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Oral characteristics of newborns: report of some oral anomalies and their treatment

Características bucais em recém-nascidos: relatos de algumas anomalias e seus tratamentos

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ABSTRACT

Today it is common that parents of babies with few months old visit the office of pediatricians and pediatric dentists, to receive information about their child's oral health, or because they noticed some anomaly or questionable alteration in baby's mouth, or for preventive measures. For this reason, pediatrics professionals have to recognize the normal oral characteristics of newborns to differ them with eventual oral anomalies that need treatment. This article provides information for pediatric health professionals about oral characteristics within normality in newborns in order to recognize abnormalities in early stages, guiding their treatment and reassure the parents or guardians on the proper moment for correct approach.
Key words: Oral manifestations, newborns, abnormalities

RESUMO

Hoje em dia é comum que pais de bebês com poucos meses de vida visitem os consultórios de pediatras e odontopediatras para receber informação sobre a saúde bucal dos seus filhos, seja porque estes observaram algumas anormalidades / alterações duvidosas na boca do bebê ou devido ao pensamento preventivo para evitar problemas bucais futuros. Por este motivo, os profissionais da pediatria devem reconhecer as características bucais normais dos recém-nascidos para diferenciá-las de eventuais anomalias bucais que precisam ser tratadas. Este artigo oferece aos profissionais da saúde pediátrica informação sobre as características consideradas dentro da normalidade em recém-nascidos e as anormalidades encontradas desde estágios precoces. De esse modo, o profissional pode orientar o tratamento correto e precoce, assim como tranqüilizar os pais ou responsáveis sobre a o momento da abordagem odontológica apropriada.
Palavras-chave: Manifestações bucais, recém-nascido, anormalidades.

INTRODUCTION

During the first months of life, newborns present some characteristics that are inherent to their development phase and suitable for physiological needs, but which frequently raise doubts among parents. On the other hand, many dental and pediatric professionals are unaware of common characteristics of the oral cavity of these infants. The aim of this paper is to offer some information for pediatric health professionals in order to recognize the normal oral characteristics of newborns, to refer to the specialist and/or realize an accurate diagnosis of the anomalies that are probably present in pediatric patients.

HARD TISSUES
Maxillo-mandibular characteristics and relationship

At birth, maxilla and mandible are small in comparison with other structures. Forward maxillary positioning in relation to mandible is the most remarkable aspect at birth and yields a pseudo-appearance of micrognathia. Some authors reported that this maxilla projection reaches over 90% of cases and can vary from 0 to 7 mm [1,2]. Backward lower jaw displacement is assigned to ventral positioning of the fetus in the amniotic cavity; the correct maxillo-mandibular relationship is reached after birth and is probably achieved by the physiological sucking exercises during breastfeeding[1,2].

Concerning the frontal maxillo-mandibular relationship of a newborn, one of the following characteristics can be found[1,2]:

1. Anterior vertical space or opening between the alveolar ridges in anterior region, which would be equivalent to an "anterior open bite", and it is physiological before onset of tooth eruption (Figure 1). The prevalence range from 10% to 30%;

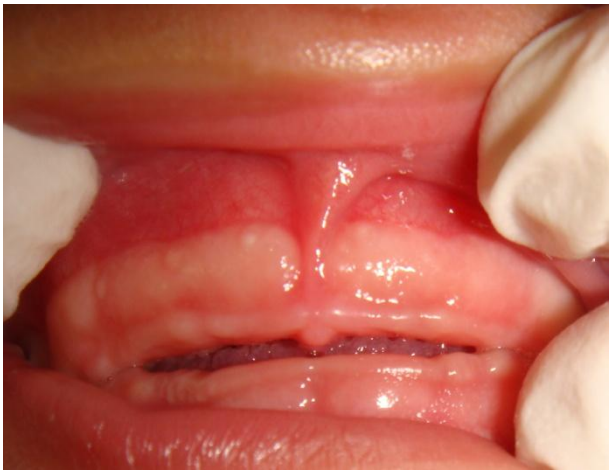

Figure 1. Anterior vertical space or opening between the alveolar ridges in the anterior region.

