

Case Report

Generalised Periodontitis: A Behavioural Management

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Abstract— Generalised periodontitis occurs due to long-standing gingivitis and often presented with poor plaque control. Periodontal stability is challenging when the patient has poor oral hygiene habits and fear of dental treatment. It requires systematic and effective behavioural management on top of traditional periodontal therapy in the overall management of the patient. It is crucial to manage dental anxiety as this could affect patient's compliance. A familiarly seen generalised periodontitis may not have fully succeeded without behavioural support. This is a case of a 35-year-old woman with dental anxiety; undergoing a change in her old incorrect oral hygiene habit to improve self-plaque control.

Keywords— Periodontitis, oral hygiene, periodontal therapy.

I. INTRODUCTION

PERIODONTITIS is a chronic inflammatory disease known to affect 93.4% of the Malaysian population [1]. Plaque accumulation, calculus formation, diabetes, and smoking play a crucial role in developing the disease. Periodontal disease is caused by plaque accumulation, initially with the characteristics of gingivitis, and if untreated, progresses to periodontitis in susceptible individuals. Plaque accumulation may seem insignificant and small, but the plaque has been generally agreed as the primary aetiology of periodontal disease [2] [3]. Therefore, oral hygiene instruction has been placed first to manage periodontal disease [4].

The gingiva reacts to plaque accumulation by the inflammatory response. This matter increases gingival

crevicular fluid, interstitial fluid, vasodilatation, and collagen degradation [4]. Clinically, gingival inflammation appears as gingival redness, with soft and oedematous texture.

Prolonged gingival inflammation leads to loss of periodontal ligament attachment, creating a periodontal pocket. The inability to clean these periodontal pockets by regular toothbrushing facilitates the progression of periodontal disease in susceptible individuals. In this situation, the patient may have been diagnosed with generalised periodontitis [6] [7].

Dental anxiety is a term used to describe anxiety elicited due to dental stimuli [8]. Patients with dental anxiety have a persistent and excessive fear of dental stimuli and procedures. This matter may result in negative behaviours

such as tantrums, refusal of treatments and avoidance of dental visits. For patients with periodontal problems, avoidance of dental visits may negatively impact overall periodontal management.

Comprehensive periodontal therapy may seem practical for short-term periodontal stability, but prolonged periodontal health depends on the patient's meticulous oral hygiene. This requires a behavioural change in both self-plaque control and attitude towards dental procedures.

II. CASE REPORT

A 35-year-old lady was presented to the Periodontics Specialist Clinic in January 2021 complaining of gingival bleeding. She noticed gingival bleeding upon toothbrushing several months ago, especially during her recent pregnancy. The patient is healthy and is not taking any medication. Her daily works require many social interactions with clients, and she is concerned with her appearance. Nevertheless, the patient was slightly anxious on the dental chair, which was due to a traumatic dental experience during childhood. She claimed to avoid dental treatments since then.

Clinical examination revealed poor oral hygiene status with full mouth plaque score and full mouth bleeding score of 60% and 65%, respectively. Abundant supra- and subgingival calculus were noted. The gingiva appeared reddish, blunted interdental papilla, and easily bleed upon probing. Interdental space of 3mm width was noted between upper right central and lateral incisors. Lower left first molar remaining roots were noted. The baseline intra-oral photographs are shown in Figures 1 to 4.



Fig. 1 Baseline anterior view intra-oral photograph



Fig. 2 Baseline palatal view intra-oral photograph



Fig. 3 Baseline lingual view intra-oral photograph



Fig. 4 Right and left buccal view baseline intra-oral photograph.

Periodontal charting disclosed 6 to 10mm probing pocket depths (PPD) with mobility ranged from moderate to severe. Dental panoramic tomogram (Figure 5) and intra-oral periapical (IOPA) radiographs (Figures 6 and 7) revealed moderate destruction of the alveolar bone on the upper and lower arch. Vertical bone loss was seen at the lower right first premolar (Figure 6), affecting approximately half of the root length. All teeth were vital. Based on clinical and further investigation, she was diagnosed with generalised periodontitis Stage III Grade C, currently unstable (Caton et al., 2018). The patient was also identified as a patient with dental anxiety. A comprehensive treatment was planned for this patient, including oral hygiene education (OHE) and motivation, scaling, and root surface debridement (RSD).



