

The Shift from Removable Dentures to Fixed Implant Dental Prosthesis in Complete Edentulous Diabetic 2 Patients: A Case Report

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Received: 04 Mar 2024

Accepted: 29 Apr 2024

Published: 04 May 2024

J Short Name: ACMCR

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Citation:

Al-kholani AI, The Shift from Removable Dentures to Fixed Implant Dental Prosthesis in Complete Edentulous Diabetic 2 Patients: A Case Report. *Ann Clin Med Case Rep.* 2024; V13(15): 1-5

Keywords:

One-piece dental implant; Flapless technique; Complete edentulous; Immediate loading; Patient Satisfaction; Diabetic patient

1. Abstract

This report aims to shift from removable complete dentures to fixed prosthodontics with the help of one-piece immediate loading dental implants among type 2 diabetic patients to reach full patient satisfaction, considering the functional and esthetic aspects. There are three types of diabetes mellitus: Type 1 (insulin-dependent), Type 2 (non-insulin-dependent), and gestational. Flapless implant surgery is fast gaining popularity because of several advantages, such as reduced surgical time, postoperative bleeding, and swelling. There is a shortage of data available concerning the clinical outcomes involving the use of implant treatment for patients with diabetes mellitus. In this report, the patient had been wearing a complete denture in the upper and lower jaws for several years, and he believed that it was not possible to get dental implants because he was suffering from type-2 diabetes. It was explained to the patient that studies are promising that it is possible to successfully perform dental implants in cases similar to his condition. The patient agreed and the dental implant took place, and after two years the results were considered excellent, and the case was monitored regularly.

2. Introduction

It is well understood that many patients who wear complete den-

tures usually experience considerable difficulty in adapting to their removable prostheses. In contrast, a few patients may be adaptive for several years but become maladaptive later as a result of tissue changes. Some patients absolutely cannot wear dentures at all, and their quality of life is greatly affected by their dilemma. Clinical experience and some researches have confirmed that there are physiological as well as psychological contributions to maladaptation [1]. The need to replace missing teeth with successful results has motivated rapid research and innovation in the field of dental implants. Currently, dental implants are widely used as a prosthetic treatment for completely or partially edentulous patients [2]. Fixed prosthodontics placed over dental implants have a better psychological impact on patients with complete tooth loss because they increase patient satisfaction and quality of life more than traditional complete dentures or leave the patients without satisfactory solutions [3].

3. Case Report

A 77-year-old male patient reported to a private Dental Center with a completely edentulous case (Figure 1). He has full dentures in the maxilla and the mandible with poor stability during function (Figure 2). The patient's psychological condition was poor. The functional status during mastication of food and speaking was not

comfortable due to the lack of stability of the complete dentures. Clinical and laboratory investigations revealed that the patient is classified as a type-2 diabetic patient. The radiographic examination (Figure-3) showed the presence of sufficient bone in terms of width and height, and it is suitable for dental implants. Prosthodontic treatment of the edentulous patient is challenging because it usually requires a complete rehabilitation of oral structures and facial morphology. Treatment planning is the first and most important step in clinical implantology. Surgical procedures and laboratory prosthodontics must be considered. The ideal placement of the implants in the bone should not interfere with the esthetics and correct design of the prosthesis. Intraoral and extraoral diagnosis follows an evaluation of old dentures regarding the vertical dimension of occlusion, function, and esthetics. The patient was successfully retreated by insertion of 16 one-piece dental implants (8 dental implants in each jaw) using a flapless technique (Figure 4) followed by the placement of fixed prosthodontics for the upper and lower jaws. After two years of follow-up overall satisfaction, chewing, and speaking comfort were all markedly improved from pre-treatment. Diabetes mellitus is no longer considered to be a contraindication for implant-supported prostheses, provided that the patient's blood sugar is under control and that there is a motivation for oral hygiene procedures. [4].

