental management of patients; especially endodontic treatment becomes challenging. This report presents the endodontic treatment of a hypotaurodontic bilateral taurodont mandibular primary molar in a healthy patient.

### **II. Case Report**

A 6 year old male reported to our department with main complaint of pain in the lower right back tooth for 15 days. Medical and family history were non-contributory. On intraoral examination, there was a deep carious lesion in the mandibular right first primary molar and proximal caries in the mandibular left primary molar. The tooth had an exaggerated response to heat with lingering pain. The tooth was sensitive to percussion and palpation. An intraoral periapical (IOPA) radiograph revealed the presence of a coronal radiolucency involving the pulp chamber and a large pulp chamber suggesting hypotaurodontism with 74 and 84 [Fig. 1a and 2a] on the basis of clinical and Radiographic finding pulpectomy was planned in both teeth. The tooth was anaesthetised with lignocaine 2% with epinephrine 1:100 000. The pulp tissue was extirpated. Two canals mesial, and distal canals were located [Fig. 1b and 2b]. Working lengths were determined with a #15 K file (Dentsply Maillefer, Ballaigues, Switzerland) by using the technique of Ingle and Bakland.<sup>[9]</sup> Chemomechanical preparation of the canals was achieved with K files. The mesial canal were instrumented to #35 and the distal canal to #40. The canals were obturated with calcium hydroxide and iodoform (metapex) following pulp extirpation [fig. 1c and 2c] and the tooth were finally restored with stainless steel crown [fig 3].

### III. Discussion

Taurodontism is a condition in which the tooth trunk is elongated and the floor of the pulp chamber is displaced apically with proportionately shortened roots. The term is meant to reflect the close similarity between human teeth and those of ungulates, particularly bulls.<sup>[10]</sup>

Taurodontism may be unilateral or bilateral and affects permanent teeth more frequently than primary teeth. The prevalence rate of taurodontism in the general population is low and is reported to vary with ethnicity. It is commonly observed among the Eskimos and Natives of Australia and Central America.<sup>[11]</sup> The prevalence of taurodontism reported in modern-day populations have varied from 0.54% in the primary dentitions of Japanese children to as high as 5.6% in the permanent dentitions of Israeli adults.<sup>[12]</sup> A study was conducted on prevalence of taurodontism and it was found to 2.5% in Indian population.<sup>[13]</sup>

Shaw(1928) was the first to classify taurodont teeth into hypotaurodont, mesotaurodont and hypertaurodont based on the relative amount of apical displacement of the pulpal floor.<sup>[14]</sup> Hypotaurodontism is the least pronounced form, in which the pulp chamber is enlarged; mesotaurodontism is the moderate form, in which the tooth roots are divided only at the middle third; and hypertaurodontism is the most severe form, in which bifurcation or trifurcation occurs near the root apices.<sup>[14]</sup>

It can occur as an isolated case or as a component of specific syndromes. In this patient, there were no systemic diseases or syndromes.

Endodontic treatment of a taurodontic tooth requires special management because the tooth morphology can make it difficult to identify the location of the orifice. Thus, endodontic treatment may be complicated, especially the cleaning and shaping of the root canals, and root canal obturation, as was the case with our patient, in whom we observed bifurcated roots at a low level. The number of root canals in taurodontic teeth also varies with some reports describing 5 to 6 canals.<sup>[1,15]</sup>

H. Jafarzadeh suggested that Careful exploration of the grooves between all orifices, especially with magnification to reveal additional orifices and canals. The pulp of a taurodont is usually voluminous, in order to ensure complete removal of the necrotic pulp, 2.5% sodium hypochlorite has been suggested initially as an irrigant to digest pulp tissue. Application of final ultrasonic irrigation may ensure that no pulp tissue remains.<sup>[16]</sup>

### IV. Conclusion

Treatment of dental anomalies is a potential endodontic challenge. Taurodontism complicates endodontic procedures due to irregular tooth morphology, which may disturb the location of the root orifices, thereby increasing the difficulty of instrumentation and obturation.

