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Peripheral Ossifying Fibroma: A Case Report

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Abstract: ***The gingival is often the site of localized growths that are considered to be reactive rather than neoplastic in nature. Many of these lesions are difficult to be identified as specific entity only on the basis of typical and consistent histomorphology. Peripheral ossifying fibroma is one such reactive lesion which shows areas of calcification or ossification. It has been described with various synonyms and is believed to arise from the periodontal ligament comprising about 9% of all gingival growths. Due to its clinical and histopathological similarities, some POFs are believed to develop initially as a pyogenic granuloma that undergoes fibrous maturation and subsequent calcification. It has been suggested that POF represents a separate clinical entity rather than a transitional form of pyogenic granuloma or irritation fibroma. This paper describes a case report of a 38-years-old female patient reported with growth on gingiva in the upper right front region of mouth since 6 months.***

Keywords: Enlargement, Pyogenic granuloma, Peripheral ossifying fibroma

1. Introduction

Gingival enlargement is a common finding in clinical practice and the appropriate treatment depends on correctly diagnosing the cause of the enlargement. The most common form of enlargement is due to plaque induced inflammation of the adjacent gingival tissues (inflammatory hyperplasia) and this tends to be associated most commonly with the interdental papillae and may be localized or generalized. Such gingival enlargement can be exaggerated by hormonal effects, as found in puberty and pregnancy, and may also be complicated by certain systemic medications. Plaque-induced inflammatory hyperplasia should resolve with debridement of plaque and calculus and improved oral hygiene, especially when the gingival tissue is oedematous. Where the gingival tissue is fibrotic, resolution of enlargement may not occur, resulting in the persistence of periodontal pocketing such that effective oral hygiene is impeded. This scenario requires a more detailed assessment and a longer term management plan designed to map the level of gingival and possibly periodontal involvement. Surgical management to remove enlarged tissue and provide improved access for the patient's oral hygiene may be required.[1] In addition to plaque-induced gingival enlargement; there are a number of other types ranging from the bland gingival fibrous nodule and retrocuspid papilla to malignant disease. Historically, localized gingival enlargements have been termed epulides, a term describing pedunculated or sessile swellings of the gingiva. However, epulides is a topographic term which gives no histologic description of a specific lesion and so the term ''reactive lesion of the gingiva'' has often been used instead.Many types of localized reactive lesions are seen on the gingiva, including focal fibrous hyperplasia, pyogenic granuloma, peripheral giant cell granuloma, and peripheral ossifying fibroma (POF).[2] POF is defined as a well demarcated and occasionally encapsulated lesion consisting of fibrous tissue containing variable amounts of mineralized material resembling bone (ossifying fibroma) (Waldrom, 1993).[3] Synonyms of POF are peripheral cementifying fibroma, calcifying or ossifying fibroid epulis, and peripheral fibroma with calcification. These lesions may arise as a result of irritants such as trauma, microorganisms, plaque, calculus, faulty restorations, and dental appliances.[4] It is typically seen as a gingival growth on interdental papilla and comprises about 9% of all gingival growths. Females are more commonly affected, and anterior maxilla is the most prevalent location. POFs are usually less than 1.5 cm in diameter, and diagnosis can be made by clinical inspection and biopsy.[5]

2. Case Report

A healthy 38-year-old female patient reported to the Department of Periodontics with "swollen gums on upper right front teeth region." On elaborating the chief complaint, the "Swelling" was present for approximately 6 months. As reported by the patient, the swelling was interfering with his bite and felt uncomfortable. Bleeding occurred when she brushed her teeth and also sometimes while eating. No medical and familial history reported by the patient.

3. Clinical Examination

Clinical examination revealed an erythematous gingival enlargement present on the facial aspect of the maxillary right Lateral Incisor. The lesion appeared exophytic with an irregular surface and was sessile. [Figure 1a, 1b]. On the measurement, it was 8mm in anterior-posterior direction, 6 mm laterally and 3mm in thickness. The lesion appeared reddish-pink in color. It was slightly pedunculated with a broad base attachment. The lesion was neither fluctuant nor did it blanch on pressure, and had a rubbery consistency. It was tender to firm pressure, but not to light palpation.

