

## Eruption Cysts in the Neonate

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*Disturbances of the dental development may result in anomalies, which may be apparent as soon as the child is born. Eruption cysts are rarely observed in neonates considering that at this stage of the child's life teeth eruption is uncommon. Thus, the aim of this report is to describe a case of eruption cysts in a neonate. A male neonate was brought to the emergency service with the chief complaint of an elevated area on the anterior region of the inferior alveolar ridge. The lesion was clinically characterized as a compressive and floating swelling. Through a radiographic exam two mandibular primary incisors could be seen superficially located. Due to the patient's age and the initial diagnosis of eruption cysts the conduct adopted was clinical surveillance. Forty-five days after the first visit the lesions had significantly decreased in size, and completely disappeared after 4 months. At that age, both mandibular central incisors were already in the oral cavity exhibiting small hypoplastic areas in the incisal edges. The clinical and radiographic follow-up of eruption cysts in neonates appears to be an adequate conduct without differing from that recommended for older children.*

**Keywords:** neonate; eruption cyst, case report

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### INTRODUCTION

Abnormalities related to odontogenesis such as dental lamina cysts, natal teeth and eruption cysts could appear in the neonate's oral cavity. Despite the fact that these abnormalities may be considered not pathologic,<sup>1</sup> they can be very alarming for parents and even for health care providers unaware of those deviations from the normal development.

Eruption cysts are located superficially over the tooth crown in the eruption stage<sup>2</sup> shortly before emerging into the

oral cavity. During the eruption process, the follicular space surrounding the tooth crown can be filled with tissular fluid, which produces a swelling in the alveolar ridge causing this specific type of soft tissue cyst. When a hemorrhage occurs in the follicular space, because of the vase compression during collagen destruction, the lesion is filled with blood. In this case the raised area become bluish or dark-blue in color and it is classified as eruption hematoma. Discomfort in both cases is rare, but the presence of such lesions can difficult or even impair the tooth emergence in the oral cavity.<sup>3</sup>

In order to explain the etiology of eruption cysts, theories are still in discussion. While some authors consider that degenerative changes in the reduced enamel epithelium during the amelogenesis<sup>4</sup> or dental lamina remaining<sup>5</sup> are the main causes of this soft tissue cyst, others state that the eruption cyst is caused by fluid or blood accumulation around the dental follicle resulting in its separation from the newly formed enamel. Irrespective of the precise etiology, the term eruption cyst is correctly used only when the implicated tooth is positioned in the soft tissue overlying the alveolar bone during the eruption process. When the tooth is surrounded by bone, the same lesion is referred to as dentigerous cyst, according to the classification adopted by the World Health Organization (WHO).<sup>6</sup> Clinically the eruption cyst appears as a soft and compressible elevation area situated in the alveolar ridge superficially to a tooth in the eruption process.<sup>7,8</sup>

In spite of being a soft tissue lesion the radiographic exam is recommended to evaluate both the underlying tooth