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### Legends

Fig 1a Preoperative X-ray i.r.t 84

Fig 1b Working length X-ray i.r.t 84

Fig 1c Post obturation X-ray i.r.t 84

Fig 1d X-ray following stainless steel crown placement i.r.t 84

Fig 2a Preoperative X-ray i.r.t 74

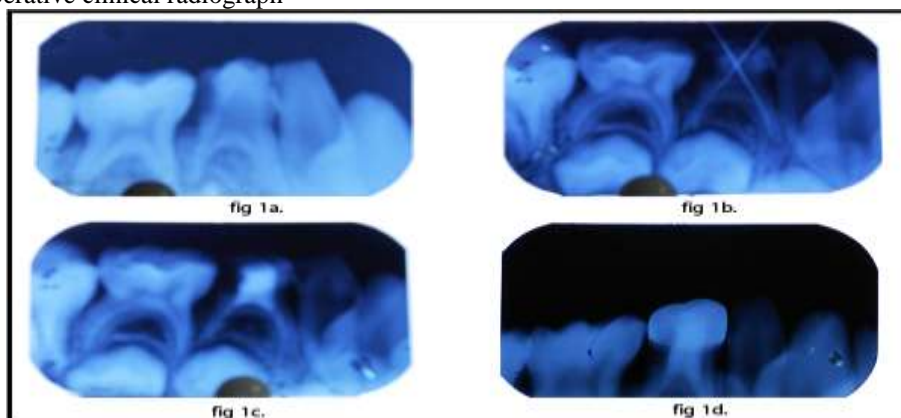
Fig 2b Working length X-ray i.r.t 74

Fig 2c Obturation X-ray i.r.t 74

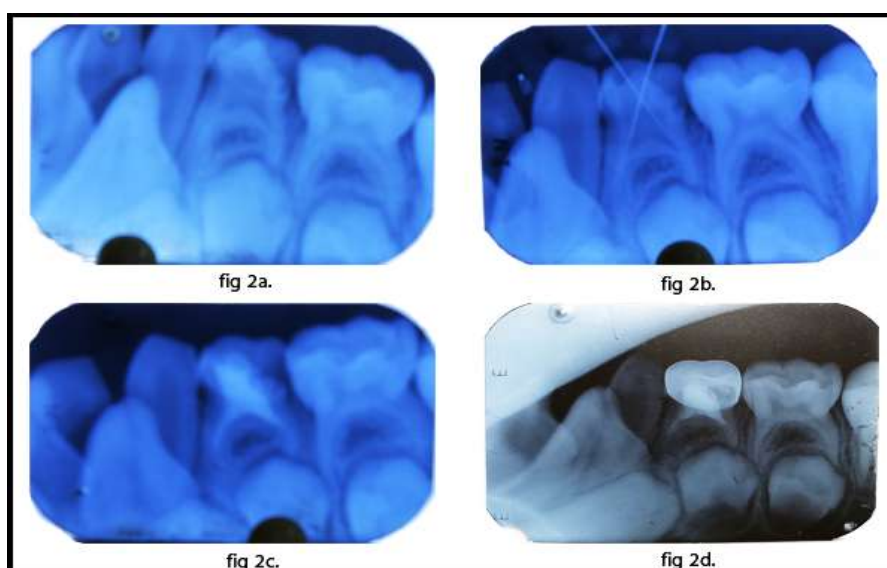
Fig 2d X-ray following stainless steel crown placement i.r.t 74

Fig 3a Preoperative clinical photograph

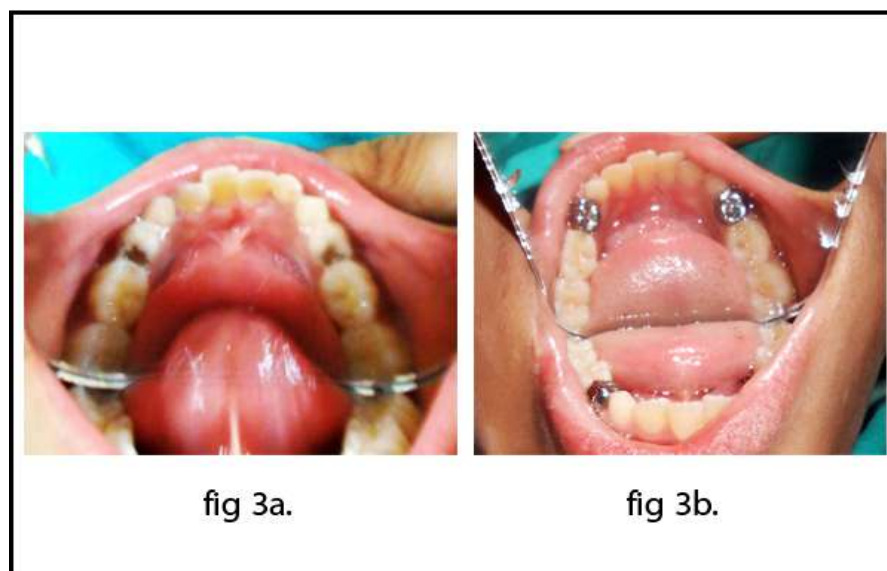
Fig 3b Postoperative clinical radiograph



**Figure 1**



**Figure 2**



**Figure 3**