REVIEW ARTICLE

Precocious Teeth: Review of Literature

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ABSTRACT

This paper reports a recent update on natal teeth. It highlights the prevalence, various etiological factors and syndromes it can be associated with. The paper focuses on the clinical and histological features. The presence of natal teeth can lead to various complications ranging from affecting the health of the child to risk of aspiration of the teeth due to high mobility and sublingual ulceration. It is vital for a clinical practioner to counsel the parents concerning the condition in addition to appropriate managing approaches required to establish well being of the child.

Keywords: Clinical features, etiology, histological features, management, natal teeth.

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INTRODUCTION

Teething is one of the most awaited moments in a parent's life for their children. It is necessary to create awareness among the parents about the eruption of tooth which ordinarily occurs at 6 months of life whereas enlightening about premature eruption, its circumstances and also the various complications which stress on the need for a correct diagnosis as well as its management. One such complication is eruption of natal teeth.[1] (Figure 1) This paper emphasizes on a refreshed and recent knowledge on natal teeth.

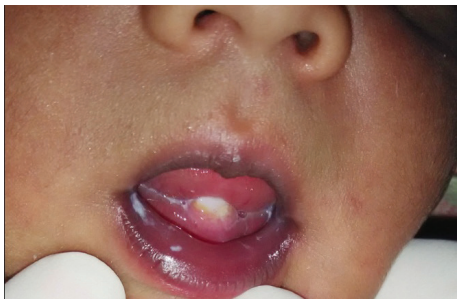

Figure-1: Natal tooth in 5 days old baby

BRIEF HISTORY

The natal teeth had always been a subject of interest which was associated with various superstitions and beliefs. In 23 B.C Caius Plinius Secundus was of the opinion that males had a splendid future whereas it was a bad omen in girls. According to Titus Livius in 59 B.C it was a forecast of disastrous events.

These superstitions lasted for a long time in countries like Poland, India and many African tribes where the children were killed soon after birth as they were considered to bring bad luck to the family. The Chinese believed the presence of teeth a bad omen as they thought the natal teeth would bite one of the parents leading to their death. The English believed these babies would grow up to become famous warriors. In France and Italy people regarded they would grow up to conquer the world. Historical figures such as Zoroaster, Hannibal, Luis XIV, Mazarin, Richelieu, Mirabeau, Richard III, and Napoleon may have been blessed with bright futures credited to natal teeth.[3]

Even though terms of "natal" and "neonatal" teeth described by Massler and Savara are accepted worldwide, they are broadly characterized as teeth that have erupted at birth or shortly after that. Dentitia praecox, dens connatalis, congenital teeth, fetal teeth, infancy teeth, predeciduous teeth, and precocious dentition are some of the terminologies used previously but discarded due to inaccuracy in describing this condition.[4]

CLASSIFICATION

Massler and Savara gave the definition taking only the time of eruption as reference; natal teeth are those observable in the oral cavity at birth and neonatal teeth

are those that erupt during the first 30 days of life and not to the anatomical, morphological and structural characteristics.[2]

Spouge and Feasby[5,6] recognized the need to organize them into:

- Mature- when they are fully developed in shape and comparable in morphology to the primary teeth with good prognosis.
- Immature- when their structure and development are incomplete and holds a poor prognosis.

On the basis of literature data, Hebling classified natal teeth into 4 categories:[3]

1) Shell-shaped crown poorly fixed to the alveolus by gingival tissue and absence of a root.
2) Solid crown poorly fixed to the alveolus by gingival tissue and little or no root.
3) Eruption of the gingival margin of crown through gingival tissue.
4) Edema of gingival tissue with an unerupted but palpable tooth.

Natal teeth are classified as (1) and (2), if the degree of mobility is more than 2 mm; such teeth usually need extraction.[7]

PREVALENCE

Authors have reviewed the prevalence of natal and neonatal teeth as 1:700 to 1:30,000[6,8]

Etiology:

The etiology of natal and neonatal teeth still remains a mystery although various authors have presented their views and theories regarding the same.

