Peripheral ossifying fibroma associated with actinomycosis

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ABSTRACT

Many types of localized reactive lesions may occur on the gingiva, including focal fibrous hyperplasia, pyogenic granuloma, peripheral giant cell granuloma and peripheral ossifying fibroma (POF). Clinically differentiating one from the other as a specific entity is often not possible. Histopathological examination is needed in order to positively identify the lesion. The POF is one such lesion, which is a reactive gingival overgrowth occurring frequently in the maxillary anterior region in teenagers and young adults. They are pink to red in color, and commonly associated with poor oral hygiene and early periodontal disease. We report in this study, the clinical report of a 12-year-old male patient with a POF in the maxilla associated with actinomycosis infection. Based on the clinical and histopathological evaluations, the diagnosis was concluded as POF. Clinical, radiographical and histological characteristics are discussed and recommendations regarding treatment and follow-up are provided.

Key words: Actinomycosis, Fibrous Hyperplasia, Peripheral Ossifying Fibroma

Access this article online
Website: www.jpediatrdent.org
DOI: 10.4103/2321-6646.137696
Quick Response Code:

INTRODUCTION

Many types of localized reactive lesions may occur on the gingiva, including focal fibrous hyperplasia, pyogenic granuloma, peripheral giant cell granuloma, and peripheral ossifying fibroma (POF).[1] In general, POF is a solitary, slow-growing nodular mass that is either pediculate or sessile.[2] The color ranges from red to pink, and the surface is frequently, but not always ulcerated. It is more commonly seen in the first and second decades of life and is more common in females.[3] Females are more commonly affected, and the anterior maxilla is the most prevalent location of involvement.[4] POFs are usually <1.5 cm in diameter, and the diagnosis can be made by clinical inspection and biopsy.[5] Histologically, this malady is a noncapsulated mass of cellular fibrous connective tissue with randomly distributed calcifications and/or mature bone.[6] The etiology of POF is unclear. Trauma or local irritants such as plaque, calculus, microorganisms, masticatory forces, ill-fitting dentures, and poor-quality restorations are all known to precipitate the development of POF.[7] After elimination of local etiological factors, local surgical excision of POF is the preferred treatment. Excision should include the periodontal ligament and periosteum at the base of lesions in order to reduce the chance of recurrence.

Actinomycosis is a progressive infectious disease characterized by abscessation, fistulization, and sulfur granules.[8] The disease forming types are determined as initially *Actinomyces Israelii*, *Actinomyces naeslundii*, *Actinomyces odontolyticus*, *Actinomyces viscosus*, *Actinomyces pyogenes ve*, and *Actinomyces Meyeri*.[8,9] Although the bacterium is normally present in mouth flora, it gains pathogenicity due to various predisposing factors.[9] The pathogen microorganism may reach the deep tissues through necrotic pulp, periodontal pocked, a dental extraction wound, or ulcerated mucosa.[10] About 60% of the actinomycosis subjects in humans are observed in cervicofacial section, 22% in the abdominal section, and 15% in the thorax section.[9] Cervicofacial sections that are most affected by the infection are parotid, submandibular glands, and mandible. Rarely can it be observed in the nose, paranasal sinuses, palate, oropharynx, hypopharynx, larynx, trachea, or nasopharynx.[8]

Below we present a case report of a 12-year-old male child with POF associated with actinomycosis infection in

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the maxillary right anterior region. There was recurrence even after surgical treatment.

CASE REPORT

A healthy 12-year-old boy presented to the Department of Pediatric Dentistry with the complaint of gradually increasing gingival swelling in the maxillary right anterior region. The swelling started as a small nodule that progressed gradually to the present size within a span of 2 months. There was no associated pain. The patient did not have any history of trauma, injury, or food impaction, and there was no significant medical history.

An intraoral examination revealed generalized pink gingiva with a well-demarcated, nontender, firm, focal, sessile, nodular growth arising from the interdental papilla of maxillary right central and lateral incisors. The oval-shaped mass was 1 cm × 1.5 cm in size with a reddish pink color, smooth surface, and distinct edges. No ulceration was observed [Figure 1].