Radiographic Examination
IOPA examination in relation to 11 and 12 regions did not indicate the presence of bony involvement [Fig 2].
Diagnosis: The following differential diagnoses were made:

1. Irritational fibroma,
2. Pyogenic Granuloma,
3. Peripheral Giant cell Granuloma

Treatment Done

After routine blood examination and oral prophylaxis, excisional biopsy of the enlarged tissue was done using scalpel under [2% Lignocaine with 1:80000 adrenaline]Local anesthesia under antibiotic coverage and thorough curettage of the adjacent periodontal ligament and periosteum was carried out by raising localized flap [Fig 3, Fig 4, Fig 5].After controlling the bleeding, the area was sutured and covered with periodontal dressing [Fig 6, Fig 7]. Excised tissue was sent immediately for histopathological examination [Fig 8]

Histopathologic Examination

The histopathological examination of the lesion using Haemotoxylin and eosin (HE) staining method at 4X magnification revealed a moderately to densely collagenous connective tissue stroma showing areas of osteoid like calcifications seen near to the overlying proliferative epithelium [Fig 9]**.** At 10x magnification, revealed osteoid like areas with developing osteocytes in the densely collagenous stroma. Vascularity was high with numerous blood vessels and RBCs [Fig 10]. Depending upon clinical and histopathological examination diagnosis of peripheral ossifying fibroma was confirmed.

Follow up: The patient presented for a follow-up examination on 1st and 5th month postoperatively. Composite restoration done in the affected carious tooth. The surgical site appeared to be healing well [Fig 11 a &b]. There was no evidence of recurrence of the lesion, and the patient was asymptomatic.

4. Discussion

In oral cavity periodontium can show different types of focal overgrowths. These lesions arise due to overgrowth and proliferation of different components of connective tissue in periodontium, i.e. the fibers, bone, cementum, blood vessel or any particular type of cell. The lexicon of focal proliferative lesions commonly occurring on gingival tissue includes fibroma, giant cell fibroma, pyogenic granuloma, peripheral giant cell granuloma, POF and POdF. Most of these lesions are reactive chronic inflammatory hyperplasias, with minor trauma or chronic irritation being the etiologic factors. The nomenclature of these lesions is done in such a way so as to highlight the difference in nature of growth, location of growth, origin and the dominant proliferating histological component/cells in the lesion. The lesions which are present intraosseously are termed as “central lesions”, whereas their extraosseous counterparts or the lesions which appear on outer soft tissue (e.g. gingiva) are termed “peripheral lesions”. Also, a lesion may arise due to inflammation because of a stimulus and is called as a “reactive lesion” or it can be truly “neoplastic” where it is classified as a benign or a malignant neoplasm.[6].

A POF is considered to be reactive lesion despite the nomenclature that implies a neoplasm. Different terminologies have been used in the literature to describe it, like fibrous epulis, calcifying fibroblastic granuloma or peripheral fibroma with calcification. Menzel first described the lesion ossifying fibroma in 1872, but its terminology was given by Montgomery in 1927.[7] Peripheral ossifying fibroma occurs mostly in craniofacial bones and categorized into two types central and peripheral. The central type of ossifying fibroma arises from the endosteum or the periodontal ligament (PDL) adjacent to the root apex and expands from the medullary cavity of the bone, and the peripheral type occurs on the soft tissues overlying the alveolar process.[8]

The etiopathogenesis of peripheral ossifying fibroma is uncertain. Multiple factors have been suggested as etiological factors. It was believed that lesion arise from periodontal membrane due to exclusive occurrence of peripheral ossifying fibroma in the interdental papilla in proximity to periodontal ligament and the presence of oxytalan fibres within the mineralized matrix of some lesions. Another factor is chronic irritation from local irritants such as; dental plaque, calculus, microorganisms, masticatory forces, ill-fitting dentures and poor quality restorations leads to excessive proliferation of mature fibrous connective tissue and resultant initiation of formation of bone or dystrophic calcification. It has been suggested that the lesion may be caused by fibrosis of the granulation tissue. In addition, hormonal influences are considered as an etiological factor due to higher prevalence in females and a peak occurrence in the second decade of life of this lesion. Rare manifestation of multicentric lesion point towards a possible role of genetics in the pathogenesis of this disease.[9, 10].According to Marcos A. Jose *et al*., 2010 the proliferating cells of connective tissue in POF are of myo-fibroblastic nature (i.e., cells sharing morphological characteristics with fibroblasts and muscle cells). An immuno-histochemical study made to determine the nature of these proliferating spindle shaped cells showed the cells to be positive to vimentin and actin suggesting the myo fibroblastic nature.[9]