2. Overbite;
3. Edge-to-edge anterior relationship.

Regarding the prevalence of anterior vertical space, most authors agree that it is a common and natural characteristic that can be also considered as favorable condition, which could lead to establishment of ideal overbite after teeth eruption[1-3]. This space is filled by the tongue at rest position and will be filled by teeth later [3]3. Few infants present an edge-to-edge maxillo-mandibular relationship at birth[3]. Also, in frontal view, the buccal surface of both alveolar ridges has prominences indicating the position of the deciduous teeth crowns in development, being most evident in canine region, as it is covered only by cartilage due to absence of alveolar bone.

The maxilla presents a little depth, but rich in anatomic accidents and the palatal rugae are very evident. According to Moyers [4], at birth, the maxilla presents a round shape in "U" form, different from mandible, which is almost triangular. The most frequently morphological characteristic observed in the mandible is the presence of a fibrous and flaccid cord to palpation, very developed in newborn and gradually disappears when primary anterior teeth is almost to erupt [3-5] (Figure 2).

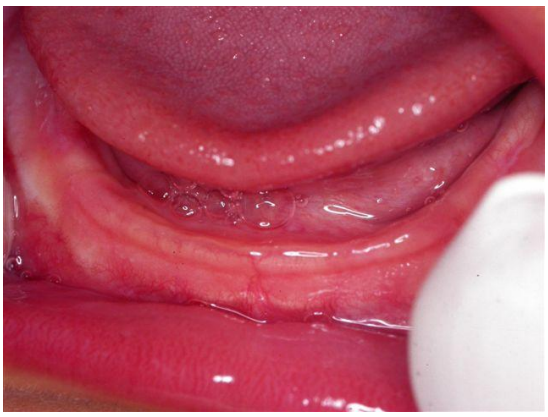

Figure 2. Presence of a fibrous and flaccid cord to palpation in the mandible.

TEETH

Chronological eruption anomalies

Besides these normal aspects, infants may also present some frequent changes in chronological eruption, such as natal and neonatal teeth. The etiology of natal teeth is rather unclear, though it seems to have a hereditary component[6, 7]. Natal teeth are present at birth, whereas neonatal teeth erupt up to 30 days after birth[8]. It happen about one in every 2.000 to 3.000 live births[8]; most of these teeth are mandible primary incisors and are more frequent among females (2.3:1)[6, 8]. Complications include discomfort during sucking causing irritation and trauma to infants tongue, sublingual ulceration, laceration of the mother's breasts, and tooth aspiration due to large mobility[8, 10]. Natal and neonatal teeth are more frequent in children with genetic disorders, and their presence could be a clinical sign for recognition of some disorders or syndromes[11]. The natal and neonatal teeth are predominantly of normal primary dentition (95%) and the management should aim the preservation of these teeth for esthetics and space maintenance for permanent successor eruption[6]. To verify if the tooth belong to primary dentition or not it is necessary to obtain an occlusal intraoral dental radiograph (Figure 3). If this is supernumerary teeth, there is an indication for extraction. If it is from normal primary dentition, these can be maintained in oral cavity with biofilm control and fluoride topical applications. If the tooth's incisal edges are sharp, they may be smoothed out or covered with composite resin to prevent the development of ulceration on the tongue's ventral surface, also known as Riga-Fede disease[8]. On the other hand, even if the normal series tooth presents excessive mobility, it should be extracted[6, 8].

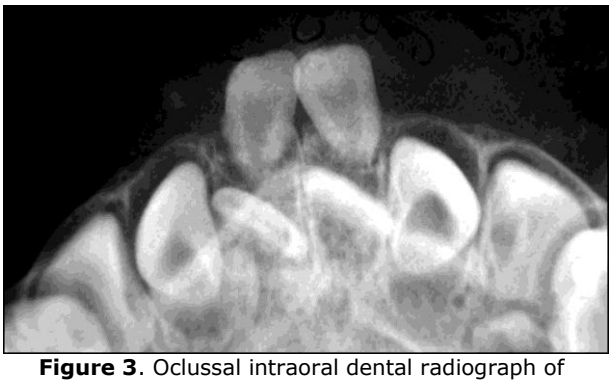

Figure 3. Oclussal intraoral dental radiograph of supernumerary neonatal teeth.