Etiology is multifactorial:

- Infection- Congenital syphilis; where eruption can be early or delayed.[9,20]
- Malnutrition- Dietary deficiencies viz. hypovitaminosis.[20]
- Febrile states- Fever, rashes during pregnancy - tend to advance their eruption.[9]
- Endocrinal disturbances and Hormonal stimulation- Tooth eruption is influenced by pituitary growth hormone, thyroid hormone and parathyroid hormone-related protein; all are required for normal tooth eruption.[21] Venkatesh C and Adhisivam B reported a nonsyndromic case of congenital hypothyroidism.[26]
- Hal's stated that "occurrence of natal and neonatal teeth is due to an abnormally superficial position of the tooth germs which, in turn, is due to a hereditary factor."[22]
- Osteoblastic activity within tooth germ as reported by Jasmin and Clergeau-Guerithault is responsible for eruption of natal and neonatal teeth.[2]
- Pregnant mothers accidentally exposed to PCBs (polychlorinated biphenyl) and PCDD/Fs (PCDF-polychlorinated dibenzofuran, PCDD- polychlorinated dibenzo-*p*-dioxin) have increased prevalence for natal teeth.[23] They have been associated with skull abnormalities representing irregular calcification, dystrophic finger nails, hyper pigmentation. Natal teeth appear as the bone of the mandible is easily penetrated.[24]
- Natal teeth have also been associated with various syndromes[8] (Table 1).

Fauconnier and Gerardy reported "early eruption" due to alteration in endocrine system featuring normal eruptive pathway with intact gingiva and "premature eruption" as pathologic phenomena like trauma in delivery leading to ulceration and source of infection resulting in exfoliation of a root less tooth in a short time later defined as "expulsive Capdepont follicle" featuring rapid tooth eruption with extreme mobility, turgidity and inflamed gingiva.[3]

CLINICAL FEATURES

- Clinically, these teeth can be hypoplastic, conical or normal size and shape, rarely with opaque yellow- brownish color depending on the degree of maturity. Mobility is due to degeneration of hertwigs root sheath leading to incomplete development of roots and loose attachment to the alveolar ridge. (Figure 2) Most commonly occurring are mandibular central incisors (85%), maxillary incisors (11%), mandibular canines and molars (3%) and maxillary canines and molars (1%).[2]

Figure-2: Ground sectioning in 40X magnification showing: A) Enamel with fish scale pattern; B) Absence of normal scalloping of dentin

HISTOLOGICAL FEATURES

- Howkins first described the histological features of natal teeth. Commonly natal teeth reveal dysplas-

Syndromes and developmental disturbances	Author(s)
Ellis van creveld syndrome	Himelhoch(1988); Kurian et al(2007)
Hallerman-Streiff syndrome	Fonseca and Mueller(1995); Oshihi et al (1986)
Patent ductus arrteriosus and intestinal pseudo-obstruction	Harris et al (1976)
Opitz (G/BBB) syndrome	Shaw et al (2006)
Van der Woude syndrome	Hersh and Verdi (1992)
Pachyonychia congenital (Jadasshon- Lewandawsky syndrome)	Feinstein et al (1988)
Steatocystoma multiplex	King and Lee (1987)
Wiedermann-Rautenstrauch neonatal progeria	Pivnick et al (2000), Arboleda (1997); Byung-Duk and Jung-Wook (2006); Castiñeyra et al (1992), Korniszewski et al (2001)
Pfeiffer syndrome type 3	Alvarez et al (1993)
Walker Warburg syndrome (Congenital hydrocephalus with congenital glaucoma)	Mandal et al (2002)
Hyper IgE syndrome	Roshan et al (2009)
Rubinstein-Taybi syndrome	Hennekam and Van Doorne (1990)
Bifid tongue and profound sensorineural hearing loss	Darwish, Sastry and Ruprecht (1987)
Cyclopia	Boyd and Miles (1951)
Transient Pseudohypoparathyroidism	Koklu and Kurtoglu (2007)
Pierre Robin syndrome	Kharbanda et al (1985)
Down syndrome	Ndiokwelu et al (2004)
Short rib-polydactyly syndrome type II (Saldino-Noonan syndrome)	Strømme Koppang, Boman and Hoel (1983)
Soto's syndrome	Callanan, Anand and Sheehy (2009)
Adrenogenital syndrome	Leung (1989)
Epidermolysis bullosa simplex	Liu, Chen and Miles (1998)
Cleft lip- palate	Cabate et al (2000)
Odonto-Tricho-Ungual-Digital-Palmar Syndrome	Mendoza and Valiente (1997)
Bloch-Sulzberger syndrome (incontinentia pigmenti)	Wolf (2007)
Goltz syndrome	Dias et al (2010)
Teebi hypertelorism syndrome	Koenig (2003)
Clouston syndrome	Reynolds, Gold and Scriver (1971)
Finlay-Marks Syndrome	Taniai et al (2004)
Beare-Stevenson Syndrome	Tao et al (2010)

