

Oral Reactive Lesions Associated to Incomplete Removal of Natal Teeth: Case Report

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Natal teeth are infrequent at birth. Dental extraction is the most recommended treatment to avoid complications. Reactive soft tissue lesions associated to natal tooth or its incomplete removal are rare. A five-month-old female presented natal teeth #71 and #81 which were removed the day after the birth. The baby evolved with two nodules in the region of #71 and #81, pedunculated, 10 and 9 mm, respectively, covered by a pink mucosa, firm in consistency. Periapical radiography showed two radiopaque areas, suggestive of root fragments. After 30 days the nodule located in the region of #81 became purple in color and ulcerated. Both lesions were removed with high intensity diode laser. Histopathological analysis was compatible with inflammatory fibrous hyperplasia (#71) and pyogenic granuloma (#81). Early diagnosis of oral lesions in newborns by means of histopathological examination and a minimum invasive treatment, such as laser surgery, should be of primary concern.

Keywords: natal teeth, pyogenic granuloma, fibrous hyperplasia.

INTRODUCTION

Natal and neonatal teeth are those that erupt in the oral cavity prematurely. The difference between them is related to the timing of the tooth eruption. Natal teeth are present at birth, and neonatal teeth are those that erupt within 30 days of birth. Natal teeth are more frequent. They manifest themselves more frequently in female newborns, mandibular incisors, comprising 85% of cases reported in the literature³. The presence of such teeth may cause several complications, such as excessive mobility, difficulty in sucking, lesions in the maternal sinus and sublingual ulcerations (Riga-Fede)¹. Exodontia is the most recommended treatment to avoid complications. Surgery is usually performed between seven to 25 days after birth².

Reactive lesions associated with natal teeth are described in the literature, although they do not occur frequently^{1,8-10,13-17}. The development of such lesions occurs due to the presence of the native tooth or to the surgical intervention to remove it, which stimulates tissue proliferation in the site. Incomplete removal or erroneous manipulation of the natal tooth, such as permanence of root fragments, may also induce certain lesions, such as inflammatory fibrous hyperplasia^{4,13,14}, peripheral ossifying fibroma^{10,15,16}, pyogenic granuloma^{1,5,8}, gingival hamartoma⁹ and pulp polyp¹⁷.

Soft tissues reactive lesions are treated by conservative local excision associated to the removal of the etiological factor¹.

Laser is an effective tool in surgical and non-surgical treatments of pediatric oral soft tissue lesions⁶. High-power laser has been a valid alternative, well acceptable by children, which can improve treatment outcomes. The use of high-power laser in surgeries aims to speed up the procedure, bleeding control, analgesia, no need to suturing, and the recovery is easier^{6,15}.

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Even though lesions in gingival tissue of newborns are rare, it is important to investigate by means of histopathological examination to rule out any malignancies and reassure the parents¹⁵. This manuscript aims to report a case of a newborn who presented two soft tissue lesions associated to root fragments of natal teeth priorly removed.

Case Report

A five-month-old female was reported to a pediatric dentist by the pediatrician for the evaluation of intraoral swellings in the anterior mandibular region. The chief complain was difficulty in feeding. Dental history reveals that the child was born with two teeth, mandibular left and right central incisors (#71 and #81) (Figure 1). The patients' natal teeth were removed by a dentist at the hospital, the day after the birth. They presented a marked degree of mobility with risk of being aspirated. Family history reveals that the child's father had natal teeth in the same region, which were removed in the first days after his birth. The baby had been born on term, healthy and a product of an uncomplicated pregnancy. Parents reported that the lesions were present for three months approximately.

Figure 1: Natal teeth (#71 and #81) observed right after birth.



Figure 2: Initial clinical presentation of two nodules on the mandibular anterior region, pink and normal surface, 5 months after the removal of the natal teeth.



There were no alterations on extraoral examination. Intraoral clinical examination revealed two nodules located on the region of teeth #71 and #81, pedunculated, measuring 10 x 7 mm and 9 x 6 mm, respectively, covered by a pink mucosa, smooth surface and presented anteroposterior mobility. The nodules were firm on palpation (Figure 2).

Periapical radiograph showed two radiopaque areas located in the soft tissue, in the region of the natal teeth #71 and #81, measuring 4 mm and 2 mm, respectively, suggesting root fragments (Figure 3).

