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A Literature Review on Epstein Pearls and their Clinical Implications

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Abstract

***Aim**: This article focuses on the importance of maintaining good oral hygiene and the benefits this has for our oral health and confidence. It highlights the need to maintain proper cleaning of the teeth and gums to prevent cavities and periodontal disease. **Material and method**: In addition, the importance of going to the dentist regularly is highlighted, especially for the pediatric population, since this allows identifying and preventing possible problems in the oral cavity from an early age. The presence of Epstein pearls in the oral cavity of neonates, which are small whitish growths on the gums, is mentioned. It is clarified that these pearls are a variability of normal development and should not be confused with the appearance of teeth. **Statistics and Result:** It is explained that Epstein pearls are formed due to the retention of epithelial tissue remnants during fetal development. The aim of the article is to provide updated information on Epstein pearls to parents and pediatricians in order to avoid misdiagnosis and to promote a better understanding of this phenomenon in newborns or neonates.*

Keywords: *Oral Cavity, Organism, Oral Cavity, Epstein Pearls*

1. Introduction

Detecting oral disorders in neonates represents a challenge for clinicians due to the lack of clear clinical guidelines to guide diagnosis and treatment. These anomalies can occur in various forms, some of the most common cases being cysts at the gingival and palate level, neonatal teeth, and cases of cleft lip and palate (Cabrera et al., 2023). Early detection of these alterations is essential to ensure timely and appropriate intervention. However, the difficulty lies in the complexity of the neonates, since their developing anatomical and physiological characteristics make it difficult to accurately identify these conditions.

Gingival and palatal cysts are relatively common findings in neonates, and their identification may require careful evaluation by health professionals. Neonatal teeth, which appear in the baby's mouth in the first few months of life, can also present diagnostic challenges due to their unusualness and potential implications for breastfeeding and feeding the baby.

On the other hand, cases of cleft lip and palate, where there is a malformation in the union of the tissues that form the upper lip and / or palate, require specialized and multidisciplinary care. Early diagnosis of these conditions is critical to ensure proper management and plan necessary treatment, which may involve reconstructive surgery and supportive therapy (Rosero et al., 2023; Rosero et al., 2023).

The lack of concise clinical guidelines for the diagnosis and treatment of oral disorders in neonates is a challenge that needs to be addressed through continued research and collaboration among health professionals. It is crucial to develop clear and up-to-date protocols that facilitate the early identification, accurate diagnosis and appropriate management of these conditions, thereby improving the care and well-being of affected infants (Cabrera et al., 2023; Ramos et al., 2016).

During embryonic development, the process of dentition formation begins to manifest itself around the fifth week of intrauterine life at this time, a thickening of the oral ectoderm can be observed, which will subsequently become the dental lamina. It is in this period that the mandibular arches, essential structures for the formation of jaws and teeth, fuse with each other (FAP, 2021; Cando et al., 2020).

One of the common findings during this developmental process is the appearance of a type of gingival cyst, known as a neonatal gingival cyst, which occurs in approximately 80% of newborns (Perez, 2019). This type of cyst is characterized by an accumulation of fluid in the gingival region, in which the forming teeth are about to erupt. Although it can cause concern in parents, it is important to note that these cysts are benign and tend to disappear spontaneously in the first weeks or months of the baby's life.

The presence of the neonatal gingival cyst in most newborns reflects the common nature of this phenomenon during the stage of dental development. Although the appearance of this cyst can be disconcerting to parents, it is critical to provide them with clear and reassuring information about its benign nature and its spontaneous resolution over time.

The recognition of these normal events in the development of the dentition is essential to differentiate them from possible pathologies or anomalies that require specific medical attention. Therefore, it is important that health professionals are trained to effectively identify and communicate to parents about these normal phenomena, providing the necessary peace of mind during the first stage of the baby's dental development.

It is a fact that while the structures of the mouth are forming, small fragments of skin can be trapped inside. These fragments are filled with keratin and give rise to these small cysts. However, they usually disappear on their own within a few weeks of life, leaving no sequelae and without the need for any treatment (Perez, 2019).

Epstein's pearls, also known as infantile gingival cysts, were first described by Alois Epstein in 1880 (Herrera et al., 2021). These formations present as yellowish-white cysts or nodules and are located in the mouth, gums, and palate of infants. These nodules get their name because of their appearance, as they resemble small pearls (Ucm, 2019).

These Epstein's pearls, or infantile gingival cysts, are benign lesions and are considered a normal anatomical variant in the oral cavity of newborns and infants. They usually appear as small, rounded, raised bumps on the gum, although they can also appear on the palate. These cysts are composed of connective tissue covered by a layer of epithelium and usually measure between 1 and 3 millimeters in diameter.

Although Epstein's pearls are benign and do not represent a significant health problem, their presence can raise concern in parents It is important to reassure parents and provide them with accurate information about the benign nature of these formations. It should be noted that Epstein's pearls are self-limiting lesions and tend to disappear spontaneously as the baby grows and develops.

