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PREVALENCE OF EPSTEIN'S PEARLS AND BOHN'S NODULES AMONG CONGENITAL ORAL ABNORMALITIES

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ABSTRACT

INTRODUCTION: Epstein's pearls and Bohn's nodules are characterized as inclusion cysts of the newborn, resulting from epithelial remnants that were trapped during the fusion of palatal processes. They are asymptomatic and transient cystic lesions and, therefore, do not require treatment by means of drugs or surgical intervention. This issue is problematic, since dental or pediatric professionals find it difficult to accurately identify and diagnose the cyst, failing to inform parents who are often distressed to realize the pathology. **OBJECTIVE**: The purpose of this paper is to develop an integrative literature review to analyze whether, in fact, Bohn's nodules and Epstein pearls are the most common congenital oral lesions in newborns. **METHODOLOGY**: Articles indexed in SciELO, PubMed / Medline and Lilacs. The keywords used were: Epstein's pearls, Bohn's nodules, newborn, prevalence, palatine cysts, gingival cysts. As inclusion criteria, complete articles published in the last 10 years, in the Portuguese and English languages and that answered the research question. We found 23 articles and after applying the inclusion criteria, we selected 17 articles, 9 of which formed the present abstract, using them to explore the content. **RESULTS AND DISCUSSION**: Epstein's pearls and Bohn's nodules appeared in the literature as high frequency oral abnormalities among newborns. The data obtained in the base articles took age, location and gender as criteria, with differences between their percentages. Despite this dissonance, research has always resulted in about 50% more cases, compared to other congenital oral abnormalities. Thus, there is a comparative table between the studies that shows the results more easily in order to make explicit the prevalence of these cystic oral lesions. No evidence was found on causes related to these pathologies, only embryological origin, and further research is needed. **CONCLUSION**: Based on the findings, it is noticeable the prevalence of Epstein Pearls and Bohn's Nodes, given the high frequency of these inclusion cysts in the clinical routine. Given this, the present literature review brings the necessary keys to clarify the predominance of these congenital oral anomalies so that it is possible to set up an accurate diagnosis and clarification of parents.

KEYWORDS: Epstein's pearls, Bohn's nodules, newborn, prevalence, palatine cysts, gingival cysts

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INTRODUCTION

During early childhood, the human body undergoes constant changes in its anatomical structures, and abnormalities in the oral vestibule and oral cavity are frequent. itself[1]. Among these manifestations, we highlight the emergence of inclusion cysts, which are still developed in the embryonic period. This pathology has common features, but varies its nomenclature depending on the location of the cyst. [2-4]. Thus, when cysts are found in the midline of the palatine bone, they are referred to as "Epstein pearls" or "palatal cyst of the newborn." However, when located in the gingival region or dental ridges, they are classified as “Bohn's nodules” or “newborn's gingival cyst” [3, 4] .

In general, these congenital oral malformations are small, asymptomatic, transient in nature, yellowish-white in color and vary in size and thickness [2, 4, 5]. As for histology, they are usually covered by three layers of paved epithelium and filled with keratin [1, 2, 4-6]. In addition, it is known that the presence of these cysts in the oral mucosa does not compromise breastfeeding, nor causes discomfort to the child. On average, they disappear at two weeks to five months of age, thus requiring no intervention through drugs or surgeries [2]. It is noteworthy that the period in which the presence of these congenital oral lesions is most identified is between 0-3, which is hardly visualized after this [2, 3, 7].

The Bohn s nodules were first described by Henrich Bohn (1866) and 'mucous gland cysts' (4). The author believed they could be derived from epithelial remains of developing palatine salivary glands. These nodules could also be seen along the buccal and lingual surfaces of the maxillary and mandibular dental ridges and were considered reminiscent of glandular mucosal tissue. The cysts located along the medial hard palate raphe, which seemed to derive from epithelial remnants retained along the newborn fusion line, were described by Alois Epstein (1880) and termed “Epstein Pearls” [2, 19). 4].

