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Natal Teeth in Newborn Infants

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Introduction

Natal teeth are those present in a baby's mouth from birth, unlike the typical emergence of teeth around six months of age. Although uncommon, natal teeth can occur in both boys and girls, causing concern for parents despite being mostly harmless. This research aims to offer a detailed exploration of natal teeth.

Methodology
This article conducted a systematic review of literature on natal teeth, utilizing databases such as PubMed, Google Scholar, and relevant academic journals to identify articles on their history, prevalence, causes, clinical features, diagnosis, complications, and management. The extracted data was then synthesized to provide a comprehensive understanding of the subject.

Result
Natal teeth, a rare occurrence in infants, have significant implications for their health and development. Despite the unclear causes, the potential complications associated with natal teeth highlight the need for early identification and prompt treatment.

Conclusion
The management of natal teeth requires a thorough assessment of the infant's overall health, consideration of risks and benefits from various treatment options, and providing essential parental education and support for informed decision-making. Healthcare providers must also be prepared to address complications such as feeding difficulties, infections, and choking. The collaborative efforts of multidisciplinary care teams are essential for comprehensive care for affected infants.

Key Words: Natal teeth, Supernumerary teeth, Primary dentition, Riga-Fede disease, Breast feeding.

1.Introduction

The birth of a newborn is one of the most precious and miraculous moments that bring immense joy and love to their parents' life. Nevertheless, in some rare cases, the baby may be born with teeth, which can be disconcerting for many new parents. **Natal teeth** refer to teeth that are present in a baby's mouth at birth. Unlike infants who typically begin to have teeth emerge around six months, babies born with natal teeth have visible teeth from the moment they are born. Although it is relatively uncommon occurrence, natal teeth can occur in both

boys and girls. For many parents, the sight of their newborn with teeth can be unsettling and cause concern about their baby's health. Though natal teeth may seem alarming, they are typically harmless and can be easily treated if necessary.

1.1 Folklore

Natal teeth have been associated with intriguing and fascinating beliefs throughout history. The first mentions of them were made by Titus Livius and Caius Plinius Secundus during Roman times[1,2]. Livius believed that the presence of natal teeth predicted disastrous occurrences, while Plinius thought they indicated a bright future but an ill-omen for male and female infants, respectively[1,3]. The appearance of these teeth was viewed positively in Malaysia and Europe[4,5,6]. In England, natal teeth were believed to indicate future fame as a soldier, while in France and Italy, they were thought to guarantee the conquest of the world[1,6]. In Sweden, it was thought that putting an injured finger in the mouth could provide a remedy for it[5]. Eminent historical figures like Hannibal, Louis XIV, Mazarin, Mirabeau, Richelieu, Richard II, anatomist Broca and Napoleon were believed to have had natal teeth[1,3,5,7]. For a significant period in ancient Poland, India, China and Africa, superstitions had a strong presence. In various African tribes, it was common to believe that newborns with teeth would bring about bad luck to anyone they interacted with, which led to their fatal demise shortly after their birth[3,5]. In China, the birth of a child with teeth was thought to bring tragedy to the family, with male child leading to the father's death, and female child leading to the mother's death[3]. Often extraction and disposal of the tooth was requested, with the belief that this would protect the child from evil spirits[2,7,8]. Various proverbs were created, including the saying, "The one whose teeth grow early, will soon sink into the grave"[5,8]. Nowadays, the eruption of a baby's first tooth is seen as a milestone in their development, both functionally and psychologically, and not as an omen of misfortune[8].

The uniqueness of this study lies in its focus on various impacts of natal teeth, not only from a medical perspective but also considering the emotional aspects for parents. By delving deeper into the experiences of families with newborns who have natal teeth, this research aims to provide valuable insights that can improve healthcare practices and enhance support for parents. In summary, this research intends to fill the existing knowledge void and provide a deeper insight into natal teeth, ensuring that parents have access to the information and support they require during this unique period in their lives.

2.Methodology

The literature review on natal teeth was conducted using various academic databases, including PubMed, Google Scholar, and Scopus. To ensure the inclusion of the most relevant findings in the field, the search focused on articles published between 1961 and 2023. Peer-reviewed articles, case reports, and systematic reviews were considered to ensure the reliability and validity of the information gathered. The selection process involved screening titles and abstracts for relevance, followed by a full-text review of articles that met the initial criteria. Studies that focused on the clinical aspects, prevalence, management, and associated complications of natal teeth were prioritized. Articles that did not provide substantial data were excluded from the final review. By synthesizing findings from various studies, the review

sought to provide a comprehensive understanding of the implications of natal teeth in pediatric dentistry, including their diagnosis, treatment, and potential impact on the health and well-being of affected infants.

