Peripheral Ossifying Fibroma Associated with a Natal Tooth in a Seven-Month-Old Infant: A Rare Case Report.

ABSTRACT

Background:

Peripheral ossifying fibroma (POF) is a reactive, non-neoplastic gingival lesion that commonly affects adolescents and young adults. Its occurrence in infants is exceedingly rare, particularly when associated with natal or neonatal teeth.

Case presentation:

A seven-month-old infant presented with a firm, pedunculated, non-tender gingival growth in relation to a natal tooth. Intraoral radiographic examination revealed a soft-tissue shadow with an ill-defined radiopacity suggestive of poorly calcified dental tissue, along with an erupted deciduous incisor. The lesion was surgically excised using a No. 15 BP blade, and hemostasis was achieved with pressure application and electrocauterization. Histopathological examination of hematoxylin and eosin–stained sections demonstrated lamellar bony trabeculae lined by osteoblasts within a fibrocellular stroma, along with scattered globular basophilic areas indicative of mineralization, confirming the diagnosis of peripheral ossifying fibroma. Follow-up at 24 hours, 3 months, and 6 months showed complete healing with no recurrence.

Clinical Significance:

This case highlights the need to include peripheral ossifying fibroma in the differential diagnosis of gingival enlargements in infants, especially when associated with natal or neonatal teeth. Early diagnosis, histopathological confirmation, and appropriate surgical management are essential to ensure optimal outcomes.

Keywords: Peripheral ossifying fibroma; Infant; Natal tooth; Gingival lesion; Histopathology

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Introduction

Peripheral ossifying fibroma (POF) is a reactive, non-neoplastic lesion arising exclusively from the gingiva[1] [2]. Histologically, it is characterized by a fibrocellular connective tissue stroma containing varying degrees of mineralized substance resembling bone or cementum [3]. Clinically, POF presents as a solitary, smooth or lobulated, sessile or pedunculated nodular mass, typically measuring between 0.2 and 3 cm, and commonly originating from the interdental papilla. The lesion is usually pink to red in color and occurs most frequently in the anterior maxillary region. Its occurrence is higher in women and in Caucasians [1], [4].

POF is classified under localized reactive hyperplastic lesions (LRHLs) of the gingiva, a group that also includes focal fibrous hyperplasia, pyogenic granuloma, and peripheral giant cell granuloma. These lesions are believed to arise in response to chronic local irritation caused by plaque, calculus, trauma, malaligned teeth, or defective restorations [1], [2].

POF most commonly affects adolescents and young adults, with a peak incidence between 10 and 19 years of age[5]. Occurrence in children below 10 years is uncommon, and cases reported in infants are exceedingly rare, particularly those associated with natal or neonatal teeth. This report presents a rare case of peripheral ossifying fibroma in a seven-month-old infant associated with a natal tooth[6].

Case Presentation

A seven-month-old female infant (Figure 1) was referred to the outpatient department with a complaint of a swelling in the lower front teeth region that had gradually increased in size over the past month, causing difficulty during nursing. The infant was otherwise healthy, with no significant prenatal, antenatal, or postnatal history.

Clinical examination revealed a distinct, firm, pedunculated, non-tender gingival growth measuring approximately of size 1 cm× 0.7 cm× 0.8 cm, arising from the alveolar crest in the mandibular anterior region (Figure 2). The overlying mucosa appeared normal in color and consistency. A tooth-like structure was present at the center of the lesion. An adjacent mandibular anterior tooth was also present, which was non-tender and immobile. According to the parents, one tooth was present since birth (natal tooth), and the swelling developed subsequently around it, while the adjacent tooth erupted recently.

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No extraoral swelling or facial asymmetry was noted. Intraoral radiographic examination (Figure 3) revealed a soft-tissue shadow containing an ill-defined radiopacity suggestive of a poorly calcified tooth structure. An adjacent erupted deciduous incisor with adequate root formation was also evident, along with developing unerupted mandibular anterior teeth. Based on clinical and radiographic findings, a provisional diagnosis of epulis was made, and excisional biopsy under local anesthesia was planned. Routine hematological investigations were within normal limits.

Surgical excision was performed with the infant seated on the parent's lap, with head stabilization provided by a trained assistant. A silk suture was placed and tightly ligated at the base of the lesion to minimize intraoperative bleeding (Figure 4). The lesion was excised using a No. 15 surgical blade, and hemostasis was achieved with electrocauterization followed by pressure pack application (Figure 5). The excised tissue (Figure 6) was sent for histopathological examination.

