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Original Article

Assessment of Prognosis of Dental Implants in Diabetic and Non-diabetic patients: A Comparative Study

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ABSTRACT:

Background: Diabetes mellitus is a group of metabolic disorders characterized by an increase in plasma glucose levels. Dental implants are one of the restorative methods to replace missing teeth. Hence; we assessed the prognosis of dental implants in diabetic patients. **Materials & methods:** The study aimed of assessing the prognosis of dental implants in diabetic patients. A total of 62 dental patients scheduled to undergo prosthetic rehabilitation for missing mandibular first molars were included in the present study. Age and gender matched 62 healthy controls were also included in the present study. Using standard protocols, placement of dental implants was done under local anesthesia in all the patients. 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 patients was 96.68 percent (60 patients), while the success rate of the dental implants in the healthy controls was 98.39 percent (61 patients). No significant results were obtained while comparing the success of dental implants in diabetic patients and non-diabetic patients. **Conclusion:** Under controlled conditions, dental implants in diabetic patients have excellent prognosis.

Key words: Diabetic, Dental implants.

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INTRODUCTION

Diabetes mellitus is a group of metabolic disorders characterized by an increase in plasma glucose levels. This hyperglycemia is the result of a defect in insulin secretion, insulin action, or both. Diabetes is the most prevalent endocrine disease affecting 5 to 10% of the population.[1- 3] Type 1 DM (Previously defined as insulin-dependent DM) is caused by the autoimmune destruction of β-cell, which leads to partial or complete insulin deficiency. Dental implants 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.[4- 6] Implant survival is initially dependent on successful osseointegration following placement. Any alteration of this biological process may adversely affect treatment outcome.[7, 8] Hence; we assessed the prognosis of dental implants in diabetic patients.

MATERIALS & METHODS

The present study was conducted in the department of Prosthodontic of the dental institute. The study aimed of assessing the prognosis of dental implants in diabetic patients. A total of 62 dental patients scheduled to undergo prosthetic rehabilitation for missing mandibular first molars were included in the present study. Written consent was obtained from all the patients after explaining in detail the entire research protocol. Complete demographic details of all the patients were also obtained. Age and gender matched 62 healthy controls were also included in the present study. Using standard protocols, placement of dental implants was done under local anesthesia in all the patients. 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

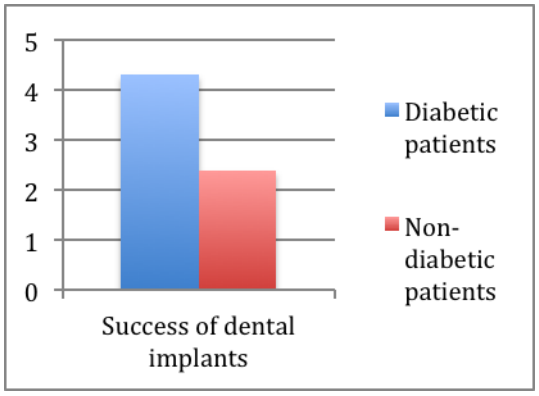
Analysis of 62 patients who underwent dental implants was included in the present study. Also, age-and gender matched 62 healthy controls were also assessed. Mean age of the patients of the present study of the diabetic patients was 46.5 years and of the healthy controls was 42.9 years respectively. There were 40 males and 22 females in the diabetic group, while there were 38 males and 24 females in the healthy control group. Success rate of dental implants in the diabetic patients was 96.68 percent (60 patients), while the success rate of the dental implants in the healthy controls was 98.39 percent (61 patients). No significant results were obtained while comparing the success of dental implants in diabetic patients and non-diabetic patients.

