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Original Article

Prognosis of Dental Implants in Diabetic Patients: A Clinical Study

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***ABSTRACT*:**

Background: One of the major concerns to the society in the current scenario is the Rising population of diabetic individuals across the world. The persistent hyperglycemia may affect each and every tissue and consequently results in morbidity and eventually mortality in diabetic patients. Hence; we planned the present study to assess the prognosis of dental implants in diabetic patients. **Materials & methods:** We planned the present study to evaluate 50 diabetic patients who underwent prosthetic rehabilitation by dental implant procedures. Pre-surgical haematological investigations were carried out in all the patients. Dental implants were placed in all the patients under local anaesthesia and proper aseptic environment under the hands of skilled implantologist. Complete follow-up details of all the patients were obtained and were summarized in Microsoft excel sheet. **Results:** Among 30 males, dental implant failure occurred in 2 cases, while among 20 females, failure of dental implant occurred in a single case. Overall, among the 50 diabetic cases included in the present study, failure of dental implant therapy occurred in 3 cases. **Conclusion:** Dental implant therapy carried out in diabetic patients with controlled diabetes is good, when carried out in controlled environment

Key words: Dental implants, Diabetic, Prognosis.

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INTRODUCTION

One of the major concerns to the society in the current scenario is the Rising population of diabetic individuals across the world. The persistent hyperglycemia may affect each and every tissue and consequently results in morbidity and eventually mortality in diabetic patients.[1,2] Dental implant surgery has developed to a widely used procedure for dental rehabilitation and is a secure and predictable procedure. Implant survival is initially dependent on successful osseointegration following placement. Any alteration of this biological process may adversely affect treatment outcome.[3- 5] Subsequently, as an implant is restored and placed into function, bone remodeling becomes a critical aspect of implant survival in responding to the functional demands placed on the implant restoration and supporting bone. Diabetes mellitus has long been considered a relative contraindication to dental implant therapy.[6, 7]Hence; we planned the present study to assess the prognosis of dental implants in diabetic patients.

MATERIALS & METHODS

We planned the present study in the department of oral implantology and it included evaluation of 50 diabetic patients who underwent prosthetic rehabilitation by dental implant procedures. We obtained the informed consent from all the patients after explaining in detail the entire research protocol. Complete demographic and clinical details of all the patients were obtained. Pre-surgical haematological investigations were carried out in all the patients. Dental implants were placed in all the patients under local anaesthesia and proper aseptic environment under the hands of skilled implantologist. Exclusion criteria for the present study included:

- Patients with presence of any other co-morbid condition,
- Hypertensive patients,
- Patients with any known drug allergy

Complete follow-up details of all the patients were obtained and were summarized in Microsoft excel sheet. Analysis of all the results was done by SPSS software. Univariate regression curve was sued for assessment of level of significance.

RESULTS

A total of 50 subjects were included in the present study that was scheduled to undergo prosthetic rehabilitation be dental implants for missing molar. Mean age of the subjects of the present study was 38 years. Among these 50 subjects, 30 were males while the remaining 20 were females.Among 30 males, dental implant failure occurred in 2 cases, while among 20 females, failure of dental implant occurred in a single case. Overall, among the 50 diabetic cases included in the present study, failure of dental implant therapy occurred in 3 cases.

