

A Concurrence of Periodontitis, Gingival overgrowth and Plasma cell gingivitis: a case report

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Abstract: Periodontitis is inflammation of supporting tissues of the teeth, it causes destructive change that leads to loss of bone and periodontal ligament. Gingival overgrowth is increase in the size of gingiva. Gingival overgrowth may be associated with hormonal, nutritional imbalance or other local factors and systemic diseases. Plasma cell gingivitis is a condition that is clinically characterized by diffuse reddening and edematous swelling of gingiva.

A non-smoker systemically healthy 35-year-old female patient reported with the chief complaint of swollen gums since 3 years. Clinically patient presented with generalized gingival overgrowth and was diagnosed as a stage IV grade 'C' periodontitis. Surgical periodontal flap therapy was performed to reduce or eliminate periodontal pocket and osseous recontouring. The tissue on biopsy revealed a histologic picture of plasma cell gingivitis.

This case description represents a rare and unusual occurrence of plasma cell gingivitis in association with gingival overgrowth and periodontitis. After non-surgical, surgical periodontal flap surgery and elimination of all possible causes resulted in reduction in gingival overgrowth and significant improvement of periodontal parameters.

Key Words: Periodontitis, gingival overgrowth, plasma cell gingivitis

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I. Introduction

Gingival enlargement is defined as an increase in the size of the gingiva. In the past, clinical descriptive terms were used such as gingival hyperplasia or hypertrophic gingivitis but new terminology used for this condition is gingival overgrowth. According to etiologic factors and pathologic changes gingival enlargement can be classified as¹: inflammatory enlargement (chronic or acute), drug-induced gingival enlargement, enlargements associated with systemic diseases or conditions, false enlargement and neoplastic enlargement.

Periodontitis is inflammation of supporting tissues of the teeth, it causes destructive change that leads to loss of bone and periodontal ligament.

Chronic inflammatory gingival enlargement involves slight ballooning of interdental papilla or marginal gingival and it may be localized or generalized and it progresses slowly and painlessly, unless it is complicated by acute infection or trauma. It may be marginal or interproximal or on the attached gingiva.¹This condition shows the exudative and proliferative features of chronic inflammation. This condition is caused by prolonged exposure to dental plaque. Factors that are responsible for plaque accumulation are poor oral hygiene, irritation by anatomic abnormalities, orthodontic appliances.²

Plasma cell gingivitis (PCG) is a condition that clinically characterized by marginal gingival enlargement that extends to the attached gingiva. Occasionally, it is accompanied by cheilitis (lip swelling) or glossitis (tongue swelling).³ The term 'PCG' is used where gums are involved and plasma cell cheilitis, where lips are involved. Three categories have been proposed, based on the etiology of the condition⁴: PCG lesions caused by an allergen, PCG due to neoplastic origin and PCG lesions due to unknown cause.

This case description outlines an unusual presentation of PCG in association with generalised gingival overgrowth and periodontitis.

II. Case Report

A 35-year-old female reported to the Department of Periodontics of Sudha Rustagi College of Dental Sciences and Research, Faridabad (Haryana) with a chief complaint of bad breath, swollen and bleeding gums. Although some swelling was present since 5-7 years but the gingival size had been progressively increasing since 3 years when she started noticing it more because of bleeding. There was no systemic, family history reported.



Figure 1, 2 Showing pre-operative photograph of maxillary and mandibular region

On clinical examination marginal, papillary and attached gingiva appeared fiery red and enlarged in the maxillary and mandibular arches (figure 1,2). Gingiva appeared to be friable and soft with smooth and shiny surface. According to Bokenkamp classification⁵, patient was placed under grade II gingival enlargement. Oral hygiene index of patient was 2.3 which represent poor oral hygiene. On probing there was moderate to severe attachment loss, deep pockets (6-11 mm) with mobility of varying grades in all the teeth. Hematological investigations were carried out which included complete blood count, bleeding time and clotting time. Laboratory tests revealed no evidence of any systemic disease.

According to drug history she had taken medications that included both allopathic and homeopathic medicines for pregnancy induction for approximately 13 years since the age of 21 years but she didn't have records. Patient had stopped the medicines since 3 years.

