

Case Report

A Rare Case Report of Pyogenic Granuloma Associated with External Root Resorption

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ABSTRACT

This is a rare case in which external root resorption was associated with localized gingival enlargement (pyogenic granuloma) in the upper right central incisor in a 49-year-old male clinically presenting with recession and mobility in other areas. The enlargement was pedunculated measuring 1.5 cm × 2 cm reddish pink in color, soft to fibrotic in consistency, and clinically diagnosed as pyogenic granuloma with chronic generalized periodontitis and endodontic lesion. Nonsurgical periodontal therapy was performed, enlargement was excised, and histopathological report was consistent with clinical report. Since it was associated with the cervical root resorption, the patient had to immediately undergo root canal treatment. The patient was observed for 4 months. The patient did not have any complaints, and the lesion was healed satisfactorily. For the esthetic purpose, gingival veneering was planned in the anterior region as there were root resorption and discoloration. After complete treatment, the gingiva is normal and healthy, and there was no sign of recurrence of the enlargement. The patient's periodontal condition is now routinely evaluated.

KEYWORDS: External root resorption, pyogenic granuloma, reverse sandwich technique

CLINICAL RELEVANCE TO INTERDISCIPLINARY DENTISTRY

- Gingival enlargement diagnosed clinically as pyogenic granuloma was surgically excised
- As there was root resorption, root canal treatment was done
- In this case, reverse sandwich technique was used because using mineral trioxide aggregate alone will give rise to rough surface which will act of nidus for plaque and calculus deposition – composite as a poor border seal leading to microleakage; hence, glass ionomer cement was applied over composite to minimum this leakage
- Gingival veneering was planned for esthetic purpose.

INTRODUCTION

Pyogenic granuloma is a reactive lesion that represents an overexuberant reaction by connective tissue to a known stimulus or injury. It is a common tumor-like mucocutaneous overgrowth that is found in the oral cavity or on the skin. Chronic low-grade physical trauma, hormonal imbalance, microbial factors, and few drugs have been implicated as etiologic factors in the development of pyogenic granulomas.^[1]

Bhaskar and Jacoway in their study observed that oral pyogenic granuloma comprised about 1.85% of all oral pathoses.^[2] Shamim *et al.* in an analysis of 244 cases of

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gingival lesions in South Indian population found that nonneoplastic lesions accounted for 75.5% of cases, with oral pyogenic granuloma being the most frequent lesion, accounting for 52.71% of cases.^[3]

Resorption of teeth on the external surface may be caused by chronic inflammatory lesions, cysts, benign or malignant tumor,^[4] trauma from a single event, malocclusion,^[5] or excessive orthodontic forces,^[6] or it may be idiopathic. Pathogenesis of external resorption from chronic inflammatory lesions, cysts, and benign or malignant tumors can release chemical mediators and can cause increased vascularity and pressure.

A 49-year-old male patient approached dental outpatient department with a chief complaint of gingival overgrowth diagnosed as pyogenic granuloma. Below the enlargement, it was observed that there was recession and external root resorption; once the lesion was excised flaps were elevated and derided, the external root resorption was resorted followed by root canal treatment (RCT). To achieve esthetic results, gingival veneer was planned. Taira *et al.* have shown a recurrence rate of 16% in excised lesions of pyogenic granuloma^[7] and the patient is followed up for 4 months and there are no signs of recurrence of the lesion.

CASE REPORT

A 49-year-old man with unremarkable medical history presented with localized overgrowth on the labial aspect of right central incisor for 4 months [Figure 1a]. On intraoral examination, well-defined solitary pedunculated gingival enlargement was seen on the maxillary labial attached gingiva measuring about 1.5 cm × 2 cm extending from mesial aspect of 11–12 anterioposteriorly and from cervical region of 11 till attached gingiva. The attachment was seen only in the distal aspect of 11; the lesion was reddish pink in color and soft to fibrotic in consistency. Surrounding mucosa showed signs of bleeding with no pus discharge. On palpation, the inspected findings were confirmed. The defect was present on the labial aspect of 11 at the crown–root junction that is below the gingival enlargement. The maxillary right central incisor also showed Grade 2 mobility and slight discoloration and had no previous history of trauma. The lesion had a moderate pocket on the distal aspect of tooth 21 measuring 8 mm with lingering response of the tooth to cold test (pulp test).