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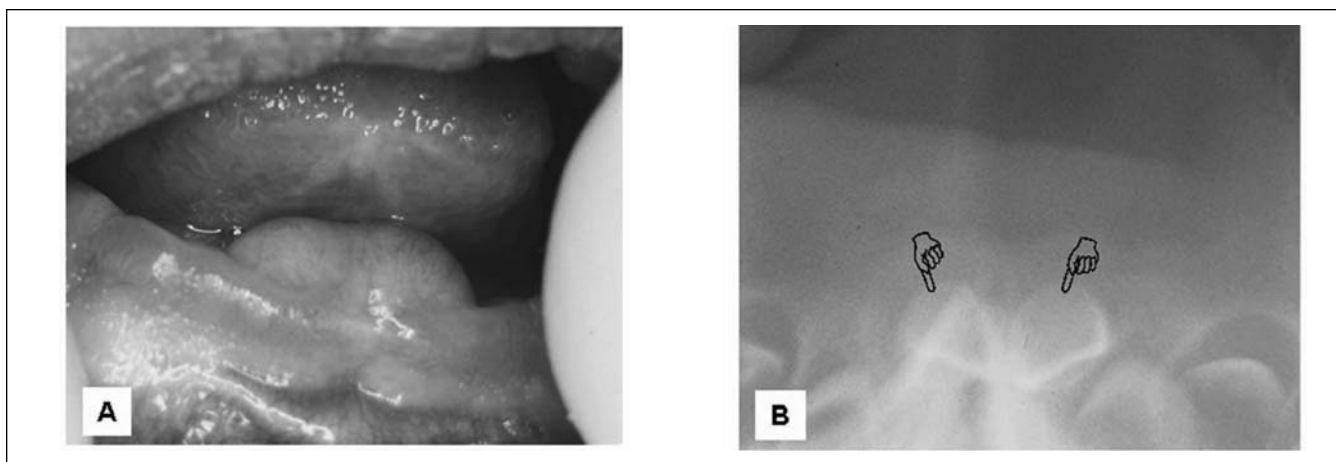
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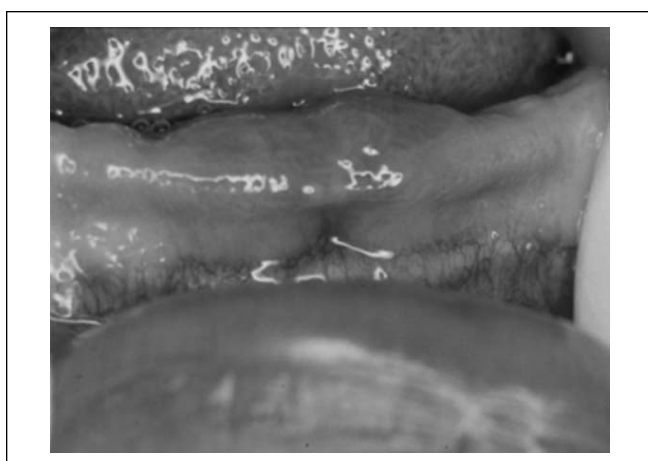
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**Figure 1.** (A) Clinical aspect of the fluctuant, compressive and pink-colored lesion presented on the mandibular gingival ridge of a neonate and (B) radiographic aspects of the related area. The radiographic image shows the superficial positioning of the primary mandibular central incisors (pointers).



**Figure 2.** 45 days follow-up. Significant decrease in the size of the lesion showing virtually its complete disappearance.

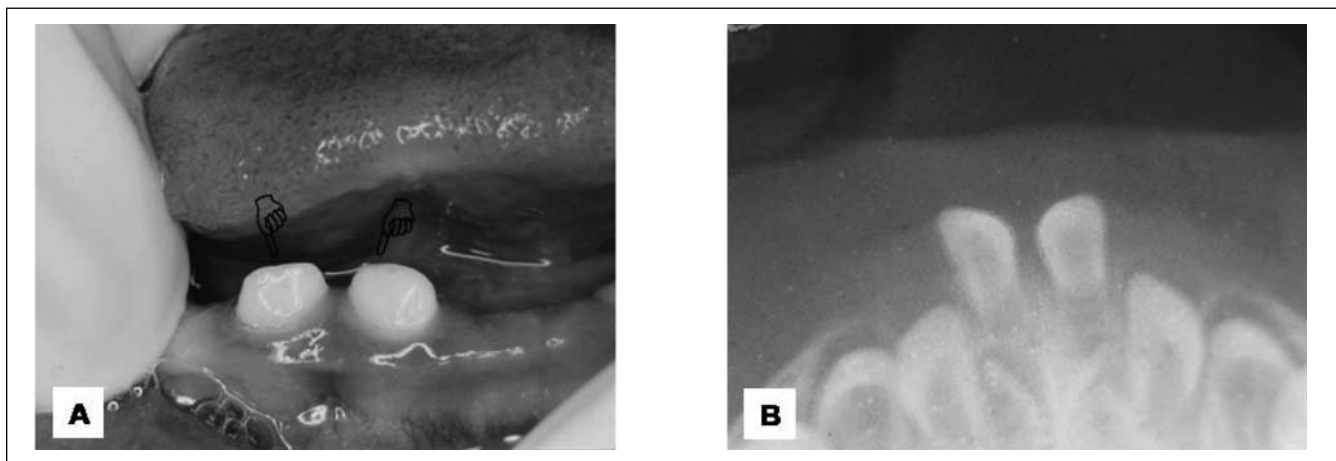
and bone. This alteration predominantly involves primary mandibular central incisors and first permanent molars.<sup>8</sup>

