

Assessment of Prognosis of Dental Implants in Diabetic Patients

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ABSTRACT

Background: Dental implants, in the present scenario, are one of the restorative methods to replace missing teeth. Diabetic patients have increased frequency of periodontitis and tooth loss, delayed wound healing, and impaired response to infection. Hence; we planned the present study to assess the prognosis of dental implants in diabetic patients.

Materials & methods: The present study included assessment of prognosis of dental implants in diabetic patients. A total of 50 diabetic patients and 50 healthy controls were included in the present study. Dental implants were placed in all the patients under the hands of skilled implantologists. Follow-up records upto a period of one year was maintained in all the patients for assessing postoperative complications. Success rate of dental implants was recorded in patients of both the study groups.

Results: Failure of dental implant was observed in 3 cases of the diabetic groups and 2 cases of the non-diabetic group respectively. No significant results were obtained while comparing the failure rate of dental implants in between the diabetic group and the control group.

Conclusion: Dental implants in diabetic patients have good prognosis in patients with controlled diabetes.

Keywords: Dental implants, Diabetic, Prognosis.

INTRODUCTION

Dental implants, in the present scenario, are one of the restorative methods to replace missing teeth. Improvements in implant design, surface characteristics, and surgical protocols made implants a secure and highly predictable procedure with a mean survival rate of 94.6 % and a mean success rate of 89.7 % after more than 10 years.¹⁻³

Diabetes mellitus (DM) is a chronic metabolic disorder that leads to hyperglycemia, which raises multiple complications caused by micro- and macroangiopathy. Diabetic patients have increased

frequency of periodontitis and tooth loss, delayed wound healing, and impaired response to infection. Glycemic control has long been the primary consideration for implant patients with diabetes.⁴⁻⁶ This appears appropriate given the correlations between glycemic control and microvascular and macrovascular complications. With diabetes contributing to oral pathologies and tooth loss, tooth replacement utilizing implant therapy may be an important contributor to the patient's overall well-being.⁷⁻⁹ Hence; we planned the present study to assess the prognosis of dental implants in diabetic patients.

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MATERIALS & METHODS

The present study was commenced in the department of oral implantology of the dental institute and it included assessment of prognosis of dental implants in diabetic patients. Written consent was obtained from all the patients before the starting of the study. Inclusion criteria for the present study included:

- Patients scheduled to undergo prosthetic rehabilitation of missing mandibular first molar by dental implants,
- Patients with controlled type 2 diabetes,
- Patients between the age group of 25 to 50 years

Exclusion criteria for the present study included:

- Patients with uncontrolled diabetes,
- Patients with history of any other systemic illness,
- Patients with any known drug allergy

After meeting the inclusion and exclusion criteria, a total of 50 diabetic patients and 50 healthy controls were included in the present study. Complete demographic details of all the patients were obtained using pre-framed questionnaire. Hematological investigations in all the patients were carried out prior to the surgery. Dental implants were placed in all the patients under the hands of skilled implantologists. Follow-up records upto a period of one year was maintained in all the patients for assessing postoperative complications. Success rate of dental implants was recorded in patients of both the study groups. All the results were compiled and analyzed by SPSS software. Chi-square test was used for assessment of level of significance.

RESULTS

Out of 50 diabetic patients included in the present study, 28 were males while the remaining 22 were females. Among 50 controls included in the present study, 26 were males and 24 were females. Mean age of the patients of the diabetic group and the control group was 38.4 years and 37.1 years respectively. Most of the patients included in the present belonged to the age group of 30 to 40 years. Failure of dental implant was observed in 3 cases of

the diabetic groups and 2 cases of the non-diabetic group respectively. No significant results were obtained while comparing the failure rate of dental implants in between the diabetic group and the control group (P- value > 0.05).

Table 1: Demographic data.

Parameter		Diabetic group	Control group
Age group (years)	Less than 30	10	12
	30 to 40	28	25
	More than 40	12	13
Mean age (years)		38.4	37.1
Gender	Males	28	26
	Females	22	24

Table 2: Prognosis of dental implants on one year's follow-up.

Parameter	Diabetic group	Control group	P- value
No. of successful cases	47	48	0.55
No. of failure cases	3	2	
Total cases	50	50	

DISCUSSION

In the present study, out of 50 diabetic patients included in the present study, 28 were males while the remaining 22 were females. Among 50 controls included in the present study, 26 were males and 24 were females. Mean age of the patients of the diabetic group and the control group was 38.4 years and 37.1 years respectively. Most of the patients included in the present belonged to the age group of 30 to 40 years. Fiorellini JP et al assessed the success and survival rates of dental implants in diabetic patients. In this retrospective analysis, 215 implants placed in 40 patients at 2 clinical centers were evaluated. Chart reviews and interviews provided medical and implant data. From the analysis, 31 failures occurred, for an overall success rate of 85.6%. Of these failures, 24 occurred within the first year of functional loading. The mean time of

functional load was 4.05 +/- 2.6 years. When the success rate was analyzed by implant location, success rates for the maxilla and mandible were 85.5% and 85.7%, respectively. For the anterior and posterior regions, success rates were 83.5% and 85.6%, respectively. The lifetable analysis revealed a cumulative success rate of 85.7% after 6.5 years of function. Based on the data, the survival rate of dental implants in controlled diabetic patients is lower than that documented for the general population, but there is still a reasonable success rate. The increase in failure rate occurs during the first year following prosthetic loading.¹⁰ 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.¹¹

In the present study, failure of dental implant was observed in 3 cases of the diabetic groups and 2 cases of the non-diabetic group respectively. No significant results were obtained while comparing the failure rate of dental implants in between the diabetic group and the control group (P- value > 0.05). Nobre Mde 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 $\geq$ 7.0 mmol/l (126 mg/dl) or 2 h plasma glucose $\geq$ 11.1mmol/l (200 mg/dl). 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.¹²

CONCLUSION

Under the light of above mentioned data, the authors conclude that the, dental implants in diabetic patients have good prognosis in patients with controlled diabetes. However; further studies are recommended.

CONFLICT OF INTEREST

No potential conflict of interest relevant to this article was reported.

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