

## Case report

### **A COMPREHENSIVE TREATMENT APPROACH FOR CHRONIC GENERALIZED PERIODONTITIS WITH PLAQUE-INDUCED GINGIVAL ENLARGEMENT- CASE REPORT**

#### **ABSTRACT:**

Periodontitis is associated with microbial infection, which activates host-derived inflammatory mediators resulting in the attachment loss of the periodontium. In this case report, a 31-year old female with chronic generalized periodontitis and inflammatory gingival enlargement was treated by comprehensive periodontal therapy in which the initial visits targeted the control of local etiological factors. Flap surgery, in all the quadrants, was planned and was carried out subsequently. Regenerative modality was implemented in defects that were containable. The patient was followed up for three years and received supportive periodontal care. Optimal oral hygiene and patient compliance led to an improved outcome in the gingival and periodontal status of the patient.

Key words: PERIODONTITIS , PLAQUE-INDUCED GINGIVAL ENLARGEMENT, Dental plaque, periodontal therapies

#### **INTRODUCTION:**

Periodontitis is the inflammation of the supporting structures of a tooth that has an underlying complex etiology.<sup>1</sup> The perplexity of the disease is due to contributing factors like genetic susceptibility, plaque deposition, teeth malalignment, iatrogenic factors and systemic factors like hormonal variations or chronic illness.<sup>2</sup> It is always challenging for a clinician to treat periodontitis, as this demands proper assessment of risk factors, appropriate treatment planning and its execution, and post-therapy maintenance care.<sup>3</sup>

Arresting the disease process and regeneration of the lost structures are the two prime pillars of treatment in patients with periodontitis. Achieving complete debridement and total elimination of microbial reservoirs has always been a topic of controversy. Several treatment strategies, including non-surgical and surgical therapies, have been efficacious in halting the disease progression, however, factors like underlying medical conditions, tooth anomalies or poor patient compliance make the therapy less effective.<sup>4</sup>

Regeneration has been a subject of curiosity for periodontist. It involves the histological concept of rebuilding the lost structures with biomaterials, growth factors or grafts. Awareness among patients regarding the bone graft treatment modality is growing popular due to its high success rate and predictable results.<sup>5,6</sup> However, regeneration is a complex, time-consuming procedure that does not always bear fruitful outcomes.<sup>7</sup> This case report describes a patient suffering from chronic generalized periodontitis and inflammatory gingival enlargement who was treated by comprehensive periodontal therapy and was followed up for three years.

#### **Case report:**

A 31-year-old, systemically healthy female with no history of dental treatment reported to the department of Periodontology of our institution with the chief **complaint** of bleeding gums for three months. The bleeding was intermittent that aggravated on brushing or while having food.

On extra-oral examination, no facial asymmetry, TMJ (**Temporomandibular joint**) abnormalities or palpable lymph nodes were exhibited. On intra-oral examination, the gingiva was erythematous, rounded with blunt interdental papilla. Enlarged gingiva was observed in the lower anterior teeth. Several areas were edematous and purulent discharge oozing out from the gingival sulcus was detected. Generalized loss of stippling and bleeding on probing (in 90% of the teeth) confirmed the presence of gingival inflammation. **Heavy deposition of plaque and calculus was found across the dental arch that depicted poor oral hygiene status. Periodontal charting demonstrated generalized deep periodontal pockets (more than 6mm in 93% of teeth) with generalized clinical attachment loss (more than 6 mm). Grade I mobility was marked in relation to tooth 36. Trauma from occlusion (TFO) was detected by fremitus test with respect to 13 and 23 and also pathological migration was noted on tooth 13. (Fig: 1)**

Both orthopantomogram (OPG) and **Intraoral periapical radiographs (IOPAR's)** were advised to the patient which revealed generalized bone loss. **The bone destruction extended till the coronal third except in a few teeth where the loss extended beyond the middle third (Fig: 2)** By the above clinical and radiographic evaluation, we diagnosed **chronic generalized periodontitis (Stage III)** with plaque-induced gingival enlargement with respect to 31, 32, 33, 34, 41, 42 and 43. Indices like Plaque index, Gingival index, Bleeding index, Probing pocket depth and Clinical Attachment Level were recorded at baseline to evaluate the gingival and periodontal status. **(Fig: 3, 4, 5, 6).**

The prognosis of a tooth depends on the age of the patient, smoking history, presence of etiological factors, remaining bone support, the extent of tooth mobility and furcation involvement, accessibility, degree of patient cooperation and the presence of environmental or systemic factors. Based on the above aspects, we concluded that the patient had an overall fair prognosis.