In this sense, it is worth noting that dental surgeons have a difficulty in recognizing these cystic lesions due to a limited knowledge on the subject. In addition, parents often do not seek professional opinion because they think cysts are the beginning of the tooth eruption, also characterizing a lack of knowledge about this condition. However, when afflicted parents seek treatment, the dentist should be able to guide them about the transient nature of the lesions, with no treatment required but regular follow-up[1, 2, 4]. Accordingly, it is recommended, based on the literature, the use of criteria for a concise diagnosis of palatal cysts. This involves the clinical aspect of the pathology as well as histological and radiographic findings. The location in the midpalatal cleft and the presence of a coated epithelial sac are fundamental criteria[5]. The diagnosis of gingival cysts differs only in location, being more evident in the gum region. Thus, the purpose of this paper is to develop an integrative literature review to analyze whether, in fact, Bohn's nodules and Epstein pearls are the most common congenital oral lesions in newborns.

METHODOLOGY

This is an integrative literature review to emphasize the higher frequency of Bohn's nodules and Epstein's pearls among congenital oral lesions in newborns. The data search was performed in the databases and online libraries: SciELO, PubMed / Medline and Lilacs. For this, the following health descriptors were used: Epstein pearls, Bohn's nodules, congenital oral cysts, gingival cysts, dental lamina cysts and newborn oral nodules in Portuguese and English. Inclusion criteria were: complete articles published in the last 10 years, in Portuguese and English, and answering the research question. We found 23 articles, and after applying the inclusion criteria, we selected 17 articles, 9 of which formed the present abstract, using them to explore the content.

DISCUSSION AND RESULTS

During the embryonic period, specifically at week 8, palate development begins. The

palatine bones, results of each maxillary process, adhere to the horizontal and shelf form, growing from the lateral towards the midline of the mouth. After that, they meet and from there, a fusion process takes place. The main hypothesis accepted by the researchers is that during this period, it is likely that there is an entrapment of the epithelium that involves both maxillary processes or peripheral gingival tissues. The reason is not known, but epithelial remains multiply and become cystic and may disappear in intrauterine life or remain until months after birth [2, 3, 5].

The true cause of this pathology is unknown. The research consulted for the construction of this summary did not find any kind of habits, genetic conditions or factors that could lead to the appearance of Epstein pearls and Bohn nodules. Therefore, further research is necessary to know the factors that lead to the appearance of these cysts.

The considers the information arranged in the literature, it becomes clear that the abnormalities present in the mucosa and oral soft tissues are found recursively [1, 2,7). Although there are divergences in the literature, research shows that the incidence of newborn inclusion cysts ranges from 58.8% to 75% of the cases approached.[1, 8], it is perceived that this occurs due to the diversity of the populations taken as references during the study design. However, it is clear that among the congenital oral manifestations, Epstein pearls and Bohn's nodules are the most frequent among congenital oral malformations in newborns when considering the range of works related to the theme, which, in turn, attribute aspects such as age, place and gender to the formation of the content provided [1].

Diante this situation, to take a basis a first study used a sample of 586 children, and 316 (53.9%) males and 270 patients (46.1%) of the female noted the occurrence of oral manifestations of soft tissue in newborns was 34.8%. Of this number, 43.2% of children between 0 and 1 month of age had Epstein Pearls, while 10.2% had Bohn's nodules. Thus, performing a restriction on the general cystic manifestations, it is observed that the inclusion cysts of the newborn were more prevalent than the other lesions (23.62%). Thus, it is important to remember that among the abnormalities related to the oral cavity, the inclusion cysts of the newborns presented in 58.8% of the cases. It is necessary to reaffirm that after the first year of life of newborns there is no incidence of cases related to these oral pathologies [1].

The same prevalence was observed in a second study, in which the sample consisted of 621 children aged 0 to 6 months[7]. During the exams, data regarding different types of oral mucosa alterations were observed. Of the total cases examined, 311 were female and 310 male, of which 45 (7.24%) showed any change - 23 males (7.42%) and 22 females (7.07%).). The frequency of babies with oral alterations in this study was 7.24%, while, more isolated, inclusion cysts were the most prevalent alterations in the oral cavity of the babies examined in the study, with frequency of 6.28%. 92.75% of the children had no oral alterations and 0.97% had other oral manifestations [7].