It accounts for 3.1% of all oral tumors and 9.6% of gingival lesion. It may occur at any range, but exhibits a peak incidence between the second and third decades. Both genders are affected but show female predilection. With respect to race, there is a predominance in Whites (71%) compared to Blacks (36%). Clinically appear as red to pink, solitary nodular mass usually arising from interdental papilla that is either pedunculated or sessile. The surface is frequently ulcerated. Lesion is found more frequently in maxillary (60%) and incisor cuspid region (50%).It is usually less than 1.5cm in diameter but, lesion up to 9cm diameter has been reported. [8]

Radiographic lesion shows radiopacity. Initial lesions do not show any detectable amount of mineralization but mature lesion show flecks and patches of radiopacity in the centre of lesion. Underlying bone involvement is rarely evident on a periapical radiograph.[11].

Histopathologically, the lesion shows stratified squamous epithelium covering an exceedingly cellular mass of connective tissue made up of plump fibroblasts, fibrocytes, fibrillar stroma and areas of mineralization with multinucleated giant cells near them in some cases. The mineralization may consist of bone, cementum-like material or dystrophic calcifications. The dystrophic calcifications are usually seen in early, ulcerated lesions, whereas the older,

mature, non-ulcerated lesions show well-formed bone and cementum-like material. [12].

Histologically, a typical ulcerated POF can exhibit three zones:

Zone I: the superficial ulcerated zone covered with fibrinous exudates and enmeshed with polymorpho-nuclear neutrophils and debris.

Zone II: The zone below the surface epithelium composed almost exclusively of proliferating fibroblasts with diffuse infiltration of chronic inflammatory cells mostly lymphocytes and plasma cells.

Zone III: More collagenized connective tissue with less vascularity and high cellularity; osteogenesis consisting of osteoid and bone formation is a prominent feature, which can even reach the ulcerated surface in some cases.

The non-ulcerated POF lesions are similar to an ulcerated type except for the presence of surface epithelium (Bhaskar & Jacoway, 1966). [3].

Peripheral ossifying fibroma has to be differentiated from traumatic fibroma (fibrous hyperplasia), peripheral giant cell granuloma, pyogenic granuloma and peripheral odontogenic fibroma. Traumatic fibroma occurs on buccal mucosa along the bite line. Peripheral giant cell granuloma has clinical features similar to POF however POF lacks the purple or blue discoloration commonly associated with peripheral giant cell granuloma and radiographically shows flecks of calcification. It is possible to histologically differentiate PGCG and peripheral odontogenic fibroma from POF as PGCG contains giant cells, whereas peripheral odontogenic fibroma contains odontogenic epithelium and dysplastic dentin; all the features are not seen in POF. [8, 13]

Pyogenic granuloma presents as soft, friable nodule, small in size that bleeds with tendency to haemorrhage and occasionally or do not show calcifications but tooth displacement and resorption of alveolar bone are not observed. However, according to other opinion peripheral ossifying fibroma falls within the spectrum of maturation pathogenesis of pyogenic granuloma. The initial lesion starts as pyogenic granuloma and maturation lead to development of POF. It is observed fact that longstanding PG may undergo organization/ healing, which is evident histologically with features of decreased vascularity, decreased inflammation and focal ossification. Peripheral odontogenic fibroma (WHO type) is an uncommon neoplasm that is believed to arise from odontogenic epithelial rests in periodontal ligament or attached gingiva itself. Presence of hypocellular stroma containing inactive odontogenic epithelium and dysplastic dentin or cementum like material is found in peripheral odontogenic fibroma.[14, 15].

Local surgical excision including the involved periodontal ligament and periosteum is the preferred treatment. Due to the high rate of recurrence (8% to 20%), long term postoperative monitoring is required in all cases of POF. Incomplete removal of the lesion, failure to eliminate local irritants and difficulty in accessing the lesion during surgical manipulation result in higher recurrence rate.[8, 16].

5. Conclusion

In conclusion the etiology of POF is unclear, inflammatory hyperplasia originating in the superficial PDL, is considered to be a factor. The POF presents as an exophytic, smooth surfaced, pink or red nodular mass that is sessile. Histopathologic examination is essential for accurate diagnosis. Once diagnosed, POF should be treated by total excision to prevent recurrence.