Other aspects of the oral cavity revealed poor oral hygiene, generalized recession inflammation of the gingiva, and bleeding on probing especially around the incisor and molar regions. The traumatic occlusion was associated with fremitus on centric occlusion and occlusal interference during protrusive movements. The

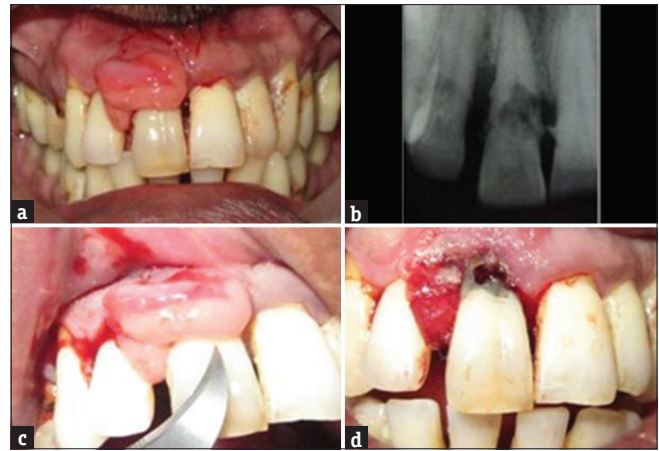


Figure 1: (a) Preoperative frontal view showing overgrowth of the gingiva on teeth 11 and 12, (b) preoperative radiographic view of teeth 11 and 12, (c) operative view with #15 BP blade in place to remove the stalk of the overgrowth, and (d) immediate post excision frontal view of the overgrowth

intraoral periapical radiography revealed an irregular radiolucency at cemento-enamel junction (CEJ) and was found to be extending on root surface [Figure 1b]. It was associated with periapical radiolucency clinically the case was provisionally diagnosed as generalized chronic periodontitis with pyogenic granuloma and endodontic lesion.

Histopathological report revealed that a discontinuous hyperplastic stratified squamous hyperparakeratinized epithelium. The underlying connective tissue was fibrocellular to areas showing sheets of plump endothelial cells cluster. Many of these are from blood vessels. Moderate-to-dense inflammatory cell infiltrate consists predominantly of plasma cells in perivascular locations and in areas diffuse dense infiltrate. Moreover, diagnosis was confirmed as pyogenic granuloma.

Treatment

Nonsurgical periodontal therapy was carried out followed by occlusal correction. Surgical excision of the lesion was done and sent for histopathological examination [Figure 1c and d]. Access opening was obtained from the lingual aspect [Figure 2a] and root canal was traced using a gutta-percha stick [Figure 2b]. A full-thickness periodontal flap was raised, the surgical site was thoroughly scaled, and the root was planed [Figure 2c].

The resorptive lesion was debrided with the help of hand instruments (Spoon excavator, GMT, and Gracey's curettes). Keeping the file in place the defect on the root surface was restored from the external surface with mineral trioxide aggregate (MTA) (medicept UK LTD), composite (Ivoclar) and glass

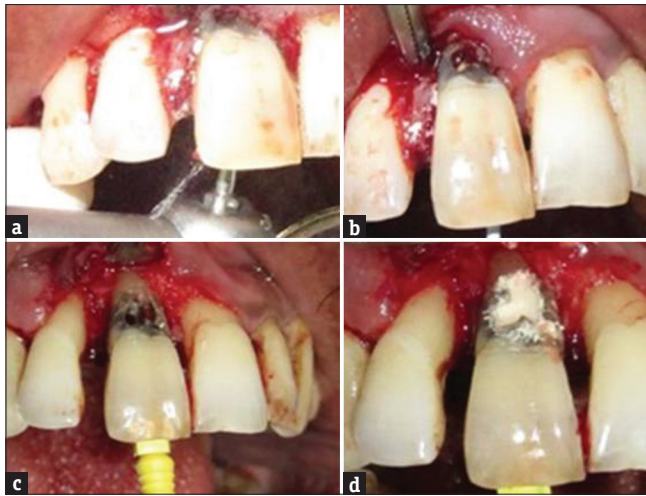


Figure 2: (a) Access cavity preparation using an airtor and access cavity bur, (b) tracing the canal with no. 30 gutta-percha point, (c) file placed for instrumentation of the canal and visualizing the canal, and (d) root canal restored with the file in place for maintaining patency

ionomer cement (GIC) type 2 (GC Fuji Li) which is a reverse sandwich technique increasing the strength of the restoration,^[8] the file was placed in root canal during filling to preserve the patency of the canal [Figure 2d]. Once the restoration was cured, the file was removed and the flap was approximated and sutured back [Figure 3a]. In the next appointment, single sitting RCT was carried out. One-month postoperative frontal view is seen [Figure 3b]. MTA is used as an apical barrier for teeth with immature apices, repair of root perforations, root-end filling, pulp capping and pulpotomy procedures. MTA is not affected in the presence of moisture and also is able to harden and form a barrier because of hydrophobic characteristic; as this case had a root resorption, MTA was used. Calcium hydroxide intracanal medication was not given since the patency of the canal might have been compromised and obliteration of the root canal might be a possibility.

