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The American Academy of Pediatric Dentistry
Volume 13, Number 3

# Natal primary molar: case report

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## Abstract

*The case of an immature natal maxillary first primary molar is reported. Natal molars are rare occurrences, the present instance being only the eighteenth reported case. Clinical and histologic examination revealed that the tooth was rootless, incompletely mineralized, and acutely inflamed. Subsequent radiographs showed that the tooth was actually the primary first molar.*

## Review of Literature

According to Bodenhoff (1960), 85% of natal or neonatal teeth are mandibular incisors, 11% are maxillary incisors, and 3% are mandibular cuspids or molars. Only 1% are maxillary cuspids or molars. Similarly, Kates et al. (1984), in a study of 18,155 infants, reported that all of 61 observed natal or neonatal teeth were mandibular central incisors. Among the 38 infants so affected, 61% had a pair of teeth.

Posterior teeth erupting during the perinatal period are decidedly rare. Brandt et al. (1983) found 16 cases of molars in the newborn in the then extant literature and added a case of their own. Thirteen were classified as natal teeth, and three as neonatal teeth. For one, the time of eruption was not specified.

The present report is a clinical and histological description of a natal maxillary primary molar.

## Case Report

The infant was a two-day-old, healthy, full term black male born from an uncomplicated pregnancy and delivery. Maternal medical and social histories disclosed no significant information. Intraoral examination revealed a pale, globular toothlike structure on the maxillary left alveolar ridge (Fig 1). The specimen measured 0.75 x 0.5 x 0.5 cm and had a somewhat flattened occlusal surface, except for three shallow cusps which appeared to be calcified only on the tips. The remainder of the specimen apparently was unmineralized, and the central fossa area of the occlusal surface was compressible by probing with a blunt instrument. The tooth was rootless and loosely attached near the cervical line to the surface mucosa of the alveolar ridge.

Histomorphologically, the specimen showed the general configuration of the crown of a primary molar tooth. The cusp tips were comprised of regular tubular dentin which was thinner than normal (Fig 2, next page). Dentin thickness on the axial surfaces decreased progressively toward the cervix. The enamel, as evidenced by residual matrix, was attenuated similarly. The central fossa area between the cusps contained a variable thickness of generally homogeneous eosinophilic material apparently representing uncalcified, atubular osteodentin (Fig 3, next page). Scattered through this material were pyknotic or lytic nuclei. In this area enamel formation was not apparent, but the osteodentin was covered by primitive stratified squamous epithelium which varied in thickness and within which were diffusely embedded large, eosinophilic, generally circular or polygonal, keratinaceous structures. Pulp vasculature was dilated and hyperemic. The odontoblast layer was reasonably well organized except in the central fossa area, where there was diffuse pulp necrosis and infiltration with acute inflammatory cells consisting mainly of neutrophils. Also, at the cervical base, where the tooth had been joined to the alveolar crest, there was a thinner, fairly uniform band of pulp necrosis. This was also infiltrated with neutrophils, although less intensely than in the central fossa area. Cementum was not identified.

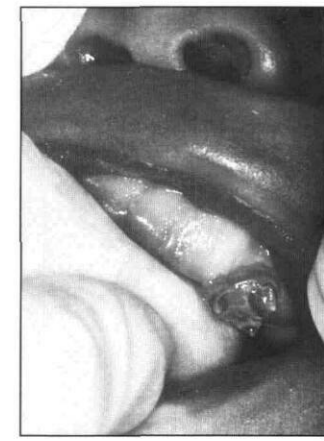

**Fig 1.** Clinical photograph of the immature natal molar in the 2-day-old infant.

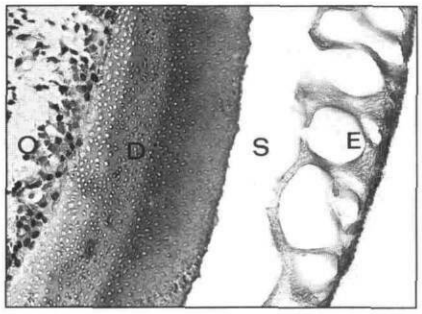


**Fig 2.** Photomicrograph of immature natal molar near cusp tip. In this area the odontoblast layer (O) of the pulp is relatively well-formed and the dentin (D) shows regularity of tubules. An artefact space (S) separates the residual enamel matrix (E) from the underlying dentin. (Original magnification 100x).