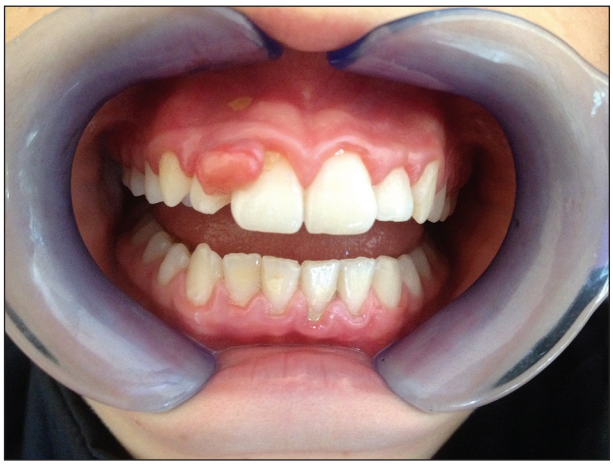

Figure 1: Preoperative photograph showing gingival swelling in relation to the right maxillary lateral and central incisors

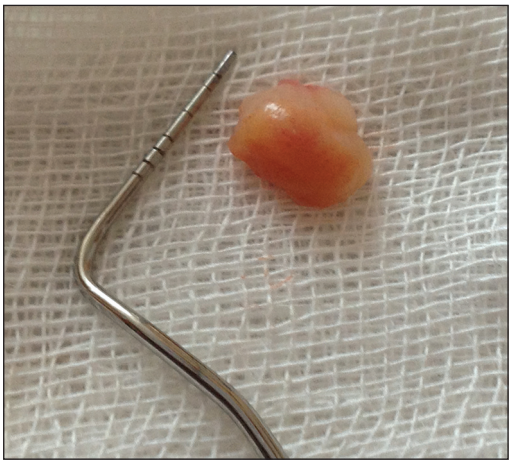

Figure 3: Excised growth

Radiographical examination was within the normal limits, with no findings pertaining to the maxillary exophytic lesion [Figure 2]. The mass was not fixed to underlying bone. Blood examination revealed normal values. Clinically, differential diagnoses for the growth were pyogenic granuloma, peripheral giant cell granuloma, fibroma, and peripheral odontogenic fibroma.

Treatment

Oral hygiene instructions were given to the patient, and oral prophylaxis was done. After 2 weeks, the growth was excised conservatively to prevent the development of an unsightly gingival defect in the anterior maxilla, followed by root planning and curettage. The excised mass was sent for histopathological examination [Figure 3]. Patient was motivated and educated to maintain his oral hygiene. Patient was called after 1 week; healing was uneventful [Figure 4]. However, patient visited after 6 months with a recurring swelling [Figure 5]. Oral hygiene instructions were reinforced, and the patient was motivated to undergo surgical excision of the recurred lesion again. After the second surgical excision again 6 months later, the swelling have been occurred. Dense plaque and calculus was observed by intraoral examination [Figure 6].

Histopathological examination of the specimen revealed nonkeratinized stratified squamous epithelium, which was