Prior to the therapy, the patient was educated about her periodontal status and the need for periodontal treatment. Also, written informed consent was obtained from the patient. We followed the trimeric model of treatment plan for the patient. Initially, phase-I therapy was intended that involved professional plaque control by both manual and ultrasonic scaling. Root planing and **curettage** were implemented to remove the infected pocket lining, subgingival calculus and necrotic tissues. TFO was relieved by occlusal reduction w.r.t 23. Chlorhexidine mouthwash was prescribed for 14 days as a means of chemical plaque control. The patient was recalled after 6 weeks to re-evaluate the gingival and periodontal status. Clinically, there was a marked improvement in the oral hygiene status. Inflammation, redness, percentage of sites with bleeding on probing, enlargement and probing pocket depth were reduced. However, **the persistence of generalized residual pocket of more than 5mm and bone loss in all the quadrants** prompted us to schedule the patient for surgery. Kirkland flap surgery under local anesthesia containing 2% lidocaine with 1:80,000 epinephrine was planned for each quadrant in every two weeks.

Crevicular incisions were given with the help of 12 no. blade and a full thickness flap in the first quadrant was raised. Thorough debridement of the infected granulation tissue was

accomplished along with saline irrigation. Horizontal defects were noted w.r.t 13, 14 and 15. Vertical defects were evident between 16, 17 (two-walled) and 17, 18 (one-walled) (**Fig: 7**). Hydroxyapatite bone graft (**Sybograft**) was placed between 16 and 17 and the flaps were sutured (**Fig: 8,9**). A periodontal pack was placed to protect the surgical site and for the patient's comfort.

The same protocol was followed for the second quadrant. Since horizontal defects were noticed in this quadrant (w.r.t 22, 23, 24, 25, 26, 27, 28) regenerative therapy was not advocated. Only degranulation of infected tissue was achieved followed by flap closure (**Fig: 10,11**).

In the third quadrant, a deep vertical one-walled defect was associated with the distal root of 36 (**Fig: 12**). A shallow crater was observed w.r.t 34. A collagen sponge was placed w.r.t 36 (**Fig: 13**) and the flaps were sutured with 3-0 silk (**Fig: 14**).

Two weeks later, periodontal flap surgery was performed in the fourth quadrant. Following debridement and irrigation, horizontal defects were noted w.r.t 42, 43, 44, 45, 46, 47 and 48. The defects were non-containable and therefore the flaps were repositioned and sutured (**Fig: 15,16**).

Post-operative instructions and medications (antibiotics and analgesics) were prescribed to the patients after every surgery. She was recalled after every one-week of surgery for suture removal and evaluation of the surgical site.

The patient was kept under supportive periodontal care for three years. As per Merin's classification, in the first year, the patient was recalled once in every 1-2 months and in every 3-4 months in the succeeding years. Removal of soft deposits and calculus and reinforcement of oral hygiene was carried out during these visits. Also, indices and re-assessment of oral hygiene was done at each visit.

There was an overall improvement in all the clinical parameters -plaque index, gingival index and bleeding index by the **end of three years**. Oral hygiene maintenance was good and also a reduction in the percentage of sites with bleeding (10%) was observed. Generalized reduction in probing pocket depth (less than 4mm) and a gain in clinical attachment level was seen (**Fig: 17, 18, 19, 20**). The radiographical analysis also showed improvement after the therapy.

### **Discussion:**

The most common cause of tooth loss in the adult population is periodontitis, which can be prevented by treating the condition in the initial stages.<sup>8</sup> Patient selection, risk assessment, tooth anatomy, treatment plan and supportive periodontal therapy are the key elements during periodontal treatments.<sup>9</sup> **This report highlights the clinical and radiographical outcome of periodontal therapy done in a chronic periodontitis case with moderate to severe clinical attachment loss and bone loss. The patient received comprehensive professional care and was followed up for three years. We considered both inflammatory and occlusal factors while treating this case.**<sup>10</sup> **To reduce the microbial load and to provide a healthy oral environment, phase-I therapy was adopted which was effective in reducing the inflammation.** However, proper accessibility is the main drawback of phase-I therapy faced by clinicians.

Today, with the advent of material science in regeneration, favourable clinical improvements of the periodontally compromised tooth have become more promising. The most common technique followed for bone regeneration is bone replacement grafts.<sup>11</sup> In this case, all teeth were periodontally treated and retained by sequelae of periodontal therapies. Regeneration was successfully performed in teeth having containable defects. Techniques involved in this field is ever-changing and efforts are being made to get a more predictable outcome for this globally prevalent disease.

