

## Management of Chronic Gingivitis with localized periodontitis by Nonsurgical (Phase I) Periodontal Therapy- A Case Report.

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### Abstract:

*Periodontitis is a chronic inflammatory disease of the periodontal tissues (periodontium) which surround and support the teeth, that results in attachment loss and alveolar bone destruction leads to ultimate tooth loss. It is caused by the bacteria present in dental plaque, which is a tenacious substance that forms on teeth and gingiva just after teeth are brushed. Periodontal treatment is aimed at controlling the infection in order to stop the progression of the disease and to be able to maintain a healthy periodontium. Mechanical debridement of supragingival and subgingival biofilms, together with adequate oral hygiene measures is the standard periodontal therapy. This mechanical subgingival biofilm debridement consists of an initial (nonsurgical /phase I) phase involving scaling and root planing (SRP) and the elimination of plaque retentive factors, followed by a surgical phase (if needed) including the elevation of a tissue flap and bone remodeling in further stages. The adjunct use of antibiotics has proven to additionally improve the outcome of periodontal treatment. A clinical case of a 40-years-old male patient with generalized severe chronic periodontitis with localized gingival swelling was treated with nonsurgical (phase I) periodontal therapy that was confined to oral hygiene instruction (OHI), SRP with an adjunct antimicrobial regimen.*

*Key words: Chronic periodontitis, nonsurgical /phase I therapy, scaling and root planing (SRP).*

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## Introduction

It is scientifically established that dental plaque is the primary etiological factor in the pathogenesis of periodontal diseases and many epidemiological studies clearly state the relation between dental calculus and periodontitis [1,2]. Calcified bacterial plaque is known as dental calculus. The degree of mineralization in supragingival and subgingival calculus is different, but both are masked by a layer of bacterial plaque [3,4]. Relationship of calculus with periodontal pathogens and bacterial by-products makes it somewhat difficult to investigate its etiological role alone in periodontitis. Yet, it is widely accepted that calculus is a local contributory factor [5]. Calculus, having a rough surface and porous structure, is an ideal substrate for bacterial colonization and serve as a reservoir for toxic bacterial components and antigen [6]. Porphyromonas gingivalis, Treponema denticola, and Aggregatibacter actinomycetemcomitans have been identified within supra- and subgingival calculus [7-9]. Calcifying nanoparticles are found in dental plaque may contribute to the formation of calculus and pathogenic calcification of epithelial cells [10]. Localized periodontal inflammation can persist, leading to the breakdown of supporting tissues, if left untreated. Because of this, removal of subgingival plaque and calculus is a must need procedure for successful periodontal therapy. Supragingival calculus can be seen through naked eye examination, but clinical detection of subgingival calculus relies on tactile exploration of tooth surfaces with an explorer or probe. Calculus on interproximal surfaces may be detected by periodontal probe and more accurately by intra-oral periapical radiographs, although the accuracy of detection depends on radiographic projections [11]. The superior periapical radiographs can only detect 43.8% of the proximal surfaces that is verified visually after extraction [12]. Advanced technologies, including dental endoscopes [13], fiber-optic probes [14], autofluorescence [15], and lasers [16], are being used recently to better detect subgingival calculus. Although it is difficult to remove subgingival calculus completely by scaling and root planing (SRP) [17,18], periodontal healing is noticed even in the presence of microscopically visible calculus [19]. Initial /nonsurgical stage of periodontal therapy usually results in significant clinical improvement and change of subgingival microbial flora [20,21]. This report documents the treatment of a patient with generalized severe chronic periodontitis with localized gingival swelling using nonsurgical /phase I periodontal therapy.

## Case Description

A 40-year-old male presented for a consultation in the outdoor patient department (OPD) of Update Dental College & Hospital, Dhaka, Bangladesh. He gave a history of taking betel nuts and betel quids with chewing tobacco. Throughout his life, he did never visit any dentist for dental treatment. After intra-oral examination, dental surgeon of OPD detected supra and subgingival plaque, calculus, bleeding on probing, periodontal pockets around maxillary and mandibular molars, premolars and on the anterior regions. A localized gingival swelling was also found in the lower right anterior region between lateral incisor and canine (Figure:1 & 2).