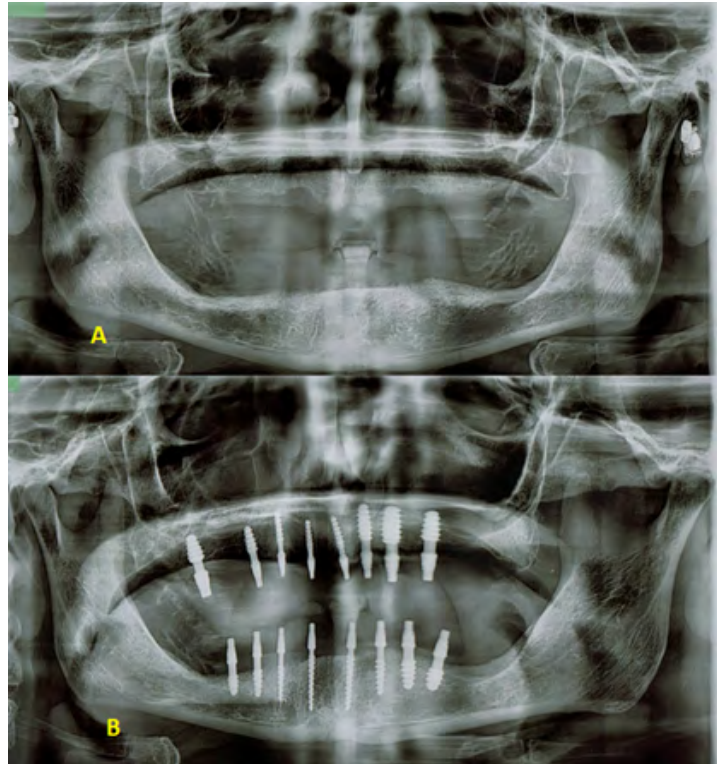


Figure 3: Digital panoramic radiograph (A) before dental implant placement, (B) after dental implant placement



Figure 1: Intra-oral view with complete upper and lower dentures in place



Figure 4: One-piece dental implants in place using a flapless technique

4. Definitive Restoration

For the definitive restoration fabrication, the following steps were followed.

- Intra-oral scanning for upper and lower arches after implant placement.
- Maxillary and Mandibular silicone impressions were taken.
- Jaw relation recording and bite registration were done digitally, and conventionally.
- An esthetic mock-up was performed on the existing provisional bridges and recorded.



Figure 2: Intra-oral view showing completely edentulous jaws

- Try-in of the zirconium bridges was done and, shade selection was checked, occlusion was adjusted to implant-protected occlusion.
- At delivery, it was ensured that the final prosthesis was fitted with perfect retention and stability.
- Temporary fixation for prosthesis was carried out to allow the patient to test the restoration and ask him to come back after 2 days with recording any comments if any.
- In the final visit permanent fixation of the fixed restoration was performed, and the Patient was motivated and instructed to keep good oral Hygiene (Figures-5-9).
- Patient was advised to come back after 3 months, then every year for regular check-ups.



Figure 5: Intra-oral frontal view showing the final restoration



Figure 6: Intra-oral view of an upper jaw with the final restoration



Figure 7: Intra-oral right view with the final restoration



Figure 8: Intra-oral left view with the final restoration



Figure 9: Intraoral left view while smiling

5. Discussion

Despite evidence-based research has reported that dental implants among diabetic patients showed an increasing trend of implant failure during the period of osseointegration and the first year of loading, this study provides supporting evidence to Mostafa et al [3]; that type II diabetes may not be an absolute risk factor for immediate loading protocols and that dental implants are safe and predictable procedures for dental rehabilitation in type 2 diabetic patient [5]. Dental implants enable undisturbed healing of the one-piece tissue compared to the two-piece design [6]. Due to the absence of the connecting screw, it is possible to give a one-piece implant of smaller diameter so that it can be used in narrow edentulous areas. A one-piece implant design with a built-in abutment can be prepared with a tungsten carbide bur using the same principles for tooth preparation. Also, the impression procedures that are used for one-piece implant design are similar to that of a prepared tooth [7]. Periodic clinical assessment of the dental implant, prosthesis, and surrounding tissue is critical for clinical success. In the present case, the patient was called every 3, 6, and 12 months [8]. After two years, the results were excellent, there were no complications and the patient was highly satisfied. Future research and clinical trials over a longer period are required to determine the long-term survival of implants in different groups of patients with diabetes mellitus. Concerning this case report, to obtain sufficient information the case must be followed for 3-5 years.

6. Conclusion

The flapless surgery with one-piece dental implant treatment and fixed restoration concept is a straightforward and predictable treatment option to rehabilitate complete edentulous patients with improved functional and patient satisfaction. Within the limitations of this study, it can be concluded that flapless implant surgery results in lesser loss of interproximal bone and also results in better papillary fill when compared with the flap technique. Proper patient selection is essential for carrying out flapless implant surgery [9].

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