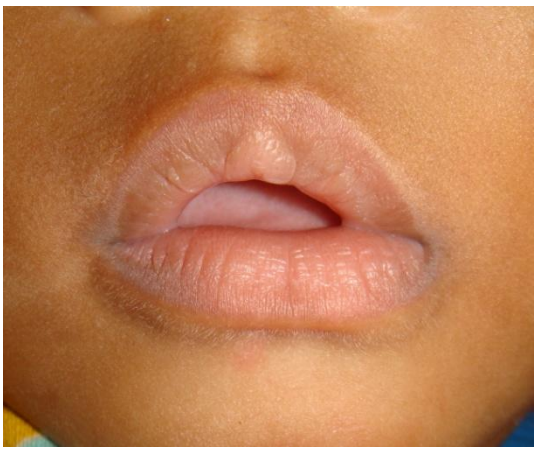

Figure 4. Sucking pad callus

THE TEMPOROMANDIBULAR JOINT (TMJ)

TMJ characteristics

The temporomandibular joint (TMJ) presents a rudimentary shape. Articular eminence is only a mild elevation, the mandibular condyle and disc are flat and glenoid fossa is shallow or almost flat at birth, remaining with this format for most period in primary dentition[3, 4, 12]. For that reason, there is greater freedom of mandibular movement due to the absence of interferences, however, laterality movement are of minor intensity. These movements promote development of the perioral muscles, which leads to maturation of the TMJ[3, 5].

SOFT TISSUES

LIPS AND FRENUM

The lips and sucking pad callus

The lip contour is characteristically triangular, with base on the lower lip and vertex on the upper lip. After birth, the frequent feedings lead to formation of the sucking pad callus[5] (Figure 4). This pad is an increased volume at the midline upper lip, enhancing mouth-to-breast engagement by the infant during breastfeeding. The volume is further increased when in contact with the breast or after stimulation. It is usually larger in younger breast-feeding children[3, 5].

The labial and lingual frenum characteristics and anomalies

The attachment of the upper labial frenum is variable with several millimeters above the alveolar ridge margin to an extent through the alveolar ridge to the incisive papilla[1-3]. This variable position is founded in 76.7% to 90% of newborns[1, 2]. Subsequently to eruption of the incisors teeth and development of the alveolar bone, the attachment progressively moves to buccal surface of alveolar ridge, assuming an upper position. In some cases, the attachment remains in the incisive papilla allowing the fibers to be established between the incisors. This type of frenum is considered pathological and is known as "persisting tectolabial frenum", which in newborns enhances breast-feeding by providing greater support to the upper lip[13]. According to Dias-Pizan et al[14] the persisting tectolabial frenum is observed in 25% of children, and the level of gingival attachment tends to move apically with age. Frenectomy is only recommended for babies when the lip is severely attached to frenum, hindering or preventing a proper lip seal during breastfeeding. Surgical indication would be strictly based on functional alterations in this age group.

Tongue-tie (ankyloglossia, tight frenulum) (Figure 5) is a condition in which the bottom of the tongue is tethered to the floor of the mouth by a membrane (frenulum) so that the tongue's range of motion is unduly restricted. This may result in various oral development, feeding, speech, swallowing, and associated problems. In newborns usually result in restricted movement of the tongue and hindering the breastfeeding[3, 15]. The prevalence of ankyloglossia varies from 4%

to 11%[15, 16]. There is a predilection of affected males over females by a ratio of 1.5:1[15, 6]. Evidence currently available propose that frenotomy be viewed as a safe, effective, and practical approach to treatment of breastfeeding difficulties in infants with ankyloglossia in whom alternative explanations for poor feeding and failure to thrive have been properly assessed[15].