Figure: 1. Showing accumulation of plaque and calculus



Figure: 2 Showing localized gingival swelling between lower right lateral incisor and canine

The Dental surgeon referred him to the Periodontology OPD. The patient was advised for intra-oral periapical radiographs from the radiology department. The radiographs revealed the presence of 40% alveolar bone loss lower right lateral incisor and canine (Figure: 3). Patient's oral hygiene was poor with plaque index score 2 and clinical signs of inflamma-

tion around all teeth were severe. Gingival index score was 3. Average sulcus depth was 3 mm. Based on the radiographic and clinical findings a nonsurgical treatment plan was developed to address the patient's plaque induced chronic generalized severe gingivitis with localized moderate periodontitis and gingival swelling. SRP with an ultrasonic scaler, followed by adjunctive treatment with a five-day course of systemic Metronidazole 400 mg three times a day. The patient was instructed to use a medi-um-tuft brush to remove plaque and also dental floss as an interdental cleaning aid. Periodontal re-assessment was performed one month after treatment, with an improvement shown with regard to the following parameters: marked reduction of gingival inflammation with gingival index score 1, complete resolution of localized gingival swelling, reduction in plaque (plaque index score 0) and bleeding on probing was absent (Figure: 4).



Figure: 3 Showing periapical radiograph localized alveolar bone loss between lower right lateral incisor and canine



Figure: 4. Showing healthy gingiva with better oral hygiene and complete resolution of localized gingival swelling after a month.

## Discussion

This case illustrates the periodontal treatment of a patient with generalized severe chronic periodontitis with localized gingival swelling using nonsurgical phase I periodontal therapy. In the first step after taking patient's oral hygiene practice information, carefully gave emphasis on brushing and interdental cleaning. Plaque control instructions were delivered to the patient. In the second step, supragingival and subgingival plaque and calculus were removed by SRP using ultrasonic scaler machine with universal insert type. SRP is still now regarded as the cornerstone of periodontal therapy. Its effectiveness in the treatment of chronic periodontitis accompanied by good oral hygiene has been repeatedly shown [22, 23]. Subgingival calculus and plaque can be substantially removed by SRP [17,24,25], creating a favorable microenvironment for periodontal tissue healing. In this case, initial nonsurgical periodontal therapy reduced pocket depths. In some randomized clinical trials, it has been indicated that SRP of molars leads to a 0.67 to 1.2 mm mean reduction of periodontal pocket depth at sites initially 4 to 6 mm deep and 0.94 to 2 mm reduction at sites initially deeper than 6 mm [23]. Isidor and Karring [26] reported a 3.7 mm reduction of periodontal pocket depth at sites with angular defects 12 months after SRP. The improvement presented in this case was consistent with these clinical studies. Nonsurgical periodontal treatment usually leads to the formation of a long junctional epithelium [27], and partial bone fill in an infrabony periodontal defect can also occasionally occur following careful SRP. Hwang, et al. [28] reported an increase in bone density in sites with more than 3 mm vertical alveolar bone loss after SRP. Reduction of radiographic defect depth was a positively associated use of adjunctive antibiotics [29]. It is very difficult to attain complete removal of plaque and calculus in deep pockets, indicated in previous studies [17,18,30]. Residual calculus amount is significantly correlated with pocket depth [17,31]. The favorable treatment outcome observed in this patient could be attributable to several factors. The patient maintained a satisfactory level of oral hygiene throughout his treatment in our department. Adjunctive administration of Metronidazole may have also enhanced the outcome. The clinical benefits obtained from adjunctive systemic antimicrobials can justify their use in patients with periodontal disease [32]. It is clear that detection of oral disease at sites that are difficult to access can be challenging. If the patient had visited a dental hospital or clinic, it should have been possible to detect the

presence of calculus, inflammation, deep probing depths, and bone loss at an earlier point in time.

### Conflict of Interests

The authors have no conflict of interests to declare.

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