Fig. 5 Dental Panoramic Tomogram (DPT)

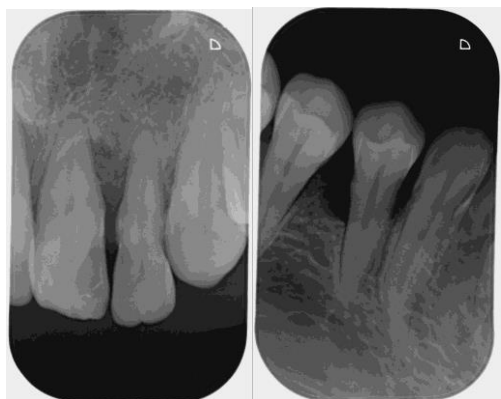


Fig. 6 Intra-oral periapical radiograph of upper and lower teeth.

A case presentation was given to the patient so that she understands her periodontal problem. The aetiology and nature of periodontitis were explained. A diagram was used to show biofilm formation and its effects on the periodontium. The toothbrushing technique was explained, and interdental cleaning was introduced using the interdental brush (Figure 8). Ample time was given for this session, and the patient was allowed to ask questions and share her view on her periodontal problems. Based on this session, the patient has a sensitive personality, and she required several intervals during treatment and consultation sessions. This approach was to relieve her anxiety and fear. She was also a working mother that was breastfeeding a child. She required extra energy to care for her teeth, on top of caring for an infant. Emotional support was highly significant for her behavioural change. Besides, motivation on the benefits of spending time for oral hygiene to both mother and child was explained. An individually tailored oral hygiene instruction based on the motivational interviewing (MI) principles were used. This visit focused on creating rapport with the patient and educate her regarding periodontal disease.

The desensitisation technique was used to reduce dental anxiety behaviour. Treatment was initiated with a minor discomfort procedure. A disclosing solution was used on the second visit, and plaque deposits were shown to the patient. Areas of missed cleaning, old and new plaque were shown based on the colour shades. The patient understood and realised that her toothbrushing habit needed improvement. Scaling and polishing were performed and again shown to the patient. The patient was slightly nervous but was able to control herself. During treatment, regular breaks were given at intervals. This approach was to ease the patient, reducing her anxiety.

Quadrant scaling and RSD were only performed on the third visit, whereby the patient was utterly compliant despite the minor complaint. The intra-oral examination showed thinner plaque compared to the first visit. Moreover, a topical anaesthetic agent was applied prior to local anaesthesia. Profound anaesthesia was also ensured before the start of the treatment. Breaks were given approximately every 10 minutes in between treatment upon the patient's request. Overall, the patient co-operated throughout the treatment, and the breaks did not compromise the quality of the scaling and RSD.

In the overall management of the patient, she showed a willingness to attend her appointments and give co-operation

during this staged treatment. The oral hygiene showed improvement with a thinner supragingival plaque and a reduction in gingival inflammation. On the bright side, the patient has started using an interdental brush daily.



Fig. 8 Interdental brush

III. DISCUSSION

Current evidence in the literature reported successful periodontal therapy using non-surgical and surgical approaches [9][10]. Nevertheless, the unique characteristic of periodontitis that tends to recur requires long-term maintenance through self-plaque control. The understanding of plaque development is vital in the management of periodontitis. Plaque starts to form first by salivary pellicle attachment to tooth surfaces and increases in size due to the multiplication of bacteria. This plaque formation can be easily disrupted by toothbrushing. Periodontitis patients often experience recurrence of periodontal disease, which most often occurs due to the instability of the self-plaque control. A systematic review on behavioural management suggested that the behavioural change method effectively improves oral hygiene [4]. Nowadays, there was limited evidence on behavioural change in the management of periodontitis.