Histopathological evaluation of hematoxylin and eosin–stained sections (Figures 7,8,9,10) revealed a parakeratinized stratified squamous epithelium overlying a dense fibrocellular connective tissue stroma. The epithelium showed areas of hyperplasia with thin, anastomosing rete ridges. The underlying stroma consisted of plump spindle-shaped fibroblasts interspersed with collagen fibers, sparse blood vessels, and minimal inflammatory infiltrate. Multiple areas of lamellar bony trabeculae lined by osteoblasts were observed, along with scattered globular basophilic calcifications suggestive of mineralization. Based on these features, a definitive diagnosis of peripheral ossifying fibroma was established.

The infant was reviewed after 24 hours, 3 months, and 6 months postoperatively (Figure 11). Healing was uneventful, and no recurrence was observed.

Discussion

Peripheral ossifying fibroma has been described in the literature under various terminologies, including peripheral fibroma with osteogenesis, cemento-ossifying fibroma, calcifying fibroblastic granuloma, and peripheral odontogenic fibroma[5]. GardnerDG *et al* recommended the exclusive use of the term "peripheral ossifying fibroma" to avoid diagnostic confusion[7].

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Although POF is a benign reactive lesion, it may exhibit aggressive behavior and has a relatively high recurrence rate. Histopathological studies have reported its frequency to range from 1–3% of all gingival biopsies and 16–40% of localized reactive hyperplastic lesions[2],[8]. The lesion is believed to originate from periodontal ligament cells, supported by its exclusive gingival occurrence and proximity to the periodontal ligament. Chronic irritation from plaque, calculus, trauma, or erupting teeth is considered a significant etiological factor[6]. Thus, in this case report, the natal teeth may have been the cause of the persistent irritation that eventually resulted in POF development.

The incidence peaks in the second and third decades of life, and thereafter it declines significantly [1]. The majority of studies have found a prevalence of 1-2% in the 0–10 age group [2]. Its prevalence rate is around 16-40 % of studied LHRLs.According to Buchner and Hansen [1], POF may exist anywhere from two weeks to twenty years, with an average of eleven and a half months [2]. POF in newborns and infants linked to natal and neonatal teeth has been an exceedingly rare occurrence [6].

A high recurrence rate of 16-20% and aggressive nature necessitates immediate excision and long term follow-ups [2]. According to Bucher and Hansen [1], the maxilla contains 60% of the POF, the mandible contains 40%, and at the incisor cuspid area 54% occur. Clinically, it's critical to distinguish this type of gingival lesion from others that are strikingly similar, like peripheral odontogenic fibroma and pyogenic granuloma and focal fibrous hyperplasia [5].

The radiographic appearance varies, showing soft tissue shadowing and varied degrees of calcifications. Larger lesions can also show erosion of the underlying alveolar bone and perhaps result in the displacement of neighboring teeth [6].

Dense fibrocellular proliferation and sporadic localised deposits of calcified material, ranging from ovoid-irregular dystrophic/metaplastic calcification to laminated, concentric deposits resembling Liesegang rings, are among the characteristic histological findings. It has also been noted that osseous lamellae and trabeculae with circumferential osteoid exhibit another pattern. The degree of mineralization has been considered as a component of its maturation and it's the specific hypercellularity is regarded as histopathologic marker [2].

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In order to prevent the disease from recurring, surgical excision of the pathology is frequently used in conjunction with curettage of the periosteum that is involved and the elimination of local irritants [8]. Since the introduction of lasers into dentistry, POF excision has also been accomplished using lasers [9].

In the present case, the excision was done using Ligature technique, where a suture was ligated deeply beneath the lesion. The reason for this was to reduce post-operative bleeding. Deep excision was then carried out followed by electrocautery and pressure pack. As the lesion has high recurrence rate and high vascularity deep excision with the aid of a surgical blade followed by electrocauterisation was done.

Conclusion

Peripheral ossifying fibroma is a rare reactive gingival lesion in infants and may be associated with natal or neonatal teeth. Despite its benign nature, the lesion may exhibit aggressive behavior and a tendency for recurrence. Early recognition, histopathological confirmation, and complete surgical excision with long-term follow-up are essential. Pediatric dental surgeons should be aware of the clinical and histopathological features of such lesions to ensure timely diagnosis and appropriate management.

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FIGURE LEGENDS

Figure 1: A seven months old infant with intraoral swelling in relation to a natal tooth.

Figure 2: Intraoral view showing a swelling present surrounding a tooth.

