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Sat, Nov 6, 2021 at 9:51 PM

To: Zety Noh &lt;zetynoh90@gmail.com&gt;

As-Salam,

Dear Dr. Nur Zety Mohd Noh,

I am pleased to inform you that your manuscript entitled "Interdisciplinary Approach Involving Medical Colleagues in Managing Periodontitis Patient with Type 2 Diabetes: A Case Report": A Case report", authors: Nur Zety Mohd Noh , Mohd Faizal Hafez Hidayat, Farha Ariffin, Erni Noor, Fouad Hussain Al-Bayaty, has been peer reviewed and accepted for publication in the issue: volume. 8, No.2, 2021 of Compendium of Oral Science (Compend.Oral.Sci), the official journal of the Faculty of Dentistry, Universiti Teknologi MARA (UiTM).

Our editorial office will be in touch with the galley proofs.

Thank you for submitting your article to the "Compendium of Oral Science (Compend.Oral.Sci)".

Very kind regards

Kazi Ahsan Jamil

Associate editor

*Editorial office**Compendium of Oral Science (Compend Oral Sci)**The official Journal of The faculty of Dentistry**Universiti Teknologi MARA**Web: <https://journal.uitm.edu.my/ojs/index.php/COS>.*

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1 Title Page

2 1. Type of paper: Case report

3 2. Title: Interdisciplinary Approach Involving Medical Colleagues in Managing  
4 Periodontitis Patient with Type 2 Diabetes: A Case Report

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20 6. Abbreviations

21 bleeding on probing (BOP)

22 body mass index (BMI)

23 glycated haemoglobin (HbA1c)

24 non-surgical periodontal therapy (NSPT)

25 periodontal probing pocket depth (PPD)

26 scaling and root debridement (SRD)

27

1 Abstract

2 Introduction: Diabetes mellitus has been recognized as a systemic risk factor for periodontitis.  
3 Success in controlling periodontitis requires interdisciplinary solutions involving medical  
4 counterparts.

5 Case report: This case report highlights the importance of a bidirectional communication  
6 between medical and periodontal specialist in the management of a 63-year-old Malay lady  
7 patient diagnosed with Generalized Periodontitis, Stage IV and Grade C. The outcome of the  
8 interdisciplinary approach was both the stabilization of her periodontal conditions and  
9 medically, the glycated haemoglobin level.

10 Conclusions: The bidirectional communication between medical and periodontal specialist is  
11 as important as managing the patients medically for a holistic treatment approach of an  
12 uncontrolled diabetic patient.

13 Key words: diabetes; interdisciplinary; periodontal medicine; periodontitis

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1 Introduction

2           Periodontal disease is a chronic inflammatory disease that affects supporting  
3 structures of teeth caused by dental biofilm while diabetes mellitus is a metabolic disorder  
4 characterized by hyperglycaemia that is deemed as one of the systemic risk factors of  
5 periodontal disease. Both diseases are acknowledged as a global burden due to the high  
6 incidence of cases (Preshaw et al. 2011). This emphasizes the role of dental and medical  
7 professionals in managing the patients. Therefore, this case report is aimed to highlight the  
8 relationship between diabetes mellitus and periodontitis, the importance of communication  
9 between both specialties in managing diabetic patients with periodontitis, and to acknowledge  
10 the medical colleagues that referral of diabetic patients to periodontists is as important as  
11 managing the patients medically.

12 Case report

13           A 63-year-old Malay lady had undergone periodontal treatment at the Spinel  
14 Postgraduate Periodontics Clinic with her consent since November 2018 for management of  
15 residual deep periodontal pockets. She was diagnosed with Type 2 diabetes mellitus since  
16 2015 and is currently on 1 g metformin twice daily. Full mouth periodontal examination  
17 revealed deep probing periodontal pocket depth (PPD) ranging from 5 mm to 8 mm with  
18 bleeding on probing (BOP). As shown in Figure 1, radiograph taken in November 2018  
19 demonstrated periodontitis due to the presence of alveolar bone loss. Based on clinical  
20 examinations and radiographic investigation, she was diagnosed with Generalized  
21 Periodontitis, Stage IV, Grade C (Tonetti et al. 2018).

22           During the patient's initial visit to the periodontal clinic, random blood glucose level was  
23 measured instead of fasting blood glucose as a routine procedure prior to treatment of a  
24 diabetic patient. She was referred to a medical colleague regarding her high random blood  
25 glucose level of 21.2 mmol/L and the requested glycated haemoglobin (HbA1c) test showed  
26 the reading of 10.4 %. Her periodontal condition was also highlighted and updated in

1 correspondence (by letter every six months) with the medical colleague when the patient went  
2 for her medical regular check-up. Interdisciplinary management between medical and dental  
3 team includes lifestyle changes and diet consultation such as brisk walking, increased intake  
4 of fruits and vegetables as well as intake of brown rice instead of white rice with the provision  
5 of periodontal treatment. The non-surgical periodontal therapy (NSPT) that includes oral  
6 hygiene instruction as well as scaling and root debridement (SRD) were provided to the  
7 patient. She was reviewed every three months to monitor her periodontal disease condition.

8 Indeed, her periodontal condition improved following several NSPT visitations without  
9 the need of surgical intervention. The baseline BOP of 41.1 % reduced to 10 % in July 2020  
10 and the deepest periodontal PPD was 4 mm with absence of BOP. Patient is deemed to have  
11 periodontal stability on a reduced periodontium (Lang and Bartold 2018). As shown in Figure  
12 2, increased radiopacity of a vertical bone defect at the mesial aspect on the lower left second  
13 premolar may indicate new bone fill. In addition, as highlighted in Table 1, her baseline HbA1c  
14 improved from 10.4 % to 7.8 % in July 2020.