The diagnostic hypothesis raised was a reactive proliferative lesion, a fibrous hyperplasia. The treatment plan proposed to the parents was the removal of the lesions. The patient was followed up by means of clinical evaluation. After 30 days the patient returned for evaluation because the clinical aspect of one lesion had changed. The nodule located on the right side (region of #81) became purple in color, surface was discrete ulcerated, yet there was no increase in size (Figure 4). Parents were concerned and the baby was feeling uncomfortable. They did not report bleeding. The family was informed the need to perform an excisional biopsy of both lesions.

Figure 3: Periapical radiograph showing radiopaque small masses in the mandibular anterior region.

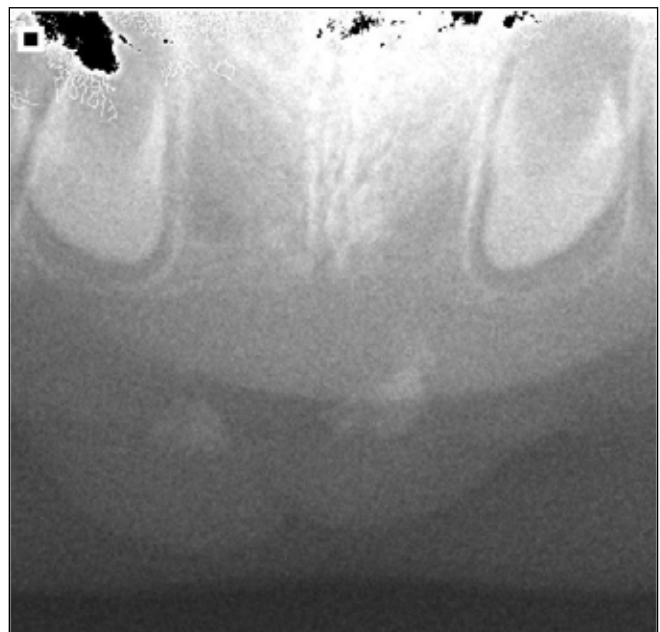


Figure 4: Purple nodule located on the right side (region of tooth #81) and nodule located on the region of #71 with the same clinical aspect as observed in the first evaluation.



Figure 5: HE-stained sections. 5A-B: Epithelial lining with areas of hyperplasia, acanthosis and hyperkeratosis (x40). Deposition of collagen fibers and fibroblasts, areas of chronic inflammation (x100). 5C-D: Epithelial lining with ulceration (x40). Fibrovascular proliferation and chronic inflammatory cells (x100).