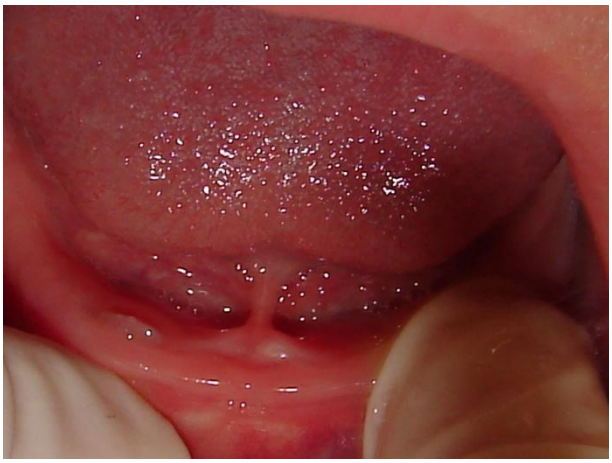

Figure 5. Ankyloglossia

VASCULAR LESIONS

Hemangiomas

Vasoformative lesions are the most common head and neck tissue malformation in infancy and childhood. Hemangiomas and lymphatic malformations comprise most of the vasoformative lesions. Hemangiomas present as raised, circumscribed, red lesions that are often lobulated[6, 17]. Their incidence is in approximately 2% of newborns and 10% of infants[6]. The majority of hemangiomas become distinct in the first 6 weeks, and undergoes proliferation in the first 8 to 12 months. Most (80%) are isolated, whereas 20% are multiple. There is a three to one female predilection[17]. The lips, tongue, and buccal mucosa are the most commonly sites where hemangiomas manifest. Clinically, superficial hemangiomas are red, raised skin lesions, but early on they may present as a macular patch, a localized area of telangectasia, or a blanched spot. Histologically, they are composed of small thin-walled vessels of capillary caliber that are lined by a single layer of flattened or plump endothelial cells surrounded by a discontinuous layer of pericytes and reticular fibers[17]. The natural course of hemangiomas after proliferation is gradual resolution. There may be continued improvement in the remaining children until 10 to 12 years of age. The natural course of resolution without any intervention often encourages practitioners to observe patients. Indications for more aggressive management include visual obstruction, symptomatic laryngotracheal lesion, ulceration and bleeding, congestive hearing failure, or platelet trapping (Kasabach-Merritt syndrome).

Treatment of complicated hemangiomas consists of pharmacotherapy (corticosteroids
or an interferon) or surgery (laser ablative or surgical excision). Corticosteroids tend to be more effective early on in proliferating lesions[6, 17]. The usual dose is 2 to 3 mg/kg per day of prednisone.

Lymphangiomas

Lymphangiomas are considered malformations, not neoplasms. Two major theories have been proposed to explain the origin of lymphangiomas[6]. One theory is that the lymphatic system develops from five primitive sacs that arise from the venous system. Concerning the head and neck, endothelial outpouchings from the jugular sac spread centrifugally to form the lymphatic system. Another theory proposes that the lymphatic system develops from mesenchymal clefts in the venous plexus reticulum and spread centripetally toward the jugular sac[17]. The head and neck are the most common sites for lymphangiomas, followed by the trunk, axilla, and extremities. The site of the lesion determines the symptoms. Many patients have no symptoms other than a cosmetic deformity. Oral cavity involvement can produce dyspnea, dysarthria, and feeding difficulties. Rapid expansion can occur with hemorrhage into the cyst or infection. Trauma also can be associated with rapid expansion secondary to the development of cellulitis, which can lead to an acute airway compromise. Diagnosis of lymphangiomas usually is not challenging. Because lymphangiomas are congenital, 60% are identified at birth, and 80% to 90% are evident by the second birthday[17]. The lesion is soft, flaccid, and fluctuant, with a multilobulated consistency. Imaging studies such as ultrasound help to determine the cystic nature of the lesion, and roentgen-ray computed tomography (CT) and magnetic resonance imaging (MRI) are essential to help confirm the diagnosis and aide in treatment planning[6, 17]. The diagnosis sometimes can be made with a prenatal ultrasound. Spontaneous regression only

rarely occurs. Sclerosing agents have been used in the past. Radiation therapy and steroids have been used, but have fallen out of favor. Laser treatment commonly is used for the treatment of oral cavity and airway lesions. The advantages to laser treatment include less bleeding and edema when compared with standard methods of surgical resection[17]. Multiple treatments are required, and the recurrence rate is higher compared with standard resections. Complete resection is desirable, but can be difficult to achieve because of the close association to vital structures, such as cranial nerves and major vessels[6, 17].

ORAL CYSTS

The prevalence of oral cysts varies from 46% to 99%, situated either in palatal region or on the alveolar ridges[1, 2, 6, 18, 19]. Studies have shown a significantly higher prevalence of cysts in the maxilla than in the mandible[2, 19-21]. On the maxilla, cysts appeared more often on the buccal side, while the mandibular gingiva demonstrated a lingual predominance[6, 20]. These cysts appear as small, isolated, or multiple whitish papules[6].