Lack of patient compliance during the maintenance phase can result in disease recurrence.<sup>12</sup> Recent evidence identifies the role of patient education, motivation and supportive treatment in the success of periodontal therapy. It has been strongly proposed that disease relapse befalls patients who drop out during the periodontal procedure and those who do not adhere to the protocols by clinicians.<sup>13,14</sup> In this report, maintenance at the personal and professional levels contributed to sound periodontal health and decreased incidence of tooth loss.<sup>15</sup> Hence, we focused on the elimination of etiological factors, regeneration and comprehensive periodontal therapy to achieve stable oral health for this patient.

### **Conclusion:**

The patient was diagnosed with chronic generalized periodontitis with plaque-induced gingival enlargement and underwent a complex periodontal therapy with a long-term maintenance program. With an appropriate initial periodontal treatment and ongoing maintenance care, the periodontal and oral hygiene status can be maintained with no recurrence of periodontitis.

### **Consent**

As per international standard or university standard, patient(s) written consent has been collected and preserved by the author(s).

### **Ethical Approval:**

As per international standard or university standard written ethical approval has been collected and preserved by the author(s).

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#### LEGENDS OF FIGURES:

1. FIGURE 1: CHRONIC GENERALIZED PERIODONTITIS WITH PLAQUE-INDUCED GINGIVAL ENLARGEMENT  
The picture demonstrates the status of oral health in the first visit. Clinical signs of inflammation were present (redness, enlargement, loss of stippling, presence of bleeding on probing and exudate)
2. FIGURE 2: PRE-OPERATIVE ORTHOPANTOMOGRAM  
The radiograph reveals generalized bone loss with deep vertical defects w.r.t 27,28,36,37. The bone destruction extended till the coronal third except in few teeth where the loss extended beyond middle third denoting stage III periodontitis
3. FIGURE 3: PRE-OPERATIVE PROBING POCKET DEPTH IN THE 1<sup>ST</sup> QUADRANT  
Measurement was done with the help of UNC-15 probe
4. FIGURE 4: PRE-OPERATIVE PROBING POCKET DEPTH IN THE 2<sup>ND</sup> QUADRANT

5. FIGURE 5: PRE-OPERATIVE PROBING POCKET DEPTH IN THE 3<sup>RD</sup> QUADRANT
6. FIGURE 6: PRE-OPERATIVE PROBING POCKET DEPTH IN THE 4<sup>TH</sup> QUADRANT
7. FIGURE 7: KIRKLAND FLAP SURGERY IN THE FIRST QUADRANT  
Access flap surgery was performed where full thickness flap was raised with the help of periosteal elevator. Thorough debridement was performed and defects were noted
8. FIGURE 8: BONE GRAFT PLACED  
Sybograf was placed between 16 and 17 (2 walled defect)
9. FIGURE 9: SUTURE PLACED IN THE FIRST QUADRANT  
3-0 silk suture was used for flap approximation.
10. FIGURE 10: CONVENTIONAL FLAP SURGERY IN THE SECOND QUADRANT  
Open flap debridement was done in this quadrant with saline irrigation. Horizontal defects were observed.
11. FIGURE 11: SUTURE PLACED IN SECOND QUADRANT  
Silk suture was placed using simple interrupted method
12. FIGURE 12: ACCESS FLAP SURGERY IN THE THIRD QUADRANT  
Crevicular incisions were given with 12 no. blade and flap was reflected.  
Degranulation of infected tissue was done and vertical defect was appreciated w.r.t 36 (distal root). A Shallow crater was also observed w.r.t 34
13. FIGURE 13: COLLAGEN SPONGE PLACED W.R.T 36
14. FIGURE 9: SUTURE PLACED IN THIRD QUADRANT  
Simple interrupted suture placed
15. FIGURE 15: HORIZONTAL DEFECTS IN FOURTH QUADRANT  
Coventional open flap debridement was done in this quadrant and horizontal defects were noted.
16. FIGURE 11: SUTURE PLACED IN FOURTH QUADRANT
17. FIGURE 17: POST-OPERATIVE PROBING POCKET DEPTH IN 1<sup>ST</sup> QUADRANT,  
Measurements taken with the help of UNC-15 probe. Clinical improvement in the parameters were noted in the first quadrant by the end of three years.

18. FIGURE 18: POST-OPERATIVE PROBING POCKET DEPTH IN 2<sup>ND</sup>  
QUADRANT

Clinical improvement in the parameters were noted in the second quadrant by the end of three years.

19. FIGURE 19: POST-OPERATIVE PROBING POCKET DEPTH IN 3<sup>RD</sup>  
QUADRANT

Clinical improvement in the parameters were noted in the third quadrant by the end of three years.

20. FIGURE 20: POST-OPERATIVE PROBING POCKET DEPTH IN 4<sup>TH</sup>  
QUADRANT

Clinical improvement in the parameters were noted in the fourth quadrant by the end of three years.