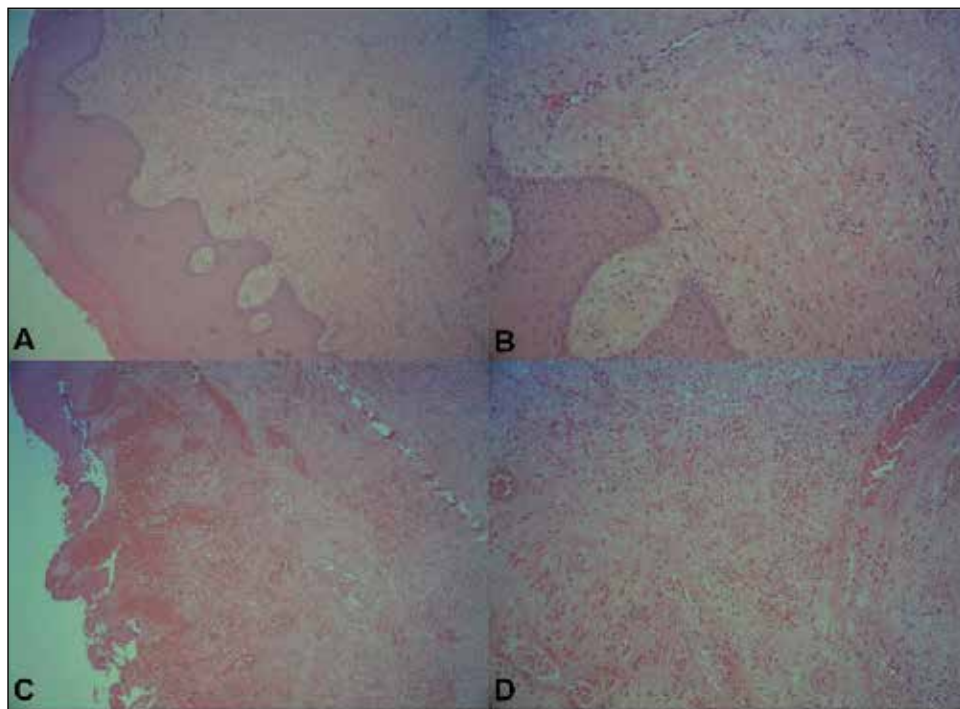


Figure 6: Clinical presentation of the area on the 6th day after the surgery a complete clinical healing.



Surgery was performed under local anesthesia (Lidocaine 2% with epinephrine 1:100.000), using a high intensity diode laser (Thera Lase Surgery, DMC®, São Carlos, SP, Brazil). Laser parameters used were 808nm, optical fiber of 400nm, energy of 1,3J. A linear incision was performed at the base of both pedicles. Lesions were removed with a minimum of bleeding. The root fragments were within each soft tissue lesion and were sent for histopathological examination. Protective stabilization was used to ensure a safety procedure. Immediately after the surgery the baby was fed on the breast.

Microscopical analysis of Hematoxylin and eosin (HE) stained sections of the fragment removed from the region of #71 showed an epithelial lining with areas of hyperplasia, hyperkeratosis and acanthosis. Inside the lesion, a large deposition of collagen fibers and

several fibroblasts were observed. Focal areas of chronic inflammation were present (Figure 5A-5B). And the fragment removed from #81 region was characterized by an exuberant proliferation of fibrovascular connective tissue, chronic inflammatory infiltrate, and ulcerated epithelial lining (Figure 5C-5D). In addition, fragments of mineralized tissue like cementum were found inside both lesions. Histopathological diagnosis was compatible with inflammatory fibrous hyperplasia and pyogenic granuloma, respectively.

Healing was uneventful. On the sixth day after the surgery a complete clinical healing was observed on oral examination (Figure 6). The patient was followed up for seven months. No recurrence was observed.

DISCUSSION

Natal and neonatal teeth and their association with soft tissue lesions are not frequently described in the literature^{1,3,7-9,11-18}. However, the development of two soft tissue lesions (in a single newborn) stimulated by the extraction of these teeth and/or the remaining root fragments had not been described previously.

Natal and neonatal teeth occur in an incidence of 1:2.000 to 1:3.500 births. Natal tooth is more prevalent than the neonatal tooth³. Our female patient presented both natal mandibular central incisors. These are the most common demographic characteristics associated to teeth in newborn^{3,18}. Nevertheless, the presence of two natal teeth is a rare condition, since only 18.5% of the infants' present natal teeth in pairs³.

The etiology of natal teeth is not completely elucidated yet. The patients' father had also natal teeth. A positive family history of natal or neonatal teeth was reported in 16.7% of the cases¹⁸. Hereditary transmission of a dominant autosomal gene and the superficial position of the tooth germ above the alveolar bone, possibly related to hereditary factors is a common accepted etiology^{3,18}.

Extraction of natal and neonatal teeth is recommended since their presence may cause difficulties in breastfeeding and swallowing of the newborn, Riga-Fede disease, soft tissue trauma and the risk of aspiration due to spontaneous exfoliation because the high degree of mobility^{3,7,11,12}. The extraction of natal teeth, surgical manipulation and the residual root fragment remaining can trigger local trauma and, consequently, induce tissue proliferation. In this reported case, two oral lesions had been developed. However, soft tissue lesions, such as reactive fibrous hyperplasia and pyogenic granuloma can occur along with the natal tooth^{1,13}. The occurrence of reactional lesions related to natal teeth is even rarer. However, there are reports in the literature of lesions such as inflammatory fibrous hyperplasia^{4,13,14}, peripheral ossifying fibroma^{10,15}, pyogenic granuloma^{1,5,8} and pulp polyp¹⁷.