More than once, the result was demonstrated by observations in a third study that focused on determining the frequency of newborn oral cavity abnormalities and assessing the association with prenatal factors. As a method, a total of 2216 newborn children from 0 to 6 months old were analyzed in two hospitals. One of the criteria, such as gender, obtained a higher number of male children (53.16%). In this context, it is known that the most frequent oral findings were Bohn's nodules and Epstein's pearls. Of the 1038 female children with abnormalities in the oral cavity, 718 showed Bohn's nodules (69.2%) and 616 had Epstein pearls (65.1%). In the 1178 male children, 832 with Bohn's nodules (70.6%) and 787 with Epstein pearls (66.8%) were seen. Thus, from the total number of both sexes (2216), 1550 Bohn's nodule children and 1463 children with Epstein pearls were found, considering that one

child can present both types of cysts mentioned and / or variable amounts simultaneously. Regarding the relationship of the above numbers with prenatal factors, it was observed that the ingestion of folic acid during pregnancy was largely linked to inclusion cysts. Moreover, it was found that Bohn's nodules are negatively related to the incidence of premature births. Comparison between infants who had or not these lesions on the oral mucosa showed that there was a significantly different maternal consumption of folic acid and iron during pregnancy [9].

From the perspectives of the 3 main studies mentioned above, two tables were organized, based on data collection related to the highlighting of inclusion cysts on the other oral manifestations of the newborn. Table 1 provides information regarding the proportion of children approached for the survey, based on the age considered by their respective authors as the most viable to the appearance of cystic lesions in the oral cavity (except for study 1, in which the author opted for greater specificity). The number of newborns affected by any oral manifestations taking into account the overall count of children approached. Table 2 shows percentages associated with the incidence of Epstein's pearls, Bohn's nodules, inclusion cysts (combination of Epstein's pearls, Bohn's nodules, and dental lamina cyst) and other oral manifestations in newborns considered as a reference for Table 1. It should be clarified that the information presented in the tables below are interpretations of the data provided in the articles [1, 5, 7].

CONCLUSION

In the final analysis, when performing an interpretation of the data collected, it is noted that Epstein's pearls and Bohn's nodules are the main oral manifestations in newborns, being the most recurrent. Moreover, when analyzing the wide range of literature that addresses this theme, we notice a difference in the numbers obtained during the data collection. However, it is visible the similarity between the conclusions reached despite the different populations approached for the mounting of the studies. In the vast majority of cases, Epstein pearls and Bohn nodules are observed to be much more frequent when compared to other lesions of the oral mucosa. However, despite not compromising the health of the newborn, it is necessary that the dentist or pediatrician is always aware of the occurrence of this problem, since these more prevalent malformations are common in the clinical routine. This represents a point to be developed, given that there is a professional unpreparedness when making an accurate diagnosis and able to calm worried parents. It is important to be aware that the inclusion cysts of the newborn are not malignant tumors and do not need pharmacological or surgical intervention, given their transient character.

	QUANTITY OF CHILDREN	AGE	CHILDREN AFFECTED BY ANY ORAL MANIFESTATION
PADOVANI, MCRL et al. Prevalence of oral manifestations in soft tissues during early childhood in Brazilian children. [1]	197 [1]	0 to 1 month [1]	139 [1]
SANTOS, FFC et al. Prevalence of congenital and developmental oral disorders in infants 0 to 6 months.[7]	621 [7]	0 to 6 months [7]	45 (7.24%) [7]
PEREZ-AGUIRRE, B. et al. Oral findings and its association with prenatal and perinatal factors in newborns. [9]	2216 [9]	0 to 6 months [9]	not reported [9] -

*TABLE 1 **

	EPSTEIN (PE) PEARLS -%	BOHN NUCLEAR (NB) - %	PE, NB AND DENTAL BLADE CYST	OTHER ORAL MANIFESTATIONS
PADOVANI, MCRL et al. Prevalence of oral manifestations in soft tissues during early childhood in Brazilian children. [1]	85 (43.2%) [1]	20 (10.20%) [1]	116 (59%) [1]	23 (11.7%) [1]
SANTOS, FFC et al. Prevalence of congenital and developmental oral disorders in infants 0 to 6 months. [7]	not informed [7]	not informed [7]	6.28% [7]	(0.97%) [7]
PEREZ-AGUIRRE, B. et al. Oral findings and its association with prenatal and perinatal factors in newborns. [9]	1463 (66%) [9]	1551 (70%) [9]	not reported [9]	1101 (49.8%) [9]

*-TABLE 2 **

** Table created by the authors of this literature review with data obtained from the referred articles*

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