The oral cysts do not require specific treatment because there is no increasing in their size and they are spontaneously shed within a few weeks or months later[2, 6]. Although prevalence is high, these cysts are rarely seen by the general dentist or pediatric dentist because of transient nature of these cysts.

Oral cysts of the newborns are small, firm, white, or grayish white lesions. These are remnants of embryonic epithelial structures and may be classified as Epstein pearls, Bohn's nodules, or dental lamina cysts. Many authors believe these 3 types of cysts are actually a single entity, which differs as to their location and originary tissue[3, 6].

Dental lamina cysts

Dental lamina cysts, also known as gingival cysts of newborns, is a benign and asymptomatic oral mucosal lesion founded on alveolar ridge of newborns or very young infants which represent cysts originating from remnants of the dental lamina. These cysts are located more frequent located at posterior region[3, 6].

Epstein pearls

Epstein pearls often go unnoticed because they are asymptomatic. Clinically, they are characterized as circumscribed, white, nodular, submucosal or mucosal lesions, and are usually located on the alveolar ridge or midline of the hard palate. Histologically, each pearl represents a keratin-filled epithelial-lined cyst[3, 6].

Bohn's nodules

Bohn's nodules are inclusion cysts involving the vestibular or lingual surface of the alveolar ridge in newborns and infants. They are believed to arise from remnants of minor mucous salivary glands[2, 3, 6]. These cysts cause no symptoms and may go unnoticed. They often appear between the second and fourth month of after birth and can worry parents. Histological examination shows true epithelial cysts containing mucous acinar cells and ducts. Bohn's nodules should be differentiated from natal or neonatal teeth[1, 2, 3].

CONGENITAL EPULIS

The congenital epulis of the newborn may be classified as an extremely rare benign tumor of unknown pathogenesis and uncertain histogenesis that is present at birth. It is a firm, pedunculated mass with a smooth or lobulated surface, several millimeters to 9 cm in diameter[17, 18, 22]. It can be multiple and may occur in the mandible, maxilla, or tongue, but usually arises from the anterior part of the maxillary alveolar ridge and may or may not be associated with other congenital anomalies[22, 23] (Figure 6). The clinical manifestations depend on the size and location and may include dyspnea, suffocation, cyanosis, cough, difficulty in sucking and swallowing, and, occasionally, vomiting. Spontaneous regression of congenital epulis has been reported in few cases[23]. However, surgical excision is generally indicated due to interference with feeding or respiration. Recurrence of tumor after surgery has never been reported [22].

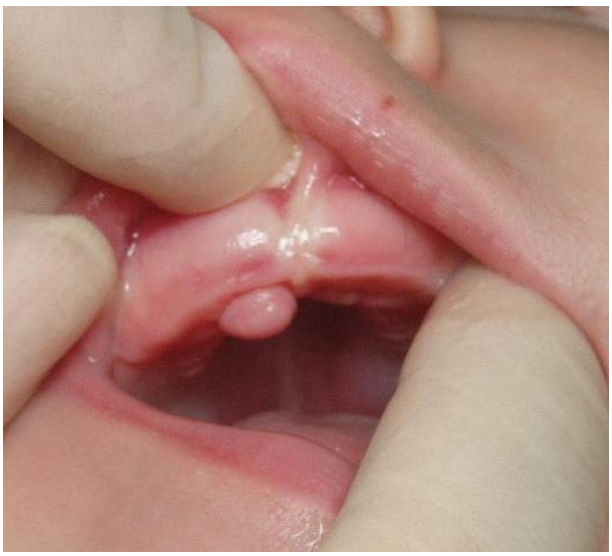

Figure 6. Congenital epulis.

CONCLUSIONS

Newborns present some normal oral characteristics, as well as physiological variations, according to their development stage. It is important that pediatricians and pediatric dentists have the knowledge about oral characteristics within normality patterns in newborns, and be prepared to realize a correct diagnosis of the anomalies in early stages, in order to avoid unnecessary therapeutic procedures, provide suitable information to the newborn's parents about the nature of these lesions and reassure them on the proper treatment.

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