Although rare in adults, it is very common in the first decade of life.<sup>7</sup>

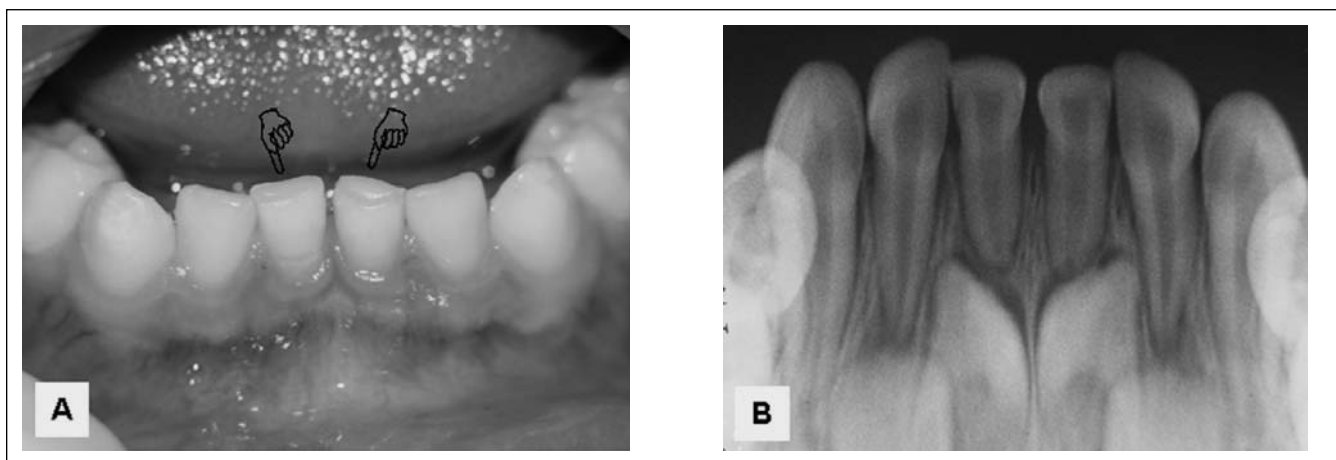
The aim of this report is to describe a case of eruption cysts in a neonate and the clinical approach adopted, discussing the factors related to the diagnosis and treatment of this dental development anomaly.

#### CASE REPORT

A black male born full-term was brought by his mother to the emergency service of the School of Dentistry at Araraquara-UNESP the day after she left the hospital. The mother's main complaint was the presence of an elevated area on the anterior region of the mandibular alveolar ridge. Clinically, the lesion was characterized as a floating and compressive swelling (Figure 1A). The anamnesis was carefully undertaken to obtain information regarding the pregnancy and family oral history. The mother reported having teeth in the oral cavity when she was born. An anterior mandibular occlusal radiograph showed the superficial posi-



**Figure 3.** (A) Clinical and (B) radiographic aspects at the 4-month recall appointment. The mandibular central incisors were partially erupted with small areas of enamel hypoplasia on the incisor edges (pointers).



**Figure 4.** (A) Clinical and (B) radiographic aspects at the 3-year recall appointment. The hypoplastic areas are more visible (pointers); however no invasive intervention was necessary. The radiographic development of the successor permanent teeth is compatible with the chronological age of the child.

tioning of the primary mandibular central incisors (Figure 1B). The procedure of choice, based on the patient's age and on the clinical diagnosis of eruption cysts, was the close monitoring of the lesion. Despite this initial decision, the possibility of a surgical intervention was not rejected in the case of lack of spontaneous regression. Recall appointments were scheduled every 15 days for a clinical examination. During the entire follow-up, the child did not present any signs of discomfort or feeding difficulties. Forty five days after the initial visit the lesion had almost disappeared (Figure 2). Complete regression was seen after 60 days and four months after the initial exam both primary central incisors were already erupted displaying small hypoplastic areas on the incisal edges (Figure 3A). A new radiograph was taken to check the root development (Figure 3B). Subsequent 6-month controls were scheduled in which a fluoridated varnish was applied to all teeth. In spite of the small hypoplastic areas (Figure 4A), which did not require any invasive procedure, the teeth presented normal development (Figure 4B) after 3 years of follow-up.

