

## Case Report

# Histological variation of natal and primary teeth: a mini-review with a case report

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**Received:** 12 August 2024

**Revised:** 24 October 2024

**Accepted:** 05 November 2024

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### ABSTRACT

Many changes occur during a child's growth from conception to his or her early years of life. Tooth eruption has a chronology that corresponds to the date the tooth emerges into the mouth cavity. These dates have been established in the literature and are vulnerable to minor variations based on genetic, endocrine, and environmental variables. However, the timing of tooth eruption can vary significantly, with the first teeth appearing at birth or throughout the first month of life. The objective of the present study was to present a review with a case report on important aspects of natal and neonatal teeth.

**Keywords:** Natal teeth, Neonatal teeth, Histology, Extraction

### INTRODUCTION

'Natal' teeth are those present at birth and 'neonatal' erupt within the first 30 days of life. The terms "congenital teeth," "fetal teeth," or "dentition praecox" are used to refer to prematurely erupted primary teeth that are present at birth.<sup>1</sup> In 1950, Massler and Savara coined the words "natal" or "neonatal teeth" to refer to teeth that emerge either prior to or within a few months of birth. Furthermore, early infancy teeth are those that erupt between one and three and a half months of life. When compared to neonatal teeth, natal teeth are more numerous, occurring roughly 3:1 more frequently.<sup>2</sup> While most studies have found no gender predisposition, a few have suggested that the condition was more common in women. According to King and Lee, the mandibular primary central incisors are the teeth that are most frequently affected.<sup>3</sup> Bodengoff's study states that mandibular incisors comprise 85% of natal teeth, maxillary incisors comprise 11%, mandibular canines comprise 3%, and maxillary canines or molars comprise only 1%. It is uncommon for more than two natal teeth to emerge at the same time; they typically do so in pairs.<sup>4</sup>

The erupted primary central incisors were found to be slightly above the germ of the permanent successor on the surface of the alveolar bone, not in an alveolus, according to Boyd and Miles.<sup>5,6</sup>

Hebling's (1997) classification of natal/neonatal teeth - category 1: a shell-like crown structure loosely attached to the alveolus by a rim of oral mucosa, no root; category 2: a solid crown loosely attached to the alveolus by oral mucosa, little or no root; category 3: the incisal edge of the crown just erupted through the oral mucosa; and category 4: a mucosal swelling with the tooth unerupted but palpable.

### CASE REPORT

A 40-day-old male infant was referred to the Pediatric and Preventive Dentistry department from a general hospital due to loosen teeth in the lower front region of the jaw and an inability for sucking breast milk (Figure 1). The infant weighed only 1.3 kg. The infant's body weight was decreasing since it was unable to suckle itself. The

perinatal history was normal, and the delivery was a typical vaginal delivery.

On general examination, the child's face was symmetrical and devoid of any noticeable dysmorphic traits. (Figure 1a). Upon intraoral examination, the anterior mandible had a shell-shaped structured crown present since birth (natal teeth). The appearance of this present natal teeth was classified category number 1 by Hebling's classification, whereas Miller's mobility classification assigned the clinical condition of grade II mobility. Clinically, the lips, tongue, gingivae palate, floor of the mouth, and buccal mucosa were all within normal bounds.

The parents were informed of the treatment plan and gave their consent for the tooth to be extracted to prevent potential aspiration because the movement of the teeth presents a greater risk for aspiration. A gauze piece containing 15% topical anesthesia was used for the extraction and the socket was gently curetted. The procedure was quite well tolerated by the infant. The tooth was removed had a crown with no roots (Figure 1b).



**Figure 1: (a) 40-day-old male infant with natal tooth, (b) extracted natal teeth, and (c) post-operative image.**

There were no postoperative problems, including bleeding or infection. The mother received instructions on proper oral hygiene for her newborn, and one week later, on follow-up, showed complete wound healing. Consequently, the mother was permitted to start breastfeeding again.

## DISCUSSION

Since it is unusual for newborns to have teeth, many cultures have myths associated with this condition. In addition, it is anticipated that they will be the world's prospective conquerors in France and Italy because it appears that historical personalities like Julius Caesar and Napoleon Bonaparte had this condition from birth.<sup>1,2,6</sup> This particular condition is typically identified at birth by the

neonatologist during the general examination. There isn't a simple or single condition or proven cause for natal teeth, nor are there any risk factors related to them. Several speculative causes have been implicated by researchers, including infection (congenital syphilis), congenital syndromes, osteoblastic activity in the germ region, maternal exposure to environmental toxins and nutritional deficiencies (hypovitaminosis).<sup>7</sup> Another cause is hormonal imbalance in the mother's body due to elevated pituitary, thyroid, or gonad secretions. However, Hal's 1957 theory—which holds that the appearance of natal or neonatal teeth results from the tooth germ's surface position—is the most widely accepted one.<sup>6,7</sup> This suggests that the tooth is situated above the germ of the permanent successor, below the surface of the alveolar bone, rather than within an alveolus. Newborn and neonatal teeth are typically smaller and more conical in shape.