3. Results

3.1 Prevalence

Natal teeth are considered rare amongst humans, leading to difficulties in establishing the frequency of these cases accurately due to varying incidence rates reported by different authors. Studies have demonstrated incidence rates ranging from 1:716 to 1:30,000 live births[1,10,11,13]. While the prevalence of occurrences in males and females is a point of controversy, some authors state that females have a higher predisposition to natal teeth, with a 66% preference reported in some cases[1,5]. Natal teeth are most observed in the anterior mandible or central incisors (85%), with 61% of patients presenting the teeth in pairs[4,6,11]. Most natal teeth are ordinarily erupted from the normal set of primary dentitions, with a reported incidence rate of around 90 to 99%, while the supernumerary teeth constitute a small proportion of natal teeth cases, estimated to occur at a rate of just 1 to 10%[6,11]. Some studies have shown that children with a cleft lip or palate and those with a family history linked with these teeth are at a higher chance of developing them[9,12]. Notably, a slight tendency toward higher prevalence in the last 40 years has been observed[13], although research is ongoing in this area. Overall, while natal teeth remain an uncommon occurrence, their prevalence rates differ across geographic locations and ethnic groups, with varying incidence rates due to different population studies and methodology employed in each study[1,2].

3.2 Etiology

Natal teeth have been a subject of controversy due to their unclear etiology. Investigators have proposed several theories contributing to this condition. One of the suggested theories for the occurrence of natal teeth is genetic predilection, as evidenced by positive family history in several studies[4]. The rate and timing of a baby's teeth coming through is determined by their genetic blueprint, with the consideration of hereditary transmission of an autosomal dominant gene a key factor[1,14]. For instance, if either of the parents experienced early teething, the infant will most likely undergo the same pattern[10]. In one of the studies, the Tlingit Indians in Alaska showed a higher prevalence of natal teeth, with affected relatives in 62% of cases[5,13]. According to other researchers, early teething may be caused by nutritional deficiencies, specifically hypovitaminosis which can be caused by poor maternal health, febrile episodes, and congenital syphilis[5,10]. Another cause of having natal teeth is hormonal stimulation and endocrine disturbances, often resulting from excessive production of pituitary, thyroid, or gonadal hormones[2,3,6]. In addition, environmental toxins such as polychlorinated biphenyls (PCBs) and dibenzofurans have been found to increase the incidence of natal teeth in newborns[6,13,15]. Maternal exposure to these toxins during the Yusheng environmental accident in Taiwan resulted in 13 out of 128 newborns having natal teeth[2,5,13]. Early osteoblastic activity in the tooth germ, associated with remodeling, has been suggested as a potential contributing factor to this phenomenon too[3,10]. There are several syndromes and developmental abnormalities that have been linked to natal teeth, such as cleft lip and palate, Pfeiffer, Ellis-

van Creveld (chondroectodermal dysplasia), Rubinstein-Taybi, steatocystoma, and Sotos, Pierre-Robin, cyclopia, Walker-Warburg syndrome, craniofacial dysostosis, and more[2,14]. Tooth abnormalities may serve as warning signs in a syndrome diagnosis and are suggested to be dysmorphic markers of earlier developmental abnormalities[5]. The most widely accepted theory for early eruption of primary teeth is the superficial position of the tooth germ[4,9]. It has been suggested that this abnormal position of the germ during development in the alveolar bone increases the rate of eruption[5,14]. The prevalence of early eruption in children with cleft lips and palate is higher (around 10%) and can also be attributed to this theory[9]. As the root cause of natal teeth remains unknown, additional studies are required to gain a deeper insight into their origin.