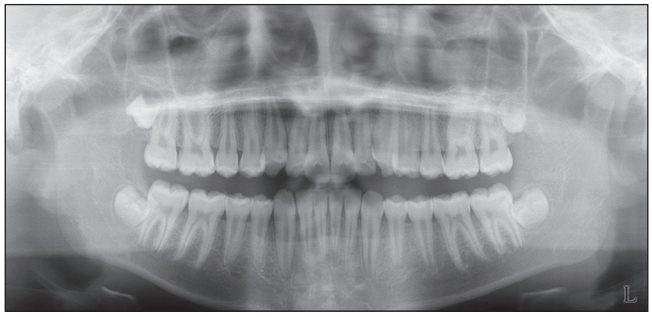

Figure 2: Panoramic radiograph showing normal aspect

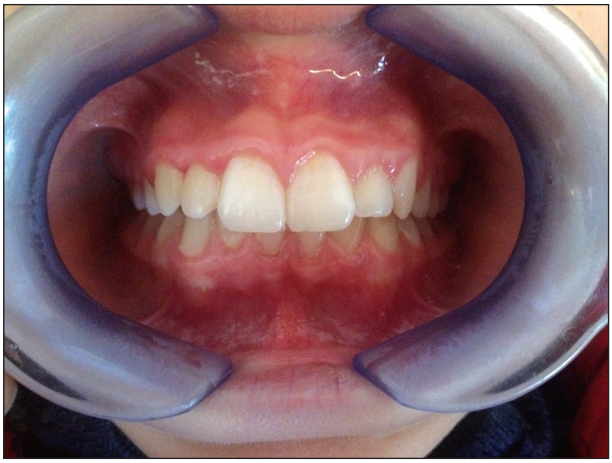

Figure 4: Postoperative photograph after 1 week, healing was uneventful

discontinuous and ulcerated in some areas. Underlying fibrous connective tissue showed intense infiltration by chronic inflammatory cells. Actinomycosis colonies and actinomycosis abscess was seen [Figure 7]. Histologically, the specimen was suggestive of POF and actinomycosis abscess. Based on the clinical and histological findings, the lesion was diagnosed as POF associated with actinomycosis abscess.

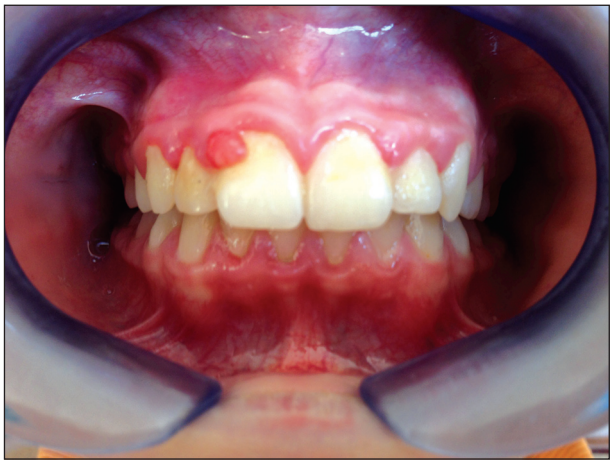

Figure 5: Postoperative photograph after 6 months showing signs of recurrence

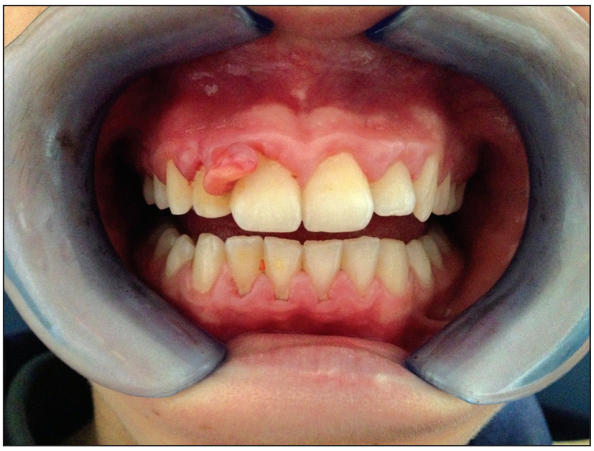

Figure 6: After the second surgical excision

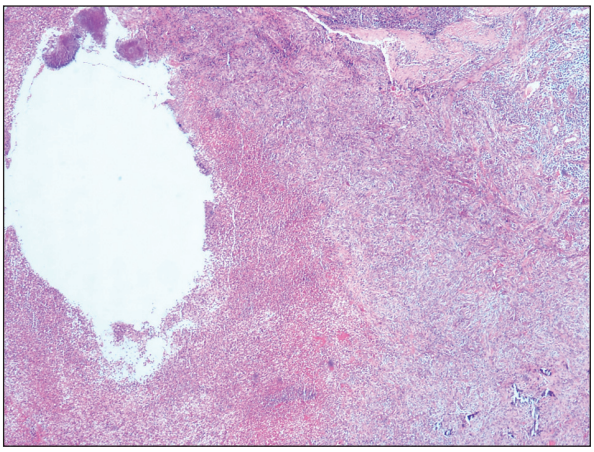

Figure 7: Histological picture of the lesion (H and E, ×4). *Actinomyces* colonies in the upper left corner, abscess was seen around the cavity. In the lower right corner ossification was seen with fibrous proliferation

DISCUSSION

Peripheral ossifying fibroma is a common gingival growth thought to be either reactive or neoplastic in nature. It has been suggested that POF represents a separate clinical entity rather than a transitional form of pyogenic granuloma, peripheral giant cell granuloma, or irritation fibroma.[4] Eversole and Rovin[11] have reported similar sex and site predilection for pyogenic granuloma, peripheral giant cell granuloma, and POF and similar clinical and histological features. They opined that these lesions could simply be varied histological responses to irritation. Gardner[7] stated that cellular connective tissue of POF is so characteristic that a histological diagnosis can be made with confidence, regardless of the presence or absence of calcification.