Recognition and understanding of Epstein's pearls are critical to avoid unnecessary alarms and to differentiate them from other, more serious conditions in the oral cavity of babies. Although they can be confused with other lesions, such as mucous retention cysts or tooth eruptions, their characteristic appearance of small pearls and their location on the gums and palate are key indicators for their proper identification.

Epstein's beads develop in the embryonic period, and result in remnants of embryonic epithelial structures of the dental lamina. (Ramírez, 2021) These grow after the fourth month in utero during the

development of the dental organs, and are located exclusively above the midline of the hard palate, that is, in the soft tissue of the jaws (Martinez, 2019).

2. Materials And Methods

The present study is part of a descriptive, observational and retrospective design with the aim of analyzing and compiling existing information on Epstein's pearls.

The descriptive approach is used to examine and understand the characteristics of this phenomenon without intervening or modifying its natural course is based on the review of previously published scientific articles, which allows us to obtain a broad and objective view of the characteristics and clinical characteristics of Epstein's pearls. The compilation of the opinions of various authors through the bibliographic review will allow us to obtain a detailed image of this phenomenon.

The observational approach will allow us to observe and analyze the phenomenon of Epstein's pearls as described in the scientific articles reviewed. No modifications will be made or intervention in the phenomenon, but the findings and conclusions presented by the authors in the selected articles will be analyzed. This will allow us to gain a deeper understanding of the characteristics, prevalence and possible factors associated with Epstein's pearls.

In addition, the retrospective design is based on the review of scientific articles previously published in recognized journals and available in databases such as PubMed, Scielo and Google Scholar. Studies and articles that specifically address the topic of Epstein's pearls will be selected, and the data and conclusions presented in them will be analyzed.

As for the population and sample, the study population will consist of the scientific journals and previously published articles addressing the topic of Epstein's pearls. The sample will be a selection of these articles, taking into account their relevance, scientific quality and relevance to the study. The search will be carried out in recognized scientific databases and inclusion and exclusion criteria will be applied to guarantee the quality and representativeness of the sample.

3. Results and Discussion

Table 1: Epstein's pearls

AUTHOR	YEAR	Title	RESULT
Barcia Carlos	2020	Epstein's Pearls | Basic information	Protein-filled gingival cysts in newborns.
Martinez Eva	2019	Epstein pearls in babies: why they come out and how to remove them	Gingival cysts that appear on the gums and palate of newborns.
White Sword	2021	Epstein's pearls in the baby: Causes, symptoms and treatment	Gingival cysts at the level of the palate and gums
Perez Christian	2019	Epstein's pearls in babies	Gingival cyst that affects newborns, is yellowish or whitish found on the palate and gum.
Ramirez Lorena	2021	Epstein pearls in newborns and babies	White or yellow cyst
Ruiz Elena	2021	Epstein's pearls of the newborn	Yellowish or white gingival cysts in newborns

Table 2: Rashes of the oral cavity

AUTHOR	YEAR	TITLE	RESULT
Torres Carvajal Martha	2009	Teething development	Embryonic life, long and complex process

Morgado Serafín Danay	2017	Chronology and evolution of tooth eruption	Altered change in the chronology of tooth growth, embryonic life development
Garcia Marin	2012	Normal and pathological tooth eruption	Alterations of the eruptive chronology, starting from embryonic life
Ayala Paula Hilda	2018	Tooth eruption and its influencing factors	Behavior of the chronology and sequence of eruption, alteration in the development of embryonic life
Burgueño Torres Laura	2014	Study of the eruption on temporary teeth	Acceleration of growth in primary teeth, in embryonic life
Rise Moonflower	2016	Chronology and sequence in the first transitional period	Favorable occlusion due to tooth eruption, in embryonic life

Table 3. Prevalence of epstein's pearls

AUTHOR	YEAR	TITLE	RESULTS
Carillo Orlando	2017	Prevalence of oral alterations of the newborn	Epstein pearls 42.7% within the midline and outside the midline 7.3%.
Gaona Acevedo Castle Castle Susan Doris	1995	Prevalence of inclusion cysts in newborns	Of 50 newborns, 22% to 44% have inclusion cysts in the mouth cavity
Perez Monica Manuel Oaks	2014	Oral alterations of the newborn	Of the 50% of newborns present gingival cysts, it has been reported that 85% erupt in the incisal region of the jaw, 11% in the incisal region of the maxilla, 3% in the region of lower canines and 1% in the region of the canine in the maxilla.
Núñez María E.	2014	Congenital and Developmental Oral Disorders in Infants 0 to 12 Months from the National Institute of Child Health	Of the total number of babies examined, 72.5% had congenital oral and developmental alterations, Epstein's pearls with 29.3% of cases.
Abbot Caut	2016	Frequency of congenital oral	Epstein's pearls were the most frequently presented

Jannette Carol	and developmental disorders in infants 0 to 12 months of age	(31.6%).