Graph 1: Demographic details

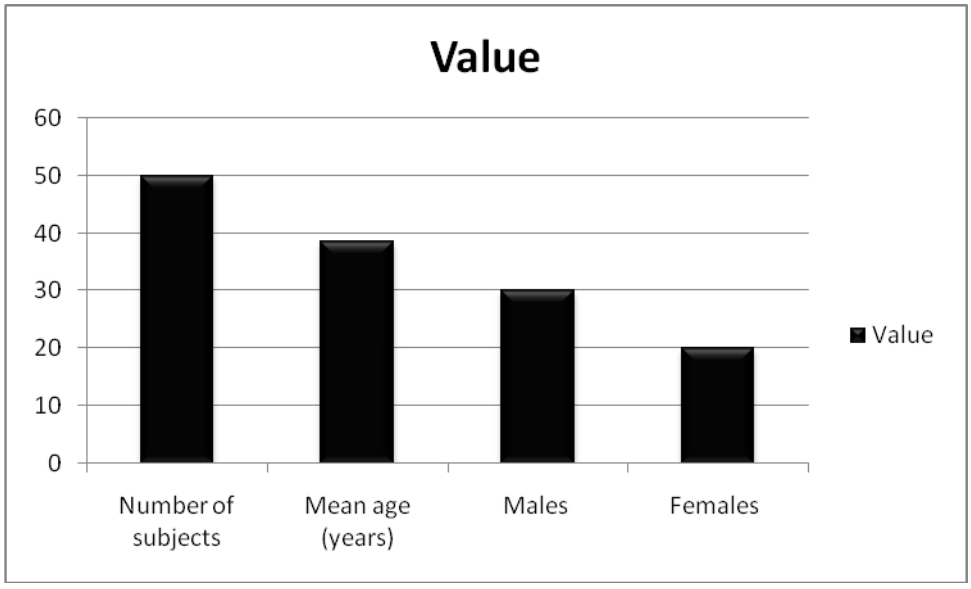
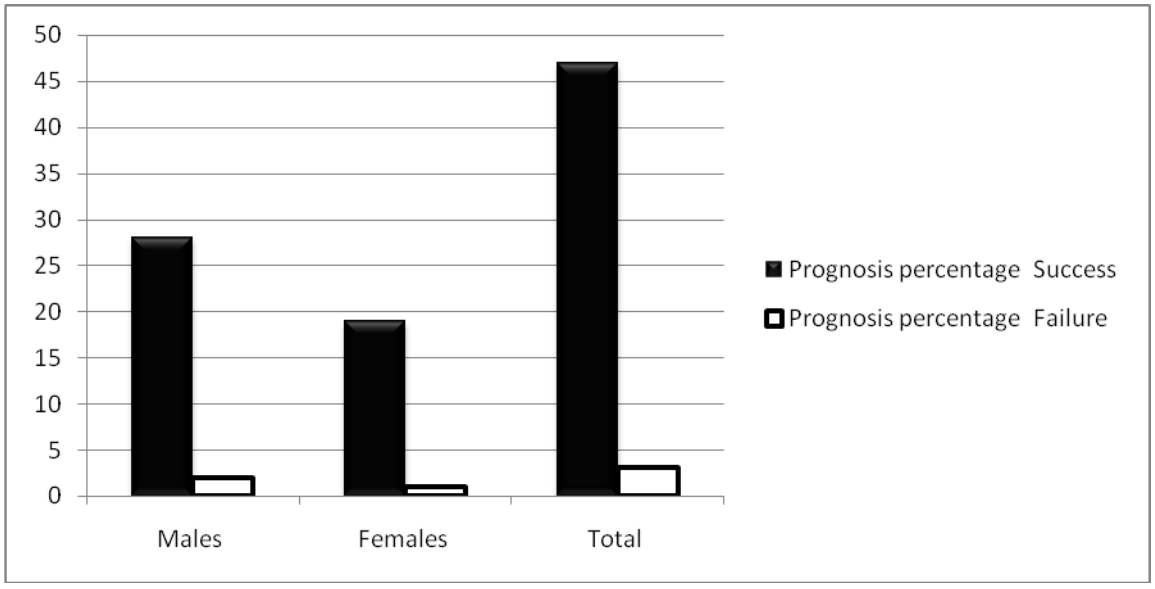


Table 1: Prognosis of dental implants

Parameter	Prognosis percentage	
	Success	Failure
Males	28	2
Females	19	1
Total	47	3

Graph 2: Prognosis of dental implants among diabetic patients



DISCUSSION

In the present study, among 30 males, dental implant failure occurred in 2 cases, while among 20 females, failure of dental implant occurred in a single case. Overall, among the 50 diabetic cases included in the present study, failure of dental implant therapy occurred in 3 cases. Balshi TJ et al reported on the results of placing implants in 34 patients with diabetes who were treated with 227 Brånemark implants. At the time of second-stage surgery, 214 of the implants had osseointegrated, a survival rate of 94.3%. Only one failure was identified among the 177 implants followed through final restoration, a clinical survival rate of 99.9%. Screening for diabetes and trying to ensure that implant candidates are in metabolic control are recommended to increase the chances of successful osseointegration. Antibiotic protection and avoidance of smoking should also be considered.[8]