Table 1: Demographic data

Parameter		Diabetic group	Non-diabetic group
Age-group (years)	Less than 25 years	5	8
	25 to 45 years	32	30
	More than 45 years	25	24
Gender	Males	40	38
	Females	22	24

Table 2: Success of dental implants

Parameter	Diabetic patients	Non- diabetic patients	p- value
Success of dental implants	96.68 % (60 patients)	98.39 % (61 patients)	0.02 (significant)



Graph 1: Success of dental implants

DISCUSSION

In the present study, we analyzed 62 patients who underwent dental implants was included in the present study. Also, age-and gender matched 62 healthy controls were also assessed. Morris HF et al assessed the survival of dental implants in type 2 diabetes patients. A total of 2,887 implants (663 patients) were surgically placed, restored, and followed for a period of 36 months. Of these, 2,632 (91%) implants were placed in non-diabetic patients and 255 (8.8%) in Type 2 patients. Failures (survival) were compared using descriptive data. The use of chlorhexidine rinses following implant placement resulted in a slight improvement (2.5%) in survival in non-Type 2 patients and a greater improvement in Type 2 patients (9.1%); the use of preoperative antibiotics improved survival by 4.5% in non-Type 2 patients and 10.5% in Type 2 patients. The use of HA-coated implants improved survival by 13.2% in Type 2 diabetics. Type 2 diabetic patients tend to have more failures than non-diabetic patients; however, the influence was marginally significant.[9] Mean age of the patients of the present study, of the diabetic patients was 46.5 years and of the healthy controls was 42.9 years respectively. There were 40 males and 22 females in the diabetic group, while there were 38 males and 24 females in the healthy control group. Diabetic patients for implants should preferably be treated in the morning with short appointment durations, with insulin or oral hypoglycemic drug taken and after eaten a normal breakfast. Glycosylated hemoglobin (HbA1c) level should be determined before implant placement. HbA1c reflects the glucose levels in the blood over the previous 6–12 weeks before the test. It is expressed as a percentage of the total hemoglobin. Depending on HbA1c levels, diabetic patients have been grouped into three categories, i.e., 6%–8% as well-controlled diabetes, 8%–10% as moderately controlled diabetes, and >10% poorly controlled diabetes.[8- 10] Success rate of dental implants in the diabetic patients was 96.68 percent (60 patients), while the success rate of the dental implants in the healthy controls was 98.39 percent (61 patients). No significant results were obtained while comparing the success of dental implants in diabetic patients and non-diabetic patients.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]

CONCLUSION

From the above results, the authors conclude that under controlled conditions, dental implants in diabetic patients have excellent prognosis. However; further studies are recommended.

REFERENCES

1. Levin L, Nitzan D, Schwartz-Arad D. Success of dental Implants placed in intraoral block bone grafts. J Periodontol. 2007;78:18–21.

2. de Morais JA, Trindade-Suedam IK, Pepato MT, Marcantonio E, Jr, Wenzel A, Scaf G. Effect of diabetes mellitus and insulin therapy on bone density around osseointegrated dental implants: A digital subtraction radiography study in rats. Clin Oral Implants Res. 2009;20:796–801.
3. Siqueira JT, Cavalher-Machado SC, Arana-Chavez VE, Sannomiya P. Bone formation around titanium implants in the rat tibia: Role of insulin. Implant Dent. 2003;12:242–51.
4. Fiorellini JP, Chen PK, Nevins M, Nevins ML. A retrospective study of dental implants in diabetic patients. Int J Periodontics Restorative Dent. 2000;20:366–73.
5. Mellado Valero A, FerrerGarcía JC, Herrera Ballester A, Labaig Rueda C. Effects of diabetes on the osseointegration of dental implants. Med Oral Patol Oral Cir Bucal. 2007;12:E38–43.
6. Heath H, 3rd, Lambert PW, Service FJ, Arnaud SB. Calcium homeostasis and diabetes mellitus. J ClinEndocrinolMetab. 1979;49:462–6.
7. Shyng YC, Devlin H, Ou KL. Bone formation around immediately placed oral implants in diabetic rats. Int J Prosthodont. 2006;19:513–24.
8. Morris HF, Ochi S, Winkler S. Implant survival in patients with type 2 diabetes: Placement to 36 months. Ann Periodontol. 2000;5:157–63.
9. Morris HF1, Ochi S, Winkler S. Implant survival in patients with type 2 diabetes: placement to 36 months. Ann Periodontol. 2000 Dec;5(1):157-65.
10. Fiorellini JP1, Chen PK, Nevins M, Nevins ML. A retrospective study of dental implants in diabetic patients. Int J Periodontics Restorative Dent. 2000 Aug;20(4):366-73.