A provisional diagnosis of stage IV, grade 'C' Periodontitis⁶ was made on the basis of clinical charting and recordings.

Radiographic examination (OPG) revealed generalized moderate to severe bone loss (figure 3).



Figure 3 Showing Pre-operative OPG

III. Treatment

The initial periodontal therapy comprising of scaling and root planing and patient education was instituted. Non surgical therapy was performed quadrant wise. Oral hygiene instructions were given and the use of chlorhexidine mouthwash twice a day for 2 weeks was advised. Subsequent visits witnessed a reduction in size and inflammation of gingiva. Teeth with overall poor prognosis were extracted before Phase II therapy which was initiated around a month after the start of phase I therapy.



Figure 4 Pockets marked



Figure 5 Flap reflection



Figure 6 Closure

Surgical therapy consisted of flap procedures to eliminate the periodontal pockets and to reduce the tissue thickness to get physiological contour. Pockets depths were marked as shown (figure 4) and bone sounding was performed with periodontal probe to determine the presence and extent of bone deformities. The initial internal bevel incision was made at least 3 mm coronal to the mucogingival junction, which creates new interdental papilla at each interdental space.⁷ Flap was reflected (figure 5) and debridement has been done. Then suturing was done to secure facial and palatal flap (figure 6). Postoperatively antibiotics and analgesics were prescribed. Healing with primary intention was uneventful. The excised soft tissue was sent for the histopathological examination.



Figure 7 Post- operative (1 month)



Figure 8 Post-operative 6 months with removable prosthesis

The patient was recalled for checkups at regular interval of 1 month. The whole treatment resulted in the disappearance of gingival overgrowth (figure 7). Patient was given temporary prosthesis (figure 8).

IV. Histopathology

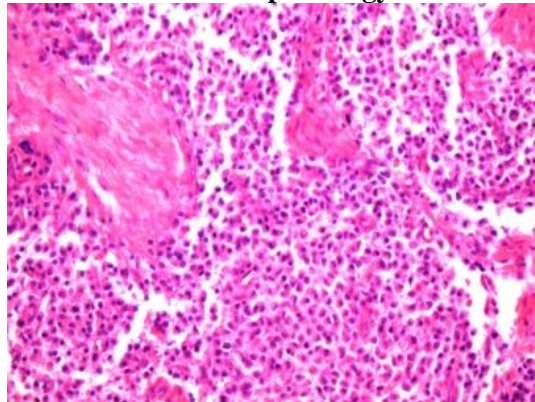


Figure 9 Low power (H & E) stained figure showing atrophic stratified epithelium

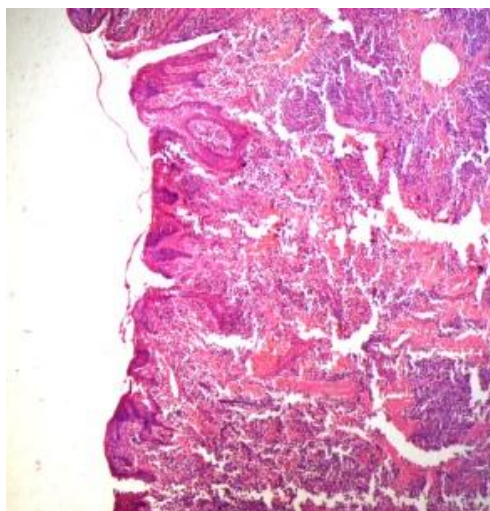


Figure 10 High power (H & E) stained figure showing dense chronic inflammatory cells infiltration predominantly plasma cells

Biopsy showed highly friable and cellular stroma comprised of dense infiltration of chronic inflammatory cells, engorged and dilated blood vessels and hemorrhagic area. There was predominance of plasma cells (figure 9) which at places are binucleated and some were fusing to form giant cells. Overall stroma was oedematous in nature with areas of collagen fibers separating the cellular stroma. Overlying epithelium was non to para-keratinized stratified squamous epithelium which was disrupted, atrophic (figure 10) to hyperplastic. Biopsy report was suggestive of plasma cell gingivitis.