3.3 Histological Characteristics

When teeth erupt early, their histological features can be impaired. This premature eruption often leads to enamel hypo-mineralization[2,3,5,6,10,12,15]. The enamel could become dysplastic, thin, and only cover two-thirds of the crown[5,6]. Nevertheless, there are instances when the teeth could lack enamel completely[2,12], resulting in small and yellow-brownish crowns[11,16]. Dentin and predentin normally appear regular on top, but they could become irregular cervically, presenting few dentinal tubules and sizeable inter-globular spaces that contain abnormal cells, which are similar to those found in osteodentin[2,10,12]. Tooth movement can further complicate this situation by degenerating Hertwig's epithelial root sheath, which halts root formation and prevents stabilization[16]. Cementum thickness varies and usually only covers the cervical third of the crown[5]. It is often acellular, and escalated mobility could elicit histological changes in cervical dentin and cementum[6]. The pulp tissue appears normal, but there can be expansion in the radicular canals and pulp cavity[10]. Certain zones, including Weil's zone and the cell-rich zone, may be absent[16]. Moreover, there may be more vascular supply in the pulpal tissue[2,3].

3.4 Clinical Features

Clinical features of natal teeth are distinct compared to normal deciduous teeth. They are characterized by their small size[17], conical shape[3,18], and yellow color[2,14,18]. These teeth are usually attached to soft tissues located above the alveolar ridge, concealed by the mucosa, further making the teeth mobile[7,10,17]. Natal teeth are classified as mature, or immature based on their shape, development, and root formation. Mature natal teeth have a good prognosis, whereas immature ones have a poorer outlook due to inadequate development, enamel hypoplasia, and small roots [1,3]. Hebling categorized natal teeth into four clinical groups based on existing literature[1,3,14]. The first category comprises natal teeth with a shell-shaped rootless crown poorly attached to the alveolar ridge[4,14]. The second category includes natal teeth with little or no root and a solid crown[15]. The third category consists of natal teeth with just-erupted incisal edges[2,3]. The fourth category includes unerupted teeth with visible mucosal swelling[1,4]. The unique clinical features of natal teeth require an individualized approach that considers both the overall health of the infant and the dental health of the affected tooth.

3.5 Radiographic Aspects

The usage of radiography is essential for the identification of newborns' erupted teeth, as well as differentiating between premature primary deciduous teeth emergence from supernumerary

teeth[3], establishing root development[5], adjacent structures[15], and the presence of a relative germ in the primary dentition[5]. Obtaining dental radiographs before tooth extraction is crucial to inform parents of possible complications and obtain their consent[5]. While occlusal or periapical radiography can distinguish between supernumerary and primary teeth, interpretation may prove challenging with newborns or during crown calcification[18]. The usual radiographic appearance often consists of a calcified cap composed of enamel and dentin that is hollow and lacks pulp tissue, which resembles the shape of a celluloid crown[10]. Differential diagnosis should involve adequate radiographic assessment, and investigations should be carried out to determine their correlation with adjacent teeth[15]. Despite limitations, small mouth opening and excessive crying during radiographic examination of natal teeth[19], radiography remains an imperative diagnostic and interventional tool.

3.6 Diagnosis

Diagnosis of natal teeth requires a comprehensive assessment of the patient by a qualified healthcare professional under satisfactory lighting conditions[4]. Accurate diagnosis relies on a complete medical history[6,17], a thorough physical examination of the patient[10], as well as radiographic[3,14], clinical[17], and histological findings[19] to distinguish natal teeth being a part of normal dentition from supernumerary teeth[1,3]. Moreover, it is crucial to differentiate natal teeth from inclusion cysts, such as Epstein's pearls, Bohn's nodules, dental lamina cysts, epulis, and odontogenic hamartomas[3]. Despite being similar in appearance to natal teeth, Epstein's pearls, Bohn's nodules, and dental lamina cysts do not require treatment since they tend to involute spontaneously[5]. In contrast, the treatment of epulis involves targeted management[2], while odontogenic hamartomas necessitate careful monitoring since they are tumor-like lesions that emerge during dental maturation[5]. If left untreated, premature loss of a primary tooth caused by natal teeth can result in space loss and eventual collapse of the mandibular arch, leading to malocclusion[1,3]. While dentists are primarily responsible for providing a definitive diagnosis, neonatal nurses should be vigilant in recognizing natal teeth. They can either be seen erupting in the mouth or may appear as a bulge on the gum prior to eruption. Parents should also be attentive to the emergence of natal teeth and seek medical assistance promptly[9]. Early diagnosis is vital to plan appropriate treatment that aims to maintain normal dental occlusion and prevent secondary complications.