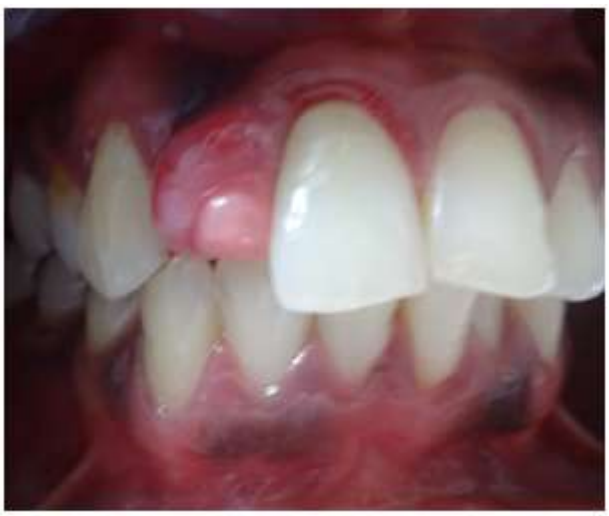

Figure 1 (a): Gingival enlargement in relation to tooth #12

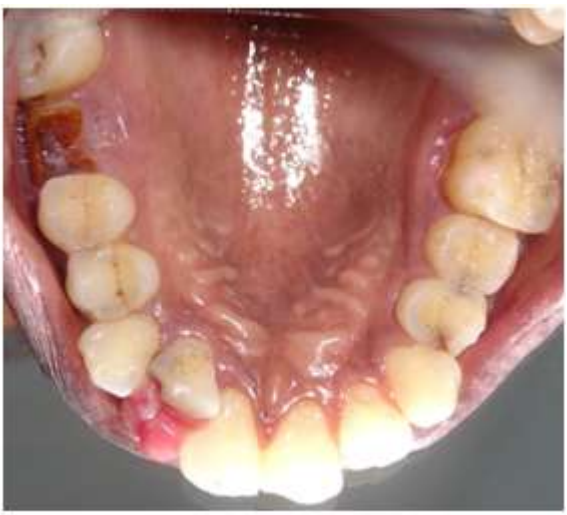

Figure 1 (b): Palatal view of the exophytic growth

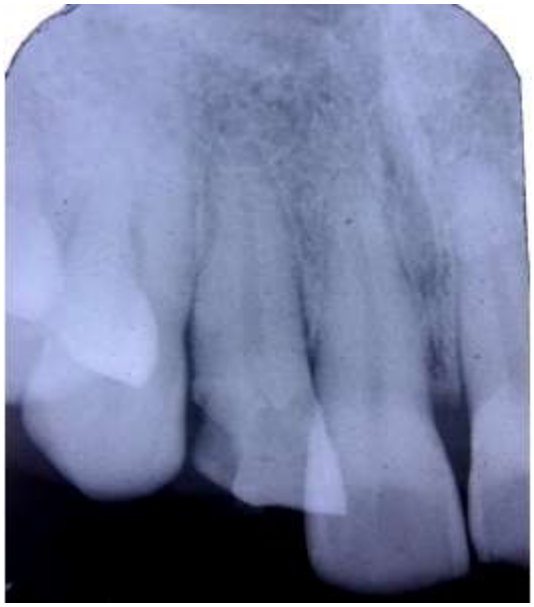

Figure 2: IOPA in relation to #12 region showing absence of bony involvement

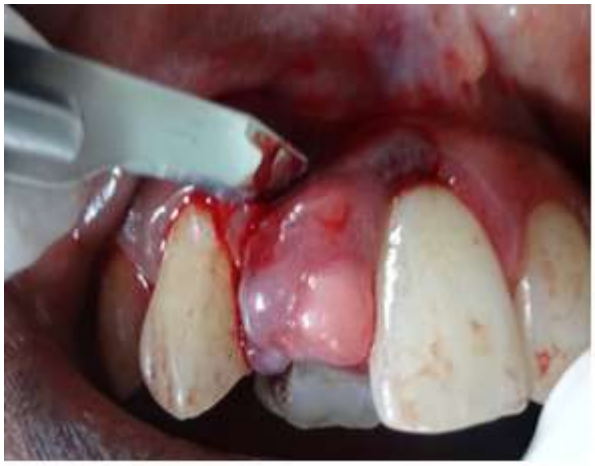

Figure 3: Excisional biopsy by scalpel method

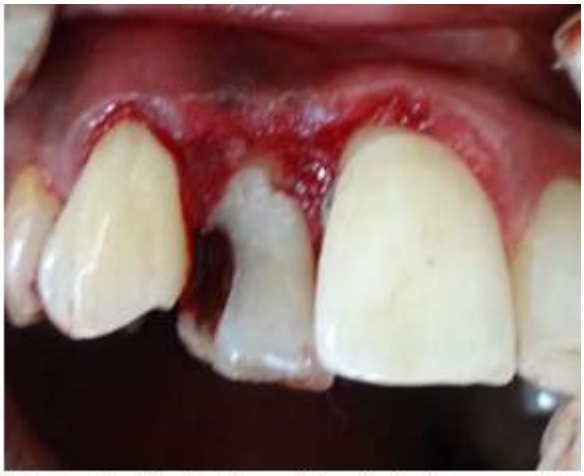