V. Discussion

Inflammation in gingival tissue can cause enlargement of the gingiva is called as an inflammatory gingival overgrowth. It is caused by accumulation of fluid in inflamed gingival connective tissue. Inflammatory gingival overgrowth can be acute and chronic. This case had the clinical features of chronic inflammatory gingival enlargement.

PCG is a rare condition⁸, characterized by diffuse and massive infiltration of the plasma cells into the connective tissue. Kerr *et al.* in 1971, reported the first case, when they observed gingival enlargement in gum chewers, which disappeared following the discontinuation of the chewing habit.⁹ Plasma cell gingivitis is generally regarded as a hypersensitivity to certain antigens, and several antigenic substances; e.g., cinnamon and mint in chewing gum, candy, and toothpaste, and peppers used in food,^{10,11} have been reported to cause it. PCG is also frequently associated with cheilitis and glossitis, and sometimes with psoriasis.¹¹ The coexistence of plasma cell gingivitis with aggressive periodontitis had been reported in the past.¹² Our patient had changed her toothpaste (ayurvedic) one year back and was cognizant of the fact that enlargement and bleeding had increased considerably afterwards. The instruction to cease the use of changed toothpaste was given on the assumption of it being an allergic response to dentifrice.

Histologically, in patients with plasma cell gingivitis, the underlying connective tissue contains a dense infiltrate of plasma cells that also extends to the oral epithelium.¹³

In our case, there was predominance of plasma cells, which, at places are binucleated and some are fusing to form giant cells. Overall stroma was oedematous in nature with areas of collagen fibers separating the cellular stroma, the features were suggestive of plasma cell gingivitis. This case was rare as it is a case of periodontitis with generalized, diffuse, chronic inflammatory enlargement and plasma cell gingivitis.

Patient had given history of drugs taken for pregnancy induction. Clomiphene citrate is among the most widely used drugs for management of infertility with a key role in ovulation induction. Chemically, Clomiphene Citrate is a citrate salt of clomiphene, a selective estrogen receptor modulator.¹⁴ One study concluded that ovulation induction, which is the most common method in management of infertility, exacerbates gingival inflammation, bleeding and GCF volume.¹⁵ Females hormones play a significant role in allergic diseases. Estrogen influences on cells to produce IgE and also mast cell and basophil degranulation.¹⁶ Hence, the possibility of hormonal fluctuation leading to an allergic response, also cannot be ruled out.

If the patient was on this drug, of which there is a high possibility then it can be assumed that inflammatory gingival enlargement may have been exaggerated by it initially as a part of conditioned enlargement although scant history and records refrain us from substantiating it. After leaving the drug chronic enlargement may have continued in the absence of complete oral prophylaxis and inability to render self care by the patient.

The treatment of gingival overgrowth is based on an understanding of the etiology and underlying pathologic changes of this condition. Gingival overgrowths are of special concern to the patient and the dentist because they pose problems that include plaque control, impaired function and aesthetics. If the extent of the gingival enlargement is so severe that access to the deposits on the tooth surface is impossible, surgical removal is the treatment of choice.

In this case of periodontitis deep pockets with moderate to severe bone loss was present so flap surgery was planned to eliminate periodontal pockets. This surgical procedure was done for our patient to eliminate periodontal pockets, making plaque control easier and to enable the regeneration or repair of osseous defects. Our patient is being regularly monitored clinically and radiographically under supportive periodontal treatment for improvement in her periodontal condition as well as for any recurrence of gingival overgrowth.

There is very scarce literature on such coexistence of association of periodontitis with gingival enlargement supposedly associated with drug, inflammation and allergy which renders the case its uniqueness.

VI. Conclusion

Gingival enlargement is of prime concern to the patient as it impairs both function and esthetics. In excessive enlargement cases, a properly timed surgical procedure to reduce the tissue to a normal contour will yield maximum benefit to the patient, reducing the number of clinical visits needed and improving the patient's quality of life. The case becomes more challenging when associated with periodontitis with generalized enlargement and plasma cell gingivitis, which has a synergistic effect on the progression of the lesion. A careful

interdisciplinary treatment plan and execution of it is essential in order to restore the health, function and esthetics gaining over-all patient satisfaction and confidence.

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