

Original Research

Evaluation of Prognosis of Dental Implants in Diabetic Patients

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ABSTRACT:

Background: India is deemed as the world's capital of diabetes. Implant survival is initially dependent on successful osseointegration following placement. Hence; the present study was undertaken for assessing the prognosis of dental implants in diabetic patients. **Materials & methods:** 30 diabetic and 30 non-diabetic subjects were included in the present study. Radiographic assessment of all the patients was done for assessment of remaining bone levels. Under local anesthesia and under strict septic conditions, placement of dental implants was done. Follow-up was done for assessing the prognosis. Follow-up records of all the patients were maintained upto a time period of two years. **Results:** Success rate of dental implants in the diabetic group was 93.33 percent while success rate of dental implants in non-diabetic group was 96.67 percent. Non-significant results were obtained while comparing the prognosis of dental implants in diabetic patients. **Conclusion:** Dental implants are associated with excellent prognosis when placed carefully and under controlled conditions in diabetic patients.

Key words: Dental implants, Diabetic, Prognosis

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INTRODUCTION

India is deemed as the world's capital of diabetes. The diabetic population in the country is close to hitting the alarming mark of 69.9 million by 2025 and 80 million by 2030. This denotes that the developing country is expected to witness an increase of 266%. The statistics recently accumulated showcase that culture of diabetes is more prevalent in the urban areas as 28% of the population living in cities are affected, whereas 5% of the rural population are positive with diabetes mellitus.¹⁻

³Tooth loss is very common and it can happen as a result of disease and trauma; therefore, the use of dental implants to provide support for replacement of missing teeth has a long and multifaceted history.⁴ Implant survival is initially dependent on successful osseointegration following placement. Any alteration of this biological process may adversely affect treatment outcome. 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.^{5,6} Hence; the present study was

undertaken for assessing the prognosis of dental implants in diabetic patients.

MATERIALS & METHODS

The present study was undertaken with the aim of assessing the prognosis of dental implants in diabetic patients.

Sample size: 30 diabetic and 30 non-diabetic subjects

Inclusion criteria: Subjects who underwent prosthetic rehabilitation of missing mandibular first molar with dental implants

The entire study protocol was explained to all the subjects before the starting of the study. Complete demographic and clinical details of all the patients were obtained. Blood samples were obtained from all the patients and complete hematological and biochemical profile was analyzed. Radiographic assessment of all the patients was done for assessment of remaining bone levels. Blood glucose levels were assessed in all the patients. Strict checking of all the patients was done for

maintaining the blood glucose levels under physiologic limits. Under local anesthesia and under strict septic conditions, placement of dental implants was done. This was followed by suturing. Follow-up was done for assessing the prognosis. Follow-up records of all the patients were maintained upto a time period of two years. All the results were recorded in Microsoft excel sheet and were analyzed by SPSS software. P- value of less than 0.05 was significant.

RESULTS

In the present study, a total of 30 diabetic and 30 non-diabetic subjects were analyzed. Mean age of the patients of the diabetic group was 41.8 years, while mean age of the patients of the non-diabetic group was 44.8 years. Majority of the patients of both the study groups belonged to the age group of 30 to 45 years. Majority of patients of both the study groups were males while the remaining were females. Majority of the patients were of urban residence.

In the present study, success rate of dental implants in the diabetic group was 93.33 percent while success rate of dental implants in non-diabetic group was 96.67 percent. Non-significant results were obtained while comparing the prognosis of dental implants in diabetic patients.

Table 1: Demographic data

Parameter		Diabetic group	Non-diabetic group
Age-group (years)	Less than 30 years	8	7
	30 to 45 years	14	13
	More than 45 years	8	10
Gender	Males	16	17
	Females	14	13
Residence	Rural	14	15
	Urban	16	15

Table 2: Success of dental implants

Parameter	Diabetic patients	Non-diabetic patients	p- value
Success of dental implants	93.33 % (28 patients)	96.67 % (29 patients)	0.12 (Non-significant)

DISCUSSION

Although chronic diseases were initially labeled “diseases of affluence,” due to their association with urban living and westernized behavior, they have rapidly become an epidemic in many middle-income countries that have yet to resolve chronic under-nutrition. India, where over 40% of children under 5 years are malnourished, has also become known as a “diabetes capital” of the world, with an estimated 65+

million diabetic patients aged 20–79 years in 2013, and substantial further increases anticipated.^{6,7} As questions remain as to the effects of diabetes and glycemic control on bone metabolism, it is important for us to consider these effects for implant therapy as well. A thorough review of the literature for clinical investigations examining diabetes and dental implant survival identified 17 primary studies, many of which are frequently cited in support of diabetes as a relative contraindication to implant therapy.^{8,9}

In the present study, a total of 30 diabetic and 30 non-diabetic subjects were analyzed. Mean age of the patients of the diabetic group was 41.8 years, while mean age of the patients of the non-diabetic group was 44.8 years. Majority of the patients of both the study groups belonged to the age group of 30 to 45 years. Majority of patients of both the study groups were males while the remaining were females. Majority of the patients were of urban residence. In a previous study, 45 diabetes patients having an initial HbA1c below 7.2% received 255 implants. They were followed over a period ranging from one to 12 years. The HbA1c levels for these patients varied over the follow-up period, with frequency of HbA1c assessments not reported. HbA1c levels below 9% were identified for 44 patients, while one patient recorded an HbA1c level over 9%. This latter patient received 11 implants and had one failure, giving the study a seemingly high failure rate (9.1% implant failure rate) for this one patient. However, when this patient’s results are combined with the other 22 patients having only moderate glycemic control over the course of their evaluation period, the cumulative implant failure rate is 3.9%. As all these patients initiated implant therapy with an HbA1c <7.2% and the changes and duration of changes in HbA1c levels are unknown, the cumulative 2.9% failure rate for all diabetic patients remains most relevant.¹⁰

In the present study, success rate of dental implants in the diabetic group was 93.33 percent while success rate of dental implants in non-diabetic group was 96.67 percent. Non-significant results were obtained while comparing the prognosis of dental implants in diabetic patients. Oates TW et al examined the evidence guiding the use of implant therapy relative to glycemic control for patients with diabetes and to consider the potential for both implant therapy to support diabetes management and hyperglycemia to compromise implant integration. A systematic approach was used to identify and review clinical investigations directly assessing implant survival or failure for patients with diabetes. A MEDLINE (PubMed) database search identified potential articles for inclusion using the search strategy: (dental implants OR oral implants) AND (diabetes OR diabetic). Inclusion in this review required longitudinal assessments including at least 10 patients, with included articles assessed relative to documentation of glycemic status for patients. The initial search identified 129 publications, reduced to 16 for inclusion. Reported implant failures rates for diabetic patients ranged from

0–14.3%. The identification and reporting of glycemic control was insufficient or lacking in 13 of the 16 studies with 11 of these enrolling only patients deemed as having acceptable glycemic control, limiting interpretation of findings relative to glycemic control. Three of the 16 studies having interpretable information on glycemic control failed to demonstrate a significant relationship between glycemic control and implant failure, with failure rates ranging from 0–2.9%. Clinical evidence is lacking for the association of glycemic control with implant failure while support is emerging for implant therapy in diabetes patients with appropriate accommodations for delays in implant integration based on glycemic control.¹¹

CONCLUSION

Under the light of above obtained data, the authors conclude that dental implants are associated with excellent prognosis when placed carefully and under controlled conditions in diabetic patients.

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