Figure 3: IOPAR shows soft tissue shadow with ill-defined radio opacity within it suggestive of poorly calcified tooth and one erupted deciduous incisor.

Figure 4: Silk suture was used to tie the growth

Figure 5: Lesion site after excision and electrocautery.

Figure 6: Excised tissue

Figure 7: Photomicrograph showing elongated rete ridges overlying a mature fibrous connective tissue and lamellar bone (H&E 10x)

Figure 8: Photomicrograph showing basophillic granular calcifications (H&E 40x)

Figure 9: Photomicrograph exhibiting bony trabecula lined by osteoblasts.(H&E 40x)

Figure10: Photomicrograph showing hyperplastic anastomosing stratified squamous epithelialium. (H&E 40x)

Figure 11: Post operative healing after one month.

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FIGURES

Figure 1

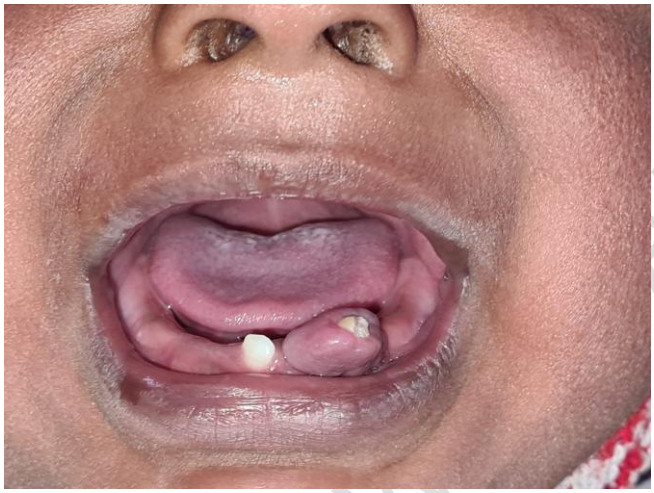

Figure 2

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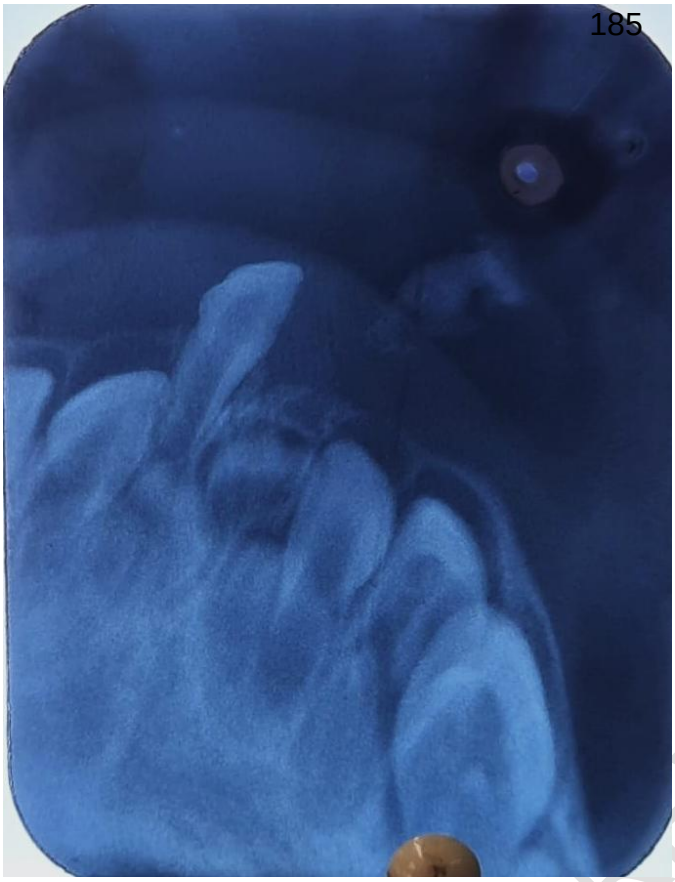