Figure 4: after Excision of the gingival overgrowth

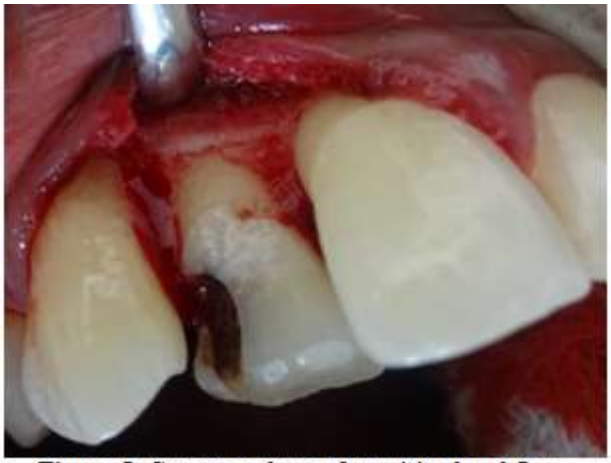

Figure 5: Curettage done after raising local flap

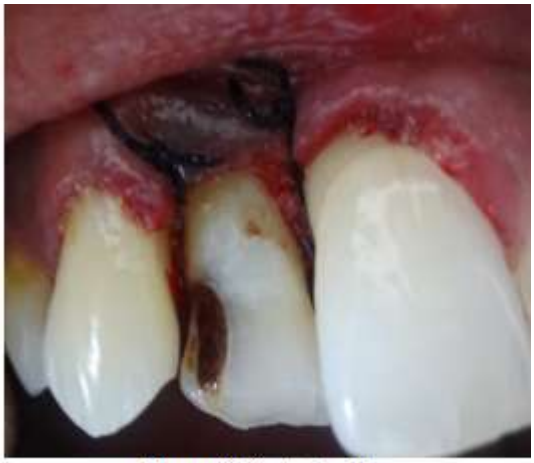

Figure 6: Suturing done

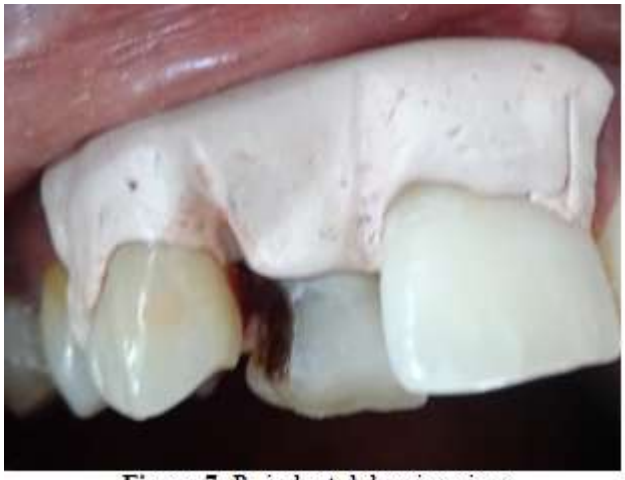

Figure 7: Periodontal dressing given

Figure 8: Excised tissue sent for histopathological examination

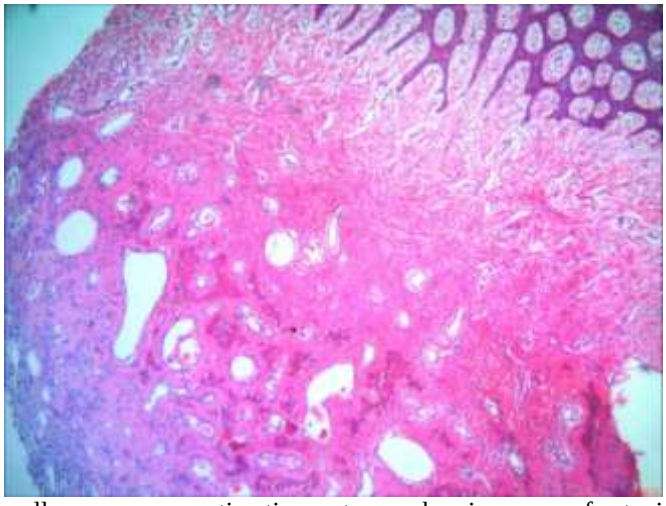