NobreMde A et al investigated the outcome of immediate function of dental implant rehabilitations in diabetic patients with and without coexisting cardiovascular diseases (CVD). This retrospective study included 70 diabetic patients (33 females and 37 males, average age: 59 years old), rehabilitated with 352 implants and divided into two groups (CVD: 38 patients; non-CVD: 32 patients). Diabetes mellitus was defined as fasting plasma glucose ≥ 7.0 mmol/l (126 mg/dl) or 2 h plasma glucose ≥ 11.1mmol/l (200 mg/dl). The data was retrieved from patient records. Primary outcome measures were prosthesis and implant survival; secondary outcome measures were marginal bone loss and complications (biological or mechanical). The follow-up was 5 years after loading for all patients. Seven patients (10%) were lost to follow-up (one patient in the CVD group; and six patients in the non-CVD group). One prosthesis failed in the non-CVD group, rendering a 97.4% survival rate, compared to 100% in the CVD group (non-significant difference between groups; P = 0.359). Ten implants failed in 7 patients: CVD group with eight implant failures in 5 patients (86.7% cumulative survival rate) versus two implants in 2 patients in the non-CVD group (93.8% cumulative survival rate) with a non-significant difference between both groups (P = 0.365). The average (95% confidence interval) marginal bone loss at 1- and 5-years was 0.95 mm (0.66 mm; 1.23 mm) and 1.52 mm (1.20 mm; 1.88 mm), respectively in the CVD group; and 0.78 mm (0.40 mm; 1.16 mm) and 1.54 mm (0.86 mm; 2.31 mm), respectively for the non-CVD group; with no significant differences between groups at 1 year (P = 0.979) and 5 years (P = 0.300). Complications occurred in 38 patients (CVD group: 21 patients; non-CVD group: 16 patients); with a non-significant difference between both groups (P = 0.660). Implant rehabilitations represent a valid treatment for diabetic patients with or without coexisting CVD, with a good risk/benefit ratio.[9]Peled M et al described their experience using the MIS implant system (Medical Implant System, Shlomi, Israel) for retention of overdentures in patients with type 2 diabetes mellitus and provide data regarding the level of satisfaction of the patients, the improvement of function, mucosal and periimplant health, and bone level around implants in this group. The study group consisted of 41 patients with type 2 diabetes mellitus who received 141 implants for retention of overdentures. The success rate was 97.3% and 94.4% 1 and 5 years following implantation, respectively. The majority of patients reported improvement of function following the new treatment. A high correlation was observed between mucosal health and improvement of function. No correlation was found between failed implants and glucose level. The clinical outcome of dental implants in a selected group of patients with well-controlled type 2 diabetes mellitus is satisfying and encouraging.[10]Annibali S et al determined the survival trend of dental implants after functional loading for ≥1 year in diabetic patients. An electronic search of the Cochrane Oral Health Group's Trials Register, Medline and Embase, plus a manual search up to December 2015 was performed. Studies assessing the survival rate of dental implants in patients with a diagnosis of diabetes mellitus were considered eligible. Screening of studies, quality assessment, and data extraction were conducted independently by 2 reviewers. Life-table analysis and Kaplan-Meier survival curves were used to evaluate implant survival and to plot the cumulative survival rate and cumulative hazard ratio. Seven studies, including 1142 implants were identified. The cumulative survival rate was 0.96 ± 0.10 before loading, 0.93 ± 0.10 and 0.91 ± 0.10 at 1 year, and at the end of the follow-up period, respectively. The hazard ratio was 4% during the period of osseointegration, 3% during the first year of loading, and remained constant over the 6-year follow-up. Patients with diabetes mellitus showed an increasing trend of implant failure during the period of osseointegration and the first year of loading.[11]

CONCLUSION

Dental implant therapy carried out in diabetic patients with controlled diabetes is good, when carried out in controlled environment. However; further studies are recommended.

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