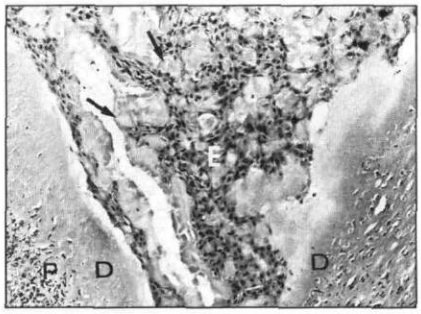


**Fig 3.** Photomicrograph of immature molar tooth in the central fossa area of the occlusal surface. The dentin (D) is atubular and contains degenerate nuclei. No evidence of enamel formation is seen but there is a covering of primitive stratified squamous epithelium (E) containing many keratinaceous structures (arrows). The subadjacent pulp (P) is acutely inflamed. (Original magnification 100x).

## Discussion

The reason usually given for eruption of teeth during the perinatal period is superior placement of the tooth germ (Southam 1968; King and Lee 1989), but in most cases specific pathogenetic factors cannot be identified. In some instances heredity seems to contribute. Massler and Savara (1950) found first order relatives with natal or neonatal teeth in 10 of 24 cases. Also, because natal and neonatal teeth are often components of inherited syndromes with more serious manifestations, infants with teeth at birth or shortly thereafter should be evaluated carefully (Chow 1980; Leung 1986; Darwish et al. 1987). For example, pachyonychia congenita, a rare hereditary disorder characterized by nail hypertrophy and dyskeratoses of skin and mucosas, also will show natal or neonatal teeth in a sizeable number of cases (Feinstein et al. 1988). Other congenital conditions associated with premature teeth include Ellis-van Creveld syndrome (Chow 1980), Pierre Robin anomaly, adrenogenital syndrome, cleft palate and rickets (Leung 1986), Hallermann-Streiff syndrome (Chow 1980); craniofacial dysostosis (Ohishi et al. 1986), steatocystoma multiplex (King and Lee 1987), and patent ductus arteriosus with lethal intestinal obstruction (Harris et al. 1976). Also, natal teeth are among several structural and metabolic defects reported in Japanese and Taiwanese infants born to mothers who had ingested polychlorinated biphenyls (PCBs) in contaminated cooking oil (Rogan 1982; Miller 1985; Rogan et al 1988).

In the present case no underlying cause for the natal tooth was apparent. There was no evidence of hereditary influence, and pediatric follow-up examinations of the infant disclosed no other defects.

Histological examination of the specimen showed that while calcification had begun on the cusps and axial surfaces, the central fossa of the occlusal surface had not yet mineralized. Also possibly indicative of hypocalcification was retention of the enamel matrix after decalcification of the specimen for histologic study (Southam 1968). According to the criteria established by Kraus and Jordan (1965) the degree of morpho–differentiation of this tooth was approximately Stage XI for the maxillary first primary molar. This corresponds developmentally to the maxillary first primary molar of a 28-week fetus.

Atubular osteodentin such as that observed in the occlusal central fossa is equivalent to the irregular tertiary dentin deposited in response to untoward stimuli such as caries or attrition (Southam 1968). This suggests that odontoblasts in the central fossa were exposed to the oral environment before developing a covering of enamel and normal tubular dentin, and responded by depositing the atubular substance. Similar material found in the cervical region of other natal and neonatal teeth has been attributed to stimulation by movement of the teeth. It has been further postulated that the mobility may cause degeneration of Hertwig's sheath thus preventing root development and stabilization (Southam 1968).

Also attributed to premature eruption of the immature tooth in this case was the primitive squamous epithelium covering the atubular dentin in the central fossa area. The epithelium contained keratinaceous structures reminiscent of the "ghost cells" seen in calcifying epithelial odontogenic cysts (Gorlin cysts) and in some odontomas (Shafer et al. 1983). We believe that aborted amelogenesis resulting from premature exposure to the oral environment resulted in metaplastic transformation of the normally columnar enamel epithelium to a stratified squamous configuration.

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