Figure 9: moderately to densely collagenous connective tissue stroma showing areas of osteoid like calcifications seen near to the overlying proliferative epithelium -X40

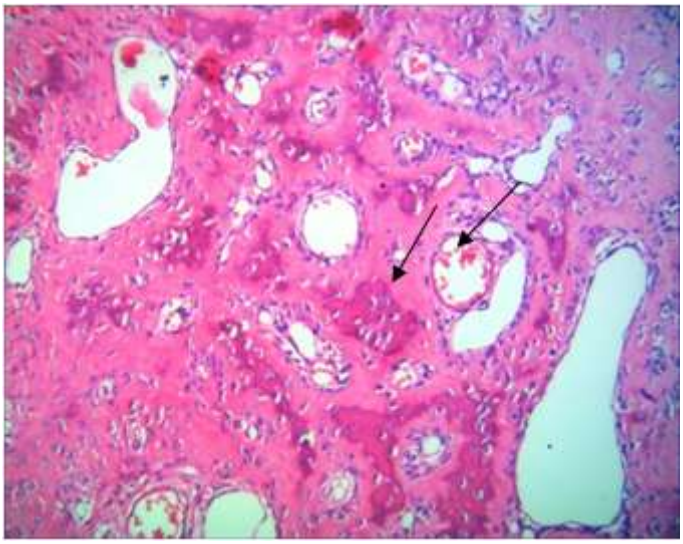

Figure 10: Osteoid like areas with developing osteocytes in the densely collagenous stroma. Vascularity was high with numerous blood vessels and RBCs -X100

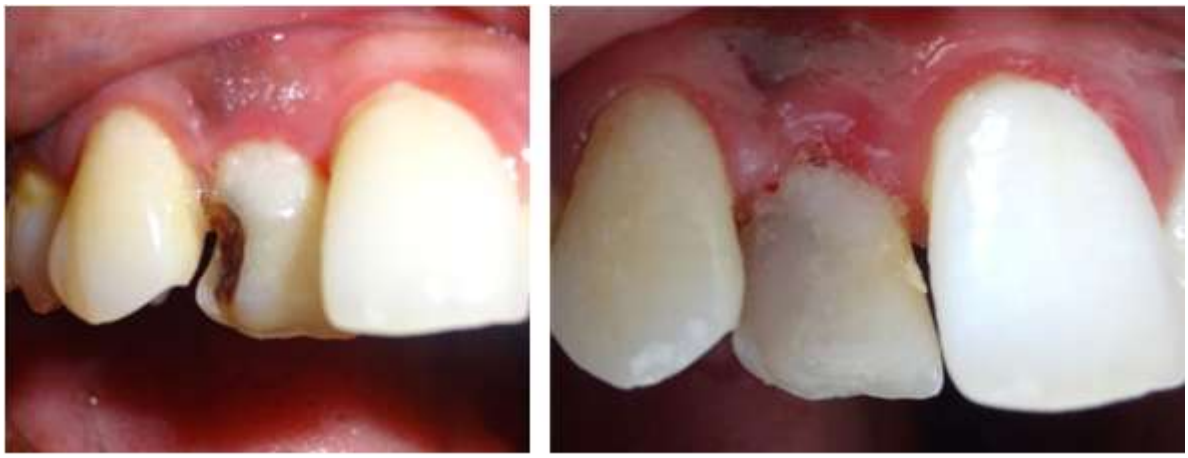

Figure 11 a & b: 1 month and 5 months post operatively

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