## DISCUSSION

Eruption cysts are rarely observed in neonates considering that at this stage of the child's life, teeth erupting are uncommon. In the present case, the occurrence of such anomaly was associated with the failed eruptive attempt of otherwise denominated natal teeth, confirmed by the radiographic image of superficially positioned primary mandibular central incisors. Bodner<sup>8</sup> reported the involvement of natal teeth in 8.3% (2 out of 24 cases) of the cases with eruption cysts. The occurrence of natal teeth is considered a disturbance of the biological chronology of unclear etiology. Inheritance is the main etiological factor associated with this odontogenic related anomaly.<sup>10</sup> Familial transmission in the present case was easily evidenced since the mother provided the information that her teeth erupted early. The most commonly affected teeth are the primary mandibular central incisors

often presenting hypoplastic enamel<sup>11</sup> as observed in the present case. It could be speculated that the tissular fluid retention in the follicular space surrounding the teeth crowns with subsequent development of the cystic lesion delayed the premature eruption of the primary mandibular central incisors. In this particular case, the presence of eruption cysts favored the continuity of tooth development. The involved teeth erupted four months after the child was born with sufficient root formation and absence of mobility, characteristics seldom seen in natal teeth.

The clinical appearance observed in the present case, characterized by a compressive and floating swelling suggestive of liquid retention, resembles that of a mucocele. This type of lesion occurs as the result of salivary gland mucus accumulation inside the connective tissue, in most cases because of a traumatic injury of the glandular duct.<sup>12</sup> However, minor salivary glands are not found in the alveolar ridge<sup>13</sup> excluding the possibility of a mucocele occurrence. Also, the hypothesis of an eruption hematoma was easily refuted because a hematoma is characterized by a purple cystic lesion caused by blood extravasation in the follicular space. The current reported lesions presented a pink color similar to the adjacent oral mucosa. Transillumination has been reported as a helpful tool in the differential diagnosis of eruption hematoma, because eruption cyst is translucent while the hematoma is opaque.<sup>2</sup>

Although the histopathological exam is not essential in establishing the final diagnosis,<sup>8</sup> a needle aspiration biopsy would definitely confirm the fluid-filled aspect, ruling out solid lesions. The evaluation of the aspirated cystic content under polarization light microscopy may demonstrate the presence cholesterol crystals, which have been described as a frequent component of the cyst capsule and fluid.<sup>14</sup> However, whenever surgery is performed, the cystic tissue must be sent for histopathological analysis to authenticate the clinical diagnosis and to avoid any probable misdiagnosis such as hemangioma, melanoma or ameloblastoma.<sup>15</sup>

Recently Chiang and Huang<sup>16</sup> reported a case of odontogenic keratocyst mimicking the clinical aspects of an eruption cyst, including a yellowish white content. That specific lesion however, presented a multilocular radiolucency, differing from the radiographic image of an eruption cyst. The cystic content should present a slightly yellow color and low viscosity, whose contents include prostaglandins, immunoglobulins, inflammatory cells such as mastocytes and antimicrobial proteins like the lactoferrin.<sup>17,18,19</sup> Mizukawa<sup>20</sup> identified high concentrations of human  $\alpha$ -defensin 1 (HNP-1), which is known to be found in human neutrophil granules, in the fluid of jaw cysts including dentigerous cysts. Although all these components are present in the cystic fluid, little is known about their role in those lesions formation and enlargement.

Since the condition subsides spontaneously in most cases, postponing the treatment should be considered first.<sup>8</sup> The close monitoring of eruption cysts is necessary to follow the eruptive process of the involved teeth. In the case of lack of spontaneous regression and impairment of tooth eruption, a surgical intervention is required to uncover the crown. A more invasive approach is also recommended for those cases where the cyst is constantly traumatized and cause discomfort to the patient. Monitoring the size and appearance of the lesion is indicated due to the possibility of tumor development, even though this possibility is very uncommon.<sup>3</sup>

## CONCLUSION

The clinical and radiographic close monitoring of eruption cysts in neonates appears to be a satisfactory management conduct resembling to the one recommended for older children.

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