Table-1: Natal teeth and associated syndromes

tic or hypomineralized enamel due to premature exposure to the oral cavity explained by Friend et al. Soni et al described presence of irregular dentin and osteodentin cervically and coronally interglobular dentin with high vascularity of pulp due to dilatation of the blood vessels often increased in number with inflammatory cells.[2] The decalcified section displayed the pulpal soft tissue with the peripheral odontoblastic cell layer and absence of Weil's and cell rich zone. The pulp core is represented by the loosely arranged fibrocytes with collagen, blood capillaries, defense cells like plasma cells and foamy histiocytes in the pulpal stroma.[2]

- The enamel thickness for natal teeth (300mm) differs from normal primary teeth which is between 1000 and 1200mm.[10] The enamel structure can display a cross striation (fish- scale pattern) in a disorganized pattern (figure 2), whereas the dentin revealed the primary curvatures of the dentinal tubules, enamel spindles at the cusp tip, interglobular

dentin at the circumpulpal dentin and dead tracts. The dentinoenamel junction doesn't show a normal scalloped pattern with a gradual decrease in the number of dentinal tubules from crown to the cervical region as it shows an atypical arrangement of dentinal tubules showing spaces and enclosed cells with calcospherites and predentin of varying thickness. Deciduous teeth and natal teeth show similar unscalloped dentinoenamel junction.[10]

Radiological findings

The RVG revealed disorganized enamel, dentin and pulp chamber and absence of root. (Figure 3).

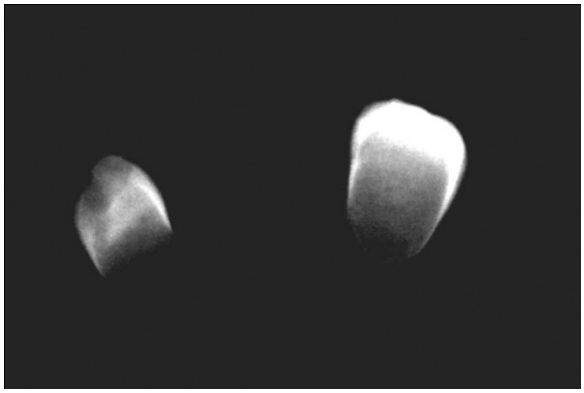

Figure-3: Digital Radiovisiography of natal teeth

COMPLICATIONS

- Difficulty in feeding due to ulceration leading to nutritional deficiencies.[2]
- Riga-Fede disease or syndrome- first identified by Riga an Italian physician and described by Fede who performed the histological studies of the lesion, is a reactive mucosal disease caused due to the continuous rubbing of the anterior lower teeth with the ventral surface of the tongue. The expression "traumatic ulcerative granuloma with stromal eosinophilia" (TUGSE) was coined by Elzay, referring to a chronic but self-limiting reactive ulcer of the oral mucosa.[11] It is also recognized as 'Riga's papilloma, Riga's boil, Riga's apthae, sublingual ulcer, sublingual granuloma[12] and also known as Cardarelli's apthae, Cardarelli's disease or Cardarelli's syndrome.[13]