Figure 3

Figure 4

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Figure 5

Figure 6

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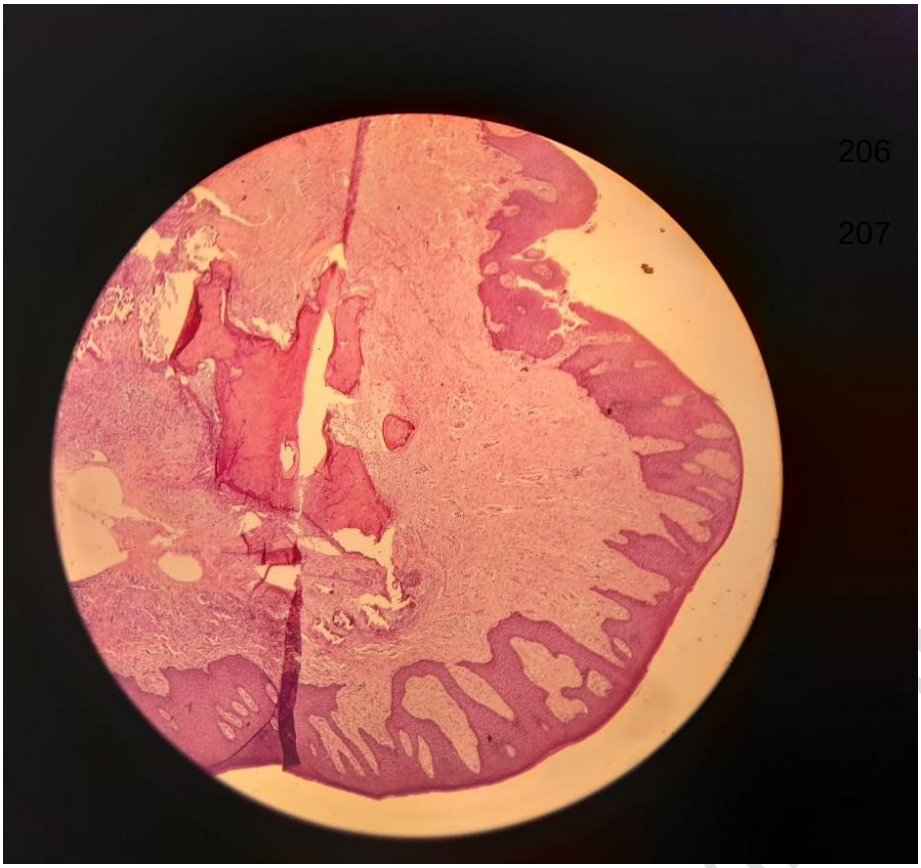

Figure 7

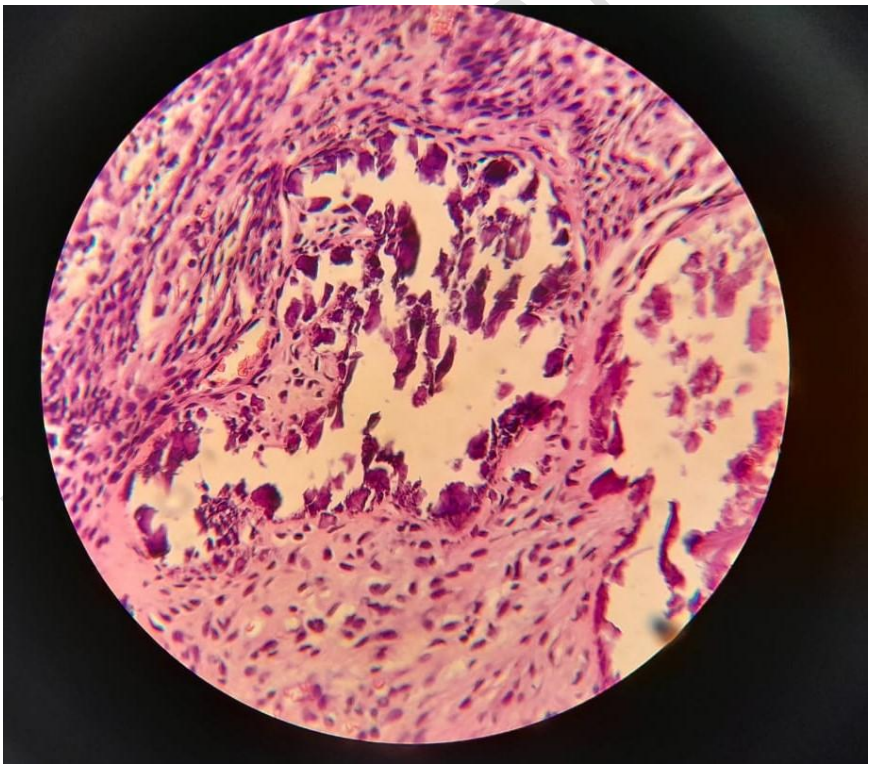

Figure 8

Figure 9

Figure 10

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Figure 11

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