The diagnostic hypothesis raised, based on the first clinical evaluation, was a reactive proliferative lesion, a fibrous hyperplasia. Differential diagnosis of soft tissue lesion associated to natal tooth should include pyogenic granuloma^{1,5,8}, peripheral ossifying fibroma^{10,15,16}, reactive fibrous hyperplasia^{4,13,14}, fibrous hamartoma⁹, and pulp polyp¹⁷ since they may have similar clinical presentation and history. Histopathological analysis is essential for the definitive diagnosis¹⁷. However, these lesions are not frequently diagnosed in neonates⁸. Pulp polyp is an inflammation occurring in dental pulp, therefore it should be considered in the differential diagnosis when root fragments or molars are present¹⁷.

No radiograph was performed before neither after the extraction of natal teeth, until the development of the lesions. Radiographic examination is indicated to discriminate normal primary dentition from supernumerary tooth^{3,18}. In addition, radiographs may help in determining the stage of root development and could have prevented the retention of root fragments^{8,17}, which possibly stimulated the development of both lesions. Vergotine (2009) recommended taking a post-extraction radiograph before curettage of the socket area to ascertain possible remaining fragments, since extraction may leave root fragments. Nonetheless, Muench(1992) denoted that the recurrence of the lesion would suggest a radiographic examination.

Fibrous hyperplasia (FH) is an inflammatory reaction involving the epithelium and the connective tissue due to irritation and chronic local trauma. It is a common reactive lesion, although rarely described in newborns^{13,14}. Fibrous hyperplasia associated to natal or neonatal tooth may be due to microtrauma caused by the eruption of the teeth and low-grade chronic irritation to gingival tissues^{13,14}, in this reported case the remaining root fragments acted as irritating agents. Clinical patterns of fibrous hyperplasia in newborns are similar to the lesions diagnosed in adults¹⁵. Pedunculated nodular masses of smooth and pink surface were noticed in the region of the removed natal teeth.

The follow up of the patient suggests that the pyogenic granuloma emerged from a fibrous hyperplasia, since in the first clinical evaluation the soft tissue lesion located in the region of #81 presented the same clinical pattern as the lesion located on the region of #71. Nonetheless, it is known that local injury or chronic irritants like foreign bodies, bone or dental fragments, as described in this case, may lead to the formation of post-extraction granuloma. This lesion is characterized by granulation tissue in the manipulated tooth socket^{1,5,8}.

Probably, pyogenic granuloma developed in the region where the intensity of the irritating agent was higher. Pyogenic granuloma is a reactive lesion, a type of inflammatory hyperplasia with an exuberant connective tissue response to a stimulus or an injury^{1,5} of a non-neoplastic nature⁵. Clinically, it presents as a nodular exophytic lesion, of firm consistency, well defined, pedunculated, or sessile, smooth, and lobulated surface, reddish or reddish-purple color due to high vascularization, can be ulcerated and easy bleeding⁸. Despite its name, it is a germ-free lesion, and it is not caused by pyogenic organisms⁵. Histological features are high vascular proliferation, numerous endothelium-delimited channels obliterated by red blood cells⁵.

The treatment performed was an excisional biopsy of both lesions. It is essential that surrounding affected tissue must be removed to prevent recurrence of pyogenic granuloma. Conventional scalpel surgery is the most common treatment for soft tissue lesions, even in newborns^{1,4,8-10,13,14,17}. High-power laser is an excellent alternative for surgical procedure, since reduces the patient's

stress, provides hemostasis, it has bactericidal effects, rapid wound healing, no suturing, reduces post-operative discomfort and analgesic prescription^{15,16}. The use of high-power lasers in newborns have been proven to be safe, comfortable, and efficient¹⁵. Another positive point in using laser surgery to treat the baby is that there was no need to prescribe vitamin K prophylactically. It is recommended to assess the risk of hemorrhage due to hypoprothrombinemia commonly present in newborns. Vitamin K is usually administered prior to oral surgeries in newborns^{1,13}. Diode laser reduces surgical time and pain, and control bleeding through photocoagulation^{6,15}, which was taken into consideration since pyogenic granuloma is a type of lesion with risk of bleeding.

CONCLUSIONS

This case report highlights the outcome of the extraction of two natal teeth. Diagnosis of oral soft tissue lesions is usually clinical and histopathological. Biopsy findings are definitive for final diagnosis. Surgery in newborns is always a scary event for parents. Management of pediatrics' oral lesions requires a minimum invasion, short time of intervention and healing, and a comfortable post-operative period.

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