Domingues–Cruz et al[14] classified Riga-Fede as:

- Precocious Riga Fede disease-seen in first 6 months of life defined as those occurrences associated with (neo)natal teeth, unrelated with neurologic disorders.
- Late Riga Fede disease- seen after 6- 8 months of life referring to those instances which typically start with the first dentition, usually the lower incisors.
- Zaenglein et al stated clinically that these lesions are erythematous with a centrally removable, yellow, fibrinopurulent membrane depicting a rolled white hyperkeratotic border immediately adjacent to the ulceration occurring on the buccal mucosa, palate, lips and commonly on ventral surface of tongue. Histological examination reported a mixed inflammatory reaction under the ulcerated surface, T cells, large mononuclear cells and eosinophils suggesting as a subtype of eosinophilic ulcer.[15] Jariwala et al suggested biopsy for lesions that remain for 2 weeks after removal of the cause.[16]
- Possibility of aspiration due to extreme mobility.[2]
- Whether the tooth is supernumerary or deciduous dentition can be clarified by viewing a radiograph of the same region.[2]
- Hamper with breast feeding and causing injury to the breast. But certain authors like Hals, Zhu and King and Walter debated this possibility as the tongue lies in between the nipple and the natal tooth.[2]
- Ulceration below the tongue due to suckling was first reported by Kinirons.[2]
- Residual natal tooth - Tsuborne et al introduced the term for the calcified structure earlier referred as "tumourlike masses, "toothlike structures," "irregular mass (es) of dentin," "odontogenic remnants" and "pearls of hard tissue." Southam hypothesized that after losing the coronal tooth structure of natal and neonatal teeth, the exposed surface of the papilla was likely to become infected and necrotic together with the odontoblasts and remnants of the HERS.[17] After the natal tooth is extracted it should be made sure to remove the HERS and dental papilla by gentle curettage as such remnant structures can continue to develop if left in situ.[13]

MANAGEMENT

The essential objective should be to eliminate the source of trauma to initiate healing and to avoid any above mentioned complications as far as possible.

Slayton[18] and Pujar P[19] have given various treatment options as:

- Smoothening of incisal edges of lower incisors by using a finishing bur or a sandpaper disk.
- Modify feeding behavior or feeding device so as to reduce trauma to the tongue. Parents can be advised to enlarge the hole of the nipple of the bottle or using a sippy cup which requires reduced vigorous sucking or by feeding using a spoon depending

on the age of the infant.

- Treat symptoms— use Kenalog in Orabase to relieve the painful symptoms and distressing of the child.
- Place an increment of composite over the incisal edges by bonding in minimal increments.
- Do nothing.
- Extract lower incisors if symptoms don't subside conservatively.
- Excise the lesion if it persists even after the removal of the cause by excisional biopsy.
- Wean the infant.
- Use stomahesive wafers.[25]
- Treat the lesion by radiation.
- Apply liquid nitrogen to the lesion.

Also use of breast pumps or a storing device can be used to feed the child if the mother insists on breast feeding.[2]

CONCLUSION

As these conditions are unusual and their existence can cause various complications these children should be supervised by clinical professionals by attaining definite history, clinical and radiographical examination. Management involves diagnosis of the condition followed by immediate measures to restore the functions without affecting the general health of the child.