They are also frequently yellow or white with absent or poorly formed roots. Forty percent of natal and neonatal teeth have a conical shape, while ten percent have hypoplastic enamel and dentin. The reason behind hypoplastic enamel on natal or neonatal teeth could be attributed to immature enamel, which begins to deteriorate due to its inability to finish developing as soon as the gingival layer disappears.<sup>8</sup> The natal tooth in our case report had the same size, shape, and color as normal teeth devoid of hypoplastic dentin and enamel (Figure 4).

Based on a comprehensive review of the literature, the congenital syndromes Ellis–van Creveld, Jadassohn–Lewandowsky, craniofacial dysostosis, and adrenogenital syndromes are most commonly linked with natal or neonatal teeth.<sup>8</sup>

Furthermore, compared to the general population, children with cleft lip have a higher frequency of natal and neonatal teeth. No malformations or syndromes were linked to the patient in our case study.

## *Histological characteristics*

In the present case report, a decalcified section was prepared, from the received specimen, which shows the formation of dentinal tubules in the dentin and fibrocellular connective tissue suggestive of pulp (Figure 2a and b).

## *Histological variation in neonatal and primary teeth*

### *Enamel*

In natal/neonatal teeth, the enamel may be thinner and less mineralized or hypoplastic or completely absent as compared to primary teeth. For natal teeth, the enamel thickness is 300 nm, while for neonatal teeth, it is 135 nm. This can result in softer enamel, making neonatal teeth more prone to wear and damage.

### Dentin

The dentin of the natal and neonatal tooth sections was found to be normal by on microscopic examination, except for a few irregular spaces in the amelodentinal area.

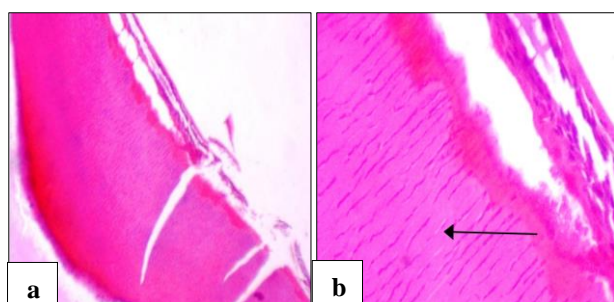
### Pulp

Although the pulp chamber and pulp canal are larger, as compared to the primary, the pulp continues to develop normally.

### Root formation

Natal and neonatal teeth may have incomplete or underdeveloped roots compared to primary teeth, which typically have fully formed roots by the time they erupt.<sup>2,9</sup>

Histological differences between natal/neonatal teeth and primary teeth mainly involve variations in enamel, dentin, pulp, and root structure due to differences in developmental stage and timing of eruption.



**Figure 2: Histological images of natal teeth (a) 10x low power and (b) 40x high – power, arrow showing dentin.**

### Complications of natal teeth

Riga-Fede disease, or ulceration of the tongue's ventral surface, is the most frequent consequence of natal teeth and is brought on by repeated stress to the region.<sup>8</sup> This condition makes it difficult or impossible to eat due to discomfort. Apical abscesses, damage to the mother's breast, and the possibility of ingesting and aspirating the tooth due to its high mobility (i.e. mobility of more than 1 mm) are possible additional concerns.<sup>7</sup> When formulating the treatment plan, other variables like the degree of mobility and implantation, breastfeeding difficulties, and potential for aspiration or swallowing of these teeth must be taken in consideration.<sup>2,9,10</sup>

Delaying natal/neonatal tooth extraction until the infant is at least 10 days old or more is recommended to enable the gut's natural flora to create vitamin K, which is crucial for the formation of prothrombin in the liver. A single injectable dosage of 0.5 to 1 mg of vitamin K should be administered to all infants as soon as possible, according to the American Academy of Paediatrics' 1961

recommendation to stop vitamin K deficit bleeding (VKDB).<sup>11</sup>

After the infant's teeth are extracted, the socket should be carefully curettage to remove the underlying dental papilla and the epithelial root sheath of the Hertwig. If the socket is not properly curette, the dental papilla's cells may continue to develop.<sup>11</sup> This could lead to the formation of tooth-like structures several months later, known as "residual natal teeth." The likelihood of residual tooth development is roughly 9.1%, according to King and Lee. In these situations, a second surgical treatment is necessary if this residual tooth formation develops.<sup>3,11</sup>

### CONCLUSION

Although they are uncommon, newborn teeth can cause sublingual ulceration (also known as the Riga-Fede illness) and make breastfeeding more difficult. To determine the appropriate course of treatment, this condition needs to be accurately diagnosed and handled individually. If the tooth is moveable or if there are related problems, extraction is an appropriate option. Additionally, this method permits effective healing of oral and tongue ulcers, eliminates stunting and nutritional deficiencies, and permits the prompt resumption of breastfeeding.

*Funding: No funding sources*

*Conflict of interest: None declared*

*Ethical approval: Not required*

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**Cite this article as:** Kaushik N, Srivastava N, Rana V, Gautam K. Histological variation of natal and primary teeth: a mini-review with a case report . *Int J Contemp Pediatr* 2024;11:1809-12.