The soft-tissue prosthesis is planned for the aesthetic concern of the patient. The missing maxillary right premolar will also be included in the soft-tissue prosthesis and try in will be given; later, the whole prosthesis must be replaced with color matched highly esthetic heat-cured acrylic prosthesis or addition silicon soft-tissue prosthesis.

RESULTS

The gingival tissues were free of inflammation and localized enlargement. The external root resorption was taken care of RCT was successful without any complaints. Soft tissue prosthesis was planned for esthetic purpose. The patient was observed after 4 months without any reoccurrence [Figure 3c and d].



Figure 3: (a) Immediate postoperative frontal view, (b) 1-month postoperative frontal view, (c) 4-month postoperative radiographic view showing obturated canal, and (d) 4-month postoperative frontal view

DISCUSSION

This is a rare common case of pyogenic granuloma having results and histopathological features similar to other studies but was rare to be accompanied with external cervical root resorption and associated with localized gingival enlargement on a tooth with traumatic occlusion. The localized enlargement was diagnosed as a pyogenic granuloma. Usually, the cause of such enlargement is a chronic localized irritating factor, such as dental plaque or calculus,^[1] which was the same in our case as well. The unusual characteristic of this lesion was its association with external cervical resorption. External cervical resorption associated with a pyogenic granuloma which is relatively low has also been reported by Vossoughi and Takei.^[9]

There are many causes for external cervical resorption, which may be due to various reasons like inflammation of the periodontal tissues,^[10] trauma^[5] and internal bleaching^[11] are among the most common. Congenitally missing cementum layer^[12] or cemental defects^[13] due to physical injuries to the root surface^[14] may act as predisposing factors in the pathogenesis of root resorption. Heithersay^[15] in 1999 stated that 16.4% of teeth showing cervical resorption which did not have any predisposing factors and also suspected that some of these teeth may have undetectable developmental defects, such as hypoplasia or hypomineralization of cementum.

CEJ studies reveal that dentin exposure occurs in 18% of all cases.^[16] Schroeder and Scherle^[17] reported that four aspects of a tooth may have different CEJ characteristics, with dentin exposure more often on the buccal and distal surfaces. These reports clear the fact that the CEJ area may often be devoid of

cementum in healthy teeth. Neuvald and Consolaro^[18] in 2000 examined CEJs using scanning electron microscopy and stated that the cervical region may be prone to external resorption.

Traumatic occlusion of central incisor may have caused external root resorption. Studies have reported that heavy occlusal forces can cause resorption of a tooth and bony support.^[19] There are reports stating that traumatic occlusion may be initiating factor in external resorption^[20] and a propagating stimulus for its progressive.^[21] We may hypothesize that changes in the root surface (i.e., cemental tears and a resulting denuded root surface) because of traumatic occlusion might have brought about temporary resorption, which was also the case in study done by Neuvald and Consolaro,^[18] which due to the inflammation in the area might have lead to a progressive pathologic state as noticed by Dragoo and Sullivan in their study.^[10] The resulting defect on the root surface can act as a contributing factor for plaque accumulation and aggravate inflammation of the adjacent gingiva. This is caused due to additive effect were gingival inflammation causes root defect along with occlusal factors adding on to the former. In this case, pyogenic granuloma in response to local irritation associated with cervical root resorption following occlusal trauma might have been the reason for the lesion to develop adding on to this, root defect as changed the gingival status by accumulation of food debris, plaque, and calculus.

In this case, MTA was used in the cervical area which will promote the development of subgingival plaque because of the rough surface the material is not a hard material and will not be able to reinforce the tooth structure.^[22] In such cases, resin composite is the material of choice.^[23] However, because of the inadequate marginal sealing ability of composites and poor biocompatibility, the restoration was initially with composite as a liner followed by GIC was more accurate in this case.

This lesion is of external root resorption; however, the differential diagnosis of root caries, internal root resorption, physiologic apical resorption, infective/inflammatory resorption, and apical (pulp) inflammatory resorption can be given which might be overruled due to the clinical and radiographical features of the lesion.

CONCLUSION

This rare case has an interdisciplinary approach with the localized gingival enlargement diagnosed as pyogenic granuloma and external cervical root resorption which was hypothesized to be due to trauma from occlusion, hence treated endodontically, and for esthetic purpose,

gingival veneering was planned. The case is followed up for 4 months without any recurrence of the lesion.

Declaration of patient consent

The authors certify that they have obtained all appropriate patient consent forms. In the form the patient(s) has/have given his/her/their consent for his/her/their images and other clinical information to be reported in the journal. The patients understand that their names and initials will not be published and due efforts will be made to conceal their identity, but anonymity cannot be guaranteed.

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Conflicts of interest

There are no conflicts of interest.

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