Martinez (Perez et al., 2014) describes Epstein's pearls as gingival cysts that develop on the gums and palate of newborns. For his part, Pérez (Chambi, 2021) points out that these pearls are gingival cysts that can affect newborns, presenting as yellowish or whitish bumps on the palate and gums. In relation to Chambia pearls (Spain, 2018) he adds that they are gingival cysts full of protein found in the oral cavity of newborns. Spain (Vargas, 2020) agrees with the above descriptions when referring to these pearls as gingival cysts that are located on the palate and gums in newborns. Likewise, both (Garrido et al., 2021; Ortiz et al., 2021; Chambi, 2021). claim by mentioning that Epstein's pearls are white or yellowish gingival cysts that appear in the oral cavity of newborns.

As for the chronology of the dental eruption, they argue that the development of the dentition begins in embryonic life, being a long and complex process. Other authors emphasize that the dental eruption can have alterations in its chronology and evolution, there are others who mention that the chronology and evolution of the dental eruption varies between individuals due to genetic and environmental factors. These authors agree that alterations in tooth eruption can manifest from the embryonic stage.
(Cando et al., 2020) highlight the influence of tooth eruption on the chronology and sequence of eruption, noting that temporary teeth may experience accelerated growth. On the other hand, (Parra et al., 2011) indicates that the chronology and sequence of the eruption during the first transitional period has an impact on dental occlusion. However, it is important to note that tooth growth and development can be accelerated or delayed due to various complications that may arise from the embryonic stage.

In relation to the prevalence of oral alterations in newborns, it reports that Epstein's pearls are found in 42.7% of cases, predominantly in the midline, and that cysts of the dental lamina have a prevalence of 13.6% in the upper jaw and 3.2% in the jaw. Ricardo et al. (2019) mention that inclusion cysts have a prevalence of 22% to 44% in newborns. In addition, indicates that 50% of newborns have gingival cysts, with the incisal region of the jaw being the most affected (85%), followed by the incisal region of the maxilla (11%), the region of lower canines (3%), and the canine region in the maxilla (1%).
On the other hand, Ricardo et al. (2020) highlights that 72.5% of the babies examined have congenital oral and developmental alterations, with Bonn nodules being the most common alteration with a 40.3% prevalence, followed by the persistence of the upper middle labial frenulum with 30.2%. Epstein's pearls are one of the most frequent congenital and developmental oral disorders, occurring in 31.6% of cases, followed by Bonn nodules with a 29.6% prevalence.
Importantly, Epstein's pearls can be considered a normal developmental variant, as they are gingival cysts that resolve spontaneously without causing significant complications in most cases (Vargas, 2020). However, it is essential to have the evaluation and supervision of a health professional, such as a pediatric dentist, to confirm the diagnosis and rule out any other conditions that could present in a similar way (Salagado et al., 2020).

In relation to tooth eruption, it is necessary to bear in mind that this process develops sequentially and gradually throughout infancy and childhood. The eruption of primary and permanent teeth follows a specific chronology, although individual variations may occur. The appearance of baby teeth usually occurs between 6 and 12 months of age, while the eruption of permanent teeth begins around 6 years and continues until adolescence. It is important to note that during tooth eruption alterations and pathologies may arise, such as ectopic eruption, delays in eruption, dental agenesis (absence of one or more teeth), among others. These conditions may require intervention and follow-up by a dentist to ensure proper dental development and prevent possible complications in the future,
In addition, it is relevant to note that tooth eruption can influence other aspects of oral and general health, such as occlusion and masticatory function. Proper teething development contributes to proper tooth alignment and efficient chewing, which is essential for proper digestion and nutrition. In

conclusion, Epstein's pearls are gingival cysts that can occur on the gums and palate of newborns. Tooth eruption is a complex process that begins in embryonic life and continues throughout infancy and childhood. It is important to have the evaluation and supervision of dental health professionals to ensure proper dental development and prevent possible complications. Early detection and proper management of oral alterations and tooth eruption are essential to maintain good oral health in the first years of life.

4. Conclusion

Epstein's pearls are called "lumps" and represent a type of yellowish-white cysts or nodules. These small benign bumps consist of protein-filled cysts that appear in the first few weeks of the baby's life. Although they are harmless, their presence can cause concern in parents. The prevalence of these oral lesions is estimated to range from 40% to 60% in neonates approximately two weeks after birth. In other words, it is estimated that about 4 out of 5 newborns have these Epstein pearls. Importantly, this prevalence may vary in different populations and contexts. It has been observed that certain characteristics of neonates are related to the appearance of Epstein's pearls. Although Epstein's pearls are considered a normal and benign variant in the development of the oral cavity of neonates, it is important to take into account these associated characteristics. Knowledge of these factors can help health professionals identify and reassure parents that these injuries are common and do not pose a risk to the baby's health.

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