REFERENCES

1. Farsi DJ, Ahmed MM. Natal and neonatal teeth. Saudi Med J. 2014;35:499-503
2. Anegundi RT, Sudha P, Kaveri H, Sadanand K. Natal and neonatal teeth: a report of 4 cases. J Indian Soc Pedo Prev Dent. 2002; 20:86-92.
3. Cunha R, Boer F, Torriani D, Frossard W. Natal and neonatal teeth: review of the literature. Pediatr Dent.2001; 23:158-62.
4. Malik M, Saini RS, Jain R, Laller S. A Comprehensive Update: Predecidous Teeth (Natal and Neonatal). J Adv Med Dent Scie 2014;2:90-4.
5. Spouge JD, Feasby WH. Erupted teeth in newborn. Oral Surg Oral Med Oral Pathol. 1996; 22: 198- 208.
6. Deep SB, Ranadheer E, Rohan B. Riga- Fede Disease: Report of a case with literature review. J Academy Adv Dental Research. 2011; 2: 27- 30.
7. Singh S, Subbareddy VV, Dhananjaya G, Patil R. Reactive fibrous hyperplasia associated with a natal tooth: A case report. J Indian Soc Pedo Prev Dent 2004; 22:183-6.
8. Markou I, Kana A, Arhakis A. Natal and Neonatal Teeth: A Review of the Literature. Balk J Stom, 2012; 16:132-140.
9. Rao RS, Mathad SV. Natal teeth: Case report and review of literature. J Oral Maxillofac Pathol. 2009; 13: 41–6.
10. Malki GA, Al-Badawi EA, Dahlan MA. Natal teeth case report and reappraisal. Case Rep Dent. 2015. Epub 2015 Feb 4.
11. Costacurta M, Maturo P, Docimo R. Riga-Fede Disease and Neonatal Teeth. Oral Implantol (Rome). 2012; 5: 26–30.
12. Saha S, Samadi F, Saha S, Samadi FM. Riga's Papilloma in a 3 Month Old Infant: A Case Report. J Int Dent Med Res 2011;4:12-16.
13. Patil SD, Dixit UB. A Trio Discovery- Cardarelli-Riga- Fede disease. A Case Report and Review of literature. J Contemp Dent 2013; 3:44-8.
14. Meij EH, Vries TW, Eggink HF, Visscher JG. Traumatic lingual ulceration in a newborn: Riga-Fede disease. Ital J Pediatr. 2012;38:20-24.
15. Ertas ET, Sekerci AE, Sisman Y, Sahman H, Etoz M. Natal teeth: a report of three cases. J Oral Health Comm Dent 2013;7:127-31.
16. Jariwala D, Graham RM, Lewis T. Riga fede disease. Br Dent J 2008; 204: 171-72.
17. Dyment H, Anderson H, Humphrey J, Chase I. Residual Neonatal Teeth: A Case Report. J Can Dent Assoc 2005; 71:394–7.
18. Slayton RL. Treatment alternatives for sublingual traumatic ulceration (Riga-Fede disease). Pediatr Dent 2000; 22: 413-4.
19. Pujar P. Riga- Fede disease. Indian J Dent Adv 2014;6: 1475-8.
20. Leung AK, Robson WL. Natal teeth: a review. J Natl Med Assoc. 2006;98:226-8.
21. Khalifa AM, El Gendy RA, Abd El-Mohsen MM, Hammour AA, El Lateef Aly RSA. Relationship between gestational age, birth weight and deciduous tooth eruption. Gaz EgyptPaediatr Assoc. 2014; 62:41–45
22. Kates GA, Needleman HL, Holmes LB. Natal and neonatal teeth: a clinical study. J Am Dent Assoc. 1984;109:441-3
23. Alaluusua S, Kiviranta H, Leppaniemi A, Holtta P, Lukinmaa PL, Lope L, Jarvenpaa AL, Renlund M, Toppari J, Virtanen H, Kaleva M, Vartiainen T. Natal and Neonatal Teeth in Relation to Environmental Toxicants. Pediatr Res. 2002;52:652-5.
24. Miller RW. Congenital PCB Poisoning: A Reevaluation. Environ Health Perspect. 1985; 60: 211-4.
25. Buchanan S, Jenkins CR. Riga-Fedes syndrome: natal or neonatal teeth associated with tongue ulceration. Case report. Aust Dent J. 1997;42:225-7.
26. Venkatesh C, Adhisivam B. Natal teeth in an infant with congenital hypothyroidism. Indian J Dent Res. 2011;22:498