In this case, ample time was used to understand the patient's view on her periodontal problems before correcting what was wrong. This matter was to facilitate oral hygiene instruction that is most suitable for the patient. The patient was also given a chance to express her concern and view on her periodontal problems and actively participate in the conversation. An individually tailored oral hygiene education was performed in accordance with MI principles to improve self-plaque control [11]. Simple examples of daily activities were used in the oral hygiene education to facilitate her understanding of periodontal diseases. The disparity between this case and other cases is that the treatment focused on behavioural change using MI principles rather than standard oral hygiene instruction.

It was clear that toothbrushing behaviour is strongly related to periodontitis. There exists established evidence that periodontal health status was positively related to toothbrushing frequency [12][13][14]. However, the majority did not perform the correct toothbrushing technique when not instructed [15]. Toothbrushing habit requires instructions so that correct toothbrushing habit is performed. Furthermore, patients did not brush oral surfaces when not instructed, and only half of 101 random samples performed flossing [16]. Understanding patients' habitual oral hygiene behaviour is essential before constructing effective oral hygiene education strategies tailored to the individual.

In a recent systematic review [4], oral hygiene may be reinforced in patients with periodontal diseases by psychological interventions and (MI) principles. Behavioural management, however, required a longer time compared to the standard approach. Donos et al compared improvement in plaque control using a behavioural management programme to a standard approach among patients with mild to moderate periodontitis [17]. Both showed significant improvement in plaque control 3-months after active therapy without significant difference between the two groups. The behavioural change was limited by the short period of a clinical trial [17]. A systematic review of 15 reports on psychological approaches to behaviour change for plaque control suggested two predictors of the likelihood of behaviour change; understanding the benefits of behaviour change and the seriousness of periodontal disease [18].

Therefore, a change in oral hygiene behaviour may need psychological intervention rather than only chairside dental treatment. It was reported that there were significantly lower plaque scores among patients receiving counselling by Farquhar's six-step method compared to traditional oral hygiene instruction alone [19]. The steps were i. identifying the problem, ii. creating confidence and commitment, iii. increasing awareness of behaviour, iv. developing and implementing the action plan, v. evaluating the plan, and vi. maintaining change and preventing relapse. The six steps method may effectively enhance self-efficacy in toothbrushing and promote behavioural change in oral hygiene. Besides, the patient needs to be re-motivated in every visit. There was no difference in self-plaque control behaviour between MI and standard procedure even when the MI was given by a clinical psychologist [12]. The limitation to this study was that the MI session was given once and was not repeated regularly.

In this case, the patient has dental anxiety that caused the avoidance of dental visits. Staged treatment starting with slight discomfort to more discomfort reduced her dental anxiety. Systematic desensitisation is an intervention developed based on the conditioning principle [20]. The goal is to reduce the response of negative emotions. It requires the patient to control fearful feelings during dental procedures and slowly increase the threshold for the following dental procedure. Females experienced dental anxiety twice higher than males, including fear of dental treatment and previous negative dental experience [21]. Appropriate behaviour towards dental treatment may be maintained following desensitisation therapy to manage dental anxiety [22]. Undiagnosed dental anxiety may be mistaken as personal behaviour and left untreated. It was recommended to rate the patient's dental anxiety prior to

periodontal therapy to assess the reasons that could compromise overall treatment.

IV. CONCLUSIONS

The management of generalised periodontitis might follow a less challenging route if the patient was ready for a change. However, in many of the cases, the patient was habitually normalised with less satisfactory oral hygiene. The change in habit requires behavioural management in addition to active periodontal therapy such as scaling and RSD to achieve long-term maintenance of periodontal health. The clinician should consider a psychological approach in the non-surgical management of periodontal disease.

NOMENCLATURE

IOPA Intra-oral periapical radiograph
PPD probing pocket depth
RSD root surface debridement
OHI oral hygiene instruction
OHE oral hygiene education

CONSENT TO PARTICIPATE

The treatment performed was conducted with the patient's understanding and consent. A written informed consent to publication of the case report was obtained prior to publication.

CONFLICT OF INTERESTS

The authors declare that there is no conflict of interest.

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