3.7 Complications

The presence of natal teeth can create several potential complications for both the mother and infant. These risks range from soreness during suckling[2,9] and inflammation of the surrounding tissues[17], to aspiration of the teeth due to excessive mobility[6] and ulceration of the mother's nipples[11]. Additionally, natal teeth can lead to Riga-Fede disease, an ulceration on the tongue's ventral surface due to the repeated tongue movements over the teeth during feeding[15,17]. This condition makes it difficult to feed, leading to weight loss, and dehydration[17]. During teething, symptoms like diarrhea, drooling, and malaise may arise[5]. Other complications that may occur include periapical abscess, interference in naso-alveolar molding, reactive fibrous hyperplasia, hypoplasia of primary and permanent teeth, and microdontic teeth due to unexplained developmental influences[5]. Therefore, consistent identification and appropriate intervention

are essential to manage potential complications and ensure infants and their mothers are comfortable during breastfeeding.

3.8 Management

The management of natal teeth requires a comprehensive approach that considers multiple factors. To determine the most appropriate treatment course, pediatricians and maxillofacial surgeons[16] must carefully evaluate each case[20.] In cases where the natal teeth are asymptomatic[5], do not interfere with breastfeeding[2] nor present significant risk of aspiration[4,7], and are part of normal primary dentition[10], preservation of the teeth with close monitoring is recommended until the teeth pose a risk of injury to the infant[17]. Riga Fede disease, ulcerative lesions caused by natal teeth, may be treated by smoothing the tooth's incisal edge with an abrasive instrument in mild-to-moderate cases of irritation to the tongue[5,14,21]. Extraction is also the treatment choice for natal teeth that have poor support, cause feeding and latching issues, breast irritation, Riga-Fede disease that does not respond to conservative management, and supernumerary teeth[4]. Scientific knowledge, tooth mobility, general complications, and parental agreement must be evaluated as well[22,23]. Dental radiographs should be taken before extraction to assess the potential risk of complications and obtain informed consent[5]. To decrease the risk of removing permanent tooth buds or causing defects, it is recommended to leave the tooth in the mouth for as long as possible. The extraction should be performed under local anesthesia[5], and removal of the dental papilla and Hertwig's epithelial root sheath is necessary to prevent continued root development[1,6]. Ideally, extraction should take place about 3 and a half weeks after birth from an immunological and hematological perspective[24]. Consultation with a pediatrician is required for infants younger than 10 days old to investigate if they have received vitamin K medication for prevention of the hemorrhagic disease of the newborn[8,11]. The findings of research conducted in Hong Kong[25] revealed that 66.67% (48 out of 72) of the subjects had natal teeth. Out of these, 29 were extracted due to excessive mobility, 3 were removed as they caused trauma to the ventral surface of the infant's tongue, whereas 16 were retained without any intervention. According to prevailing belief, if no intervention procedures are involved, natal teeth have the potential to remain in place until the age of twenty[7]. The ultimate goal of managing natal teeth is to ensure the infant's health and wellbeing, maintain proper oral function and development through interdisciplinary collaboration[12,20], and achieve optimal outcomes.

4. Conclusion

Natal teeth, being a rare occurrence in the oral cavity, demonstrate significant implications for the health and development of infants. Despite the lack of clarity surrounding their exact causes, the potential complications associated with natal teeth emphasize the critical importance of their early identification and prompt treatment. The management of natal teeth requires a thorough evaluation of the infant's overall health and necessitates consideration of potential risks and benefits arising from various treatment options. Parental education and support are essential for informed decision-making concerning this condition. In addition, healthcare providers must be prepared to manage complications like poor feeding, infections, and choking. Given the complexity of managing natal teeth, multidisciplinary care teams should collaborate to render comprehensive care to affected infants, including dentists,

pediatricians, and maxillofacial surgeons. Future research is required to better understand this condition and develop innovative management approaches. Therefore, health professionals, armed with heightened awareness, prompt identification, and appropriate management, can help mitigate risks associated with natal teeth and improve the health and well-being of newborns.

4.1 Limitations and Future Implementations

The search for literature specifically addressing natal teeth proved challenging, as most sources predominantly discuss them in conjunction with neonatal teeth. A key limitation of the present study is the difficulty in identifying potential etiological factors. To enhance understanding in this area, it is suggested that further studies concentrate on nutritional and hormonal influences, environmental toxicants, and developmental abnormalities. Additionally, the varying prevalence rates across different countries complicate the establishment of a precise rate ratio. Therefore, it is essential to conduct future longitudinal studies that take ethnicity into account.

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