Peripheral ossifying fibromas contain areas of fibrous connective tissue, endothelial proliferation, and mineralization. Endothelial proliferation can be profuse in the areas of ulceration, which can be misleading in clinical diagnosis as the lesion may appear to be pyogenic granuloma. The mineralized component of POF varies from 23% to 75%, respectively.[1]

Ossifying fibromas may occur at any age but are more common in young adults. A variant of ossifying fibroma, juvenile (aggressive) ossifying fibroma has been described in children and young adults who are younger than 15.[12-14] Females are more commonly affected than males, and the anterior maxilla is the most common location of involvement; the lesion predominates in the second decade of life.[4] Hormonal influences may play a role, given the higher incidence of POF among females, increasing occurrence in the second decade, and declining incidence after the third decade.[6] In the present case, anterior maxilla was involved, and the patient was almost at the end of his first decade. In our case, the patient was male.

While the etiology of POF is unclear, inflammatory hyperplasia originating in the superficial periodontal ligament is considered to be a factor in POF causation.[5] Orkin and Amaidas[15] suggested that excessive proliferation of mature fibrous connective tissue is a response to gingival injury or gingival irritations, subgingival calculus, or a foreign body in gingival sulcus and dental appliances and restorations. Chronic irritation of the periosteal and periodontal membrane causes metaplasia of the connective tissue, which initiates formation of bone or dystrophic calcification.[15] In this case, plaque and calculus along with hormonal influences due to the patient's age and sex might have been the cause of gingival growth.

It was additionally speculated that there is an infectious cause because of the frequent presence of microorganisms. *Actinomyces species*, which are normal inhabitants of the human oral cavity, have a tendency to penetrate submucosal tissues when there is a disruption of the mucosal barrier.[16] *Actinomyces species* are also found in healthy persons, and *A. israelii* is the main causative bacteria.[17] In the intraoral mucosal region, actinomycosis is rarely seen,[18] and causative organisms that enter tissues through an area are sometimes prior triggers. We considered hypotheses about the generating mechanism in this case. The persistent actinomycosis infection had continued after the inflammatory fibroma developed due to minor injury to the gingiva, followed by capillary proliferation and enlargement from proliferation of endothelial factors.

A diagnosis of actinomycosis depends on the clinical findings in the patient, the demonstration of the organisms in histopathological specimen tissue, and also upon their culture. However, a previous report pointed out that the organisms are difficult to culture.[19] Some studies showed recurrence rates ranging from 3% to 23%.[20] After complete excision, the lesion must be excised down to the underlying tissue, and predisposing factors must be removed to avoid recurrence.[21]

The treatment of choice for POF is local resection with peripheral and deep margins, including both the periodontal ligament and affected periosteal component.[2,22] In addition, the elimination of the local etiological factors such as plaque and calculus is required.[2,23]

The recurrence rate of POF has been considered high for reactive lesions. The rate of recurrence has been reported to vary from 8.9% to 20%.[4,11,24] This is likely due to incomplete initial removal, repeated injury, or persistence of local irritants. The average time interval for the first recurrence is 12 months.[25] Trasad *et al*.[26] reported a case of a 10-year-old male child with an unusually large POF in the left maxillary alveolar ridge which showed recurrence after 2 months after the surgical treatment. In the present case, after 6, and 12 months the patient visited us with a recurring swelling. The patient's oral hygiene was very bad, so that was likely a factor.

It is difficult clinically to differentiate between the various gingival lesions. For positive identification, the lesion must be examined thoroughly, both radiographically and histologically. Regardless of the surgical technique employed, its complete removal as well as complete elimination of the etiological factors must be achieved to prevent recurrence.

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How to cite this article: Kapdan A, Oznurhan F, Unal M, Ari T. Peripheral ossifying fibroma associated with actinomycosis. J Pediatr Dent 2014;2:70-3.

Source of Support: Nil. **Conflict of Interest:** None declared.