## 15 Discussion

16 Classic studies had been conducted on the Gila River Indian community to find the  
17 association between diabetes mellitus on periodontal condition (Nelson et al. 1990; Emrich et  
18 al. 1991). First, diabetes mellitus causes microvascular changes with increased formation of  
19 the advanced glycation end products, which consequently enhance periodontal destruction  
20 (Preshaw et al. 2011). Second, diabetes mellitus is associated with impaired immune  
21 response and defective healing (Graves et al. 2020). Hyperglycaemia also affects bone  
22 equilibrium due to increased osteoclast formation (Graves et al. 2020; Preshaw et al. 2011).  
23 On the other hand, periodontitis renders diabetic condition worse by acting as a source of  
24 proinflammatory mediators that affect insulin signalling, thus consequently reduce glucose  
25 uptake by cells and insulin sensitivity, resulting in worsened glycaemic control of the patient  
26 (Genco et al. 2020). This relationship is manifested by the patient as she was presented with  
27 generalized periodontitis with uncontrolled Type 2 diabetes mellitus.

1 According to the patient, her diabetic regime remained the same in terms of  
2 antidiabetic medication since 2015. She has been given advice to increase the intake of fruits  
3 and vegetables as well as brown rice instead of white rice in her diet. She was also advised  
4 to be active everyday by exercising such as brisk walking. However, the patient was queried  
5 whether she was able to comply with the instructions as a means to improve her diabetic  
6 condition. Another aspect is the body mass index (BMI), which reflects body fat measurement  
7 in relation to the height and body weight. There is an association between obesity, diabetes  
8 mellitus and periodontitis (Saito and Shimazaki 2007). In the body of obese patients,  
9 adipocytes get larger, thus increase the proinflammatory cytokines production. Consequently,  
10 this affects insulin sensitivity and glucose metabolism, thus worsening the diabetic condition  
11 (Suvan, Finer, and D'Aiuto 2018). However, BMI reading of the patient was not provided to  
12 establish this relationship.

13 According to the American Diabetes Association (2005), HbA1c level of less than 7 %  
14 indicates the patient's diabetic condition is controlled. However, higher than 7 % HbA1c level  
15 indicates an uncontrolled diabetic condition of a patient. In treating this patient, there was a  
16 dilemma to proceed with non-surgical or surgical periodontal treatment, especially on tooth 35  
17 with deep PPD and vertical bone defect. Previous treatment approach usually focuses on  
18 eliminating vertical bone defects through open flap surgery or ostectomy, while the recent  
19 approach is focusing on guided tissue regeneration therapy (Cortellini and Tonetti 2000).  
20 However, there are many factors to be considered such as bacterial contamination, innate  
21 wound healing potential, local site characteristics and surgical procedure prior to surgical  
22 planning (Kornman and Robertson 2000). As for this patient, her uncontrolled diabetic  
23 condition was a concern and may contribute to deep wound infection and impaired healing  
24 following surgical procedure.

25 Even though NSPT is the gold treatment standard, it has its limitation especially in the  
26 area with deep periodontal pocket, multi-rooted teeth or furcation involvement (Graziani et al.  
27 2017). However, a successful treatment outcome is still achieved especially in the single

1 rooted teeth (Badersten, Nilveus, and Egelberg 1984). NSPT can reduce probing PPD and  
2 frequency of BOP and gain in the clinical attachment level (Graziani et al. 2017). After several  
3 non-surgical treatment appointments, the patient has shown an improvement in which the  
4 BOP reduced from 41.1 % at baseline to 10 % during the latest periodontal review with  
5 reduced probing PPD. The patient is currently presented with periodontal stability on reduced  
6 periodontium (Lang and Bartold 2018) as absence of BOP is an indicator of periodontal  
7 stability (Lang et al. 1990).

8           Based on previous discussions and findings, it was reported that the provision of dental  
9 treatment may assist in restoring insulin sensitivity, metabolic control and periodontal clinical  
10 parameters (Preshaw et al. 2011; Grossi et al. 1997; Westfelt et al. 1996). However, further  
11 studies shall be conducted to investigate the outcome as restoration of metabolic control can  
12 be multifactorial. In addition to medical management, this shows that periodontal treatment  
13 can play its part in managing diabetic patients. However, inadequate communication between  
14 medical professionals and periodontists as well as lack of awareness and knowledge on  
15 periodontal health pertaining to systemic issue among medical colleagues may limit the  
16 provision of a holistic treatment management for the patients. On the other hand, the  
17 knowledge on periodontitis-diabetes relationship helps to alert the medical professionals that  
18 diabetic patients have higher risk of periodontitis. Therefore, they can play their role in  
19 periodontal health by providing early referral for periodontal screening to benefit the patients  
20 (Ramirez et al. 2010; Dubar et al. 2019).

## 21 Conclusions

22           A bidirectional communication between medical professionals and periodontists is as  
23 important as managing the patients medically for a holistic treatment approach. Patients can  
24 benefit from the screening and referral of periodontal treatment by medical professionals to  
25 assist in improving patients' glycaemic control and periodontal health towards a better quality  
26 of life.



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- 1 Legends to figures
- 2 Figure 1. Baseline panoramic radiograph of the patient showing generalized horizontal bone  
3 loss and vertical bone loss on mesial root surface of lower left second premolar tooth
- 4 Figure 2. Periapical radiograph on lower left second premolar at (a) 15 months of review; (b)  
5 22 months of review
- 6
- 7 Table 1 Summary on HbA1c level of the patient.

<b>Date</b>	<b>Reading of HbA1c</b>
<b>November 2018</b>	10.4 %
<b>May 2019</b>	8.5 %
<b>December 2019</b>	8.6 %
<b>April 2020</b>	8.9 %
<b>July 2020</b>	7.8 %

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