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Original Research

Assessment of prognosis of dental implants in diabetic patients

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ABSTRACT:

Background: Diabetes mellitus is a chronic disorder of carbohydrate metabolism. Dental implant surgery has developed to a widely used procedure for dental rehabilitation and is a secure and predictable procedure. Hence; the present study was undertaken for assessing the prognosis of dental implants in diabetic patients. **Materials & methods:** A total of 15 diabetic patients who were scheduled to undergo dental implant procedures for missing mandibular first molar were enrolled in the present study. Also, 15 age and gender matched healthy non-diabetic patients were also included who were scheduled to undergo prosthetic rehabilitation of missing mandibular first molar. Assessment of mean HbA1c concentration and mean FBS and RBS was done preoperatively. Dental implants were placed by the hands of skilled and experienced implantologists. Follow-up was done in all the patients and assessment of incidence of postoperative complications, if any, was done. **Results:** Among the patients of the diabetic group, success of dental implants was 93.33 percent whereas in the dental implant group, success of dental implants was 100 percent. While comparing the prognosis in between the two study groups, non-significant results were obtained. **Conclusion:** Under controlled diabetic conditions, dental implants procedures in diabetic patients have excellent prognosis.

Key words: Dental implants, Diabetic patients

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INTRODUCTION

Diabetes mellitus is a chronic disorder of carbohydrate metabolism characterized by hyperglycemia, reflecting distortion in physiological equilibrium in utilization of glucose by tissue, liberation of glucose by liver and production-liberation of pancreatic anterior pituitary and adrenocortical hormone.[1-3] Dental implant surgery has developed to a widely used procedure for dental rehabilitation and is a secure and predictable procedure. Local and systemic risk factors can result in higher failure rates. Diabetes mellitus is a chronic disease that goes in with hyperglycemia and causes multifarious side effects. Diabetes as a relative contraindication for implant surgery is controversially discussed.[4] Because the number of patients suffering from diabetes increases, there are more diabetic patients demanding implant procedures.[5-7] Hence; the present study was undertaken for assessing the prognosis of dental implants in diabetic patients.

MATERIALS & METHODS

The present study was conducted in the department of Oral Implantology of the medical institute and it included assessment of prognosis of dental implants in diabetic patients. Before the starting of the study, ethical clearance was obtained from the ethical committee of the institution. Also we obtained written consent from all the patients after explaining in detail the entire research protocol. A total of 15 diabetic patients who were scheduled to undergo dental implant procedures for missing mandibular first molar were enrolled in the present study. Also, 15 age and gender matched healthy non-diabetic patients were also included who were scheduled to undergo prosthetic rehabilitation of missing mandibular first molar. Complete demographic details of all the

patients were obtained. Complete hematological and biochemical examination of all patients was done preoperatively. Assessment of mean HbA1c concentration and mean FBS and RBS was done preoperatively. Dental implants were placed by the hands of skilled and experienced implantologists. Follow-up was done in all the patients and assessment of incidence of postoperative complications, if any, was done. All the results were recorded and analyzed by SPSS software. Chi- square test was used for assessment of level of significance. P- value of less than 0.05 was taken as significant.

RESULTS

53.33 percent of the patients of diabetic patients and 60 percent of the patients of the non-diabetic controls belonged to the age group of 51 to 60 years. 33.33 percent of the patients of the diabetic patients and 20 percent of the patients of the non-diabetic controls belonged to the age group of 41 to 50 years. Mean age of the patients of the diabetic patients and non-diabetic controls was found to be 45.13 years and 46.07 years respectively. 73.33 percent of the patients of the diabetic patients and 66.67 percent of the patients of the non-diabetic controls were males while 26.67 percent of the patients of the diabetic patients and 33.33 percent of the patients of the non-diabetic controls were females. Among the patients of the diabetic group, success of dental implants was 93.33 percent whereas in the dental implant group, success of dental implants was 100 percent. While comparing the prognosis in between the two study groups, non-significant results were obtained.

Table 1: Age-wise distribution of patients

Age group (years)	Diabetic patients		Non-diabetic controls	
	Number of patients	Percentage	Number of patients	Percentage
18 to 30	1	6.67	1	6.67
31 to 40	1	6.67	2	13.33
41 to 50	5	33.33	3	20
51 to 60	3	53.33	9	60
Total	15	100	15	100
Mean age (years)	45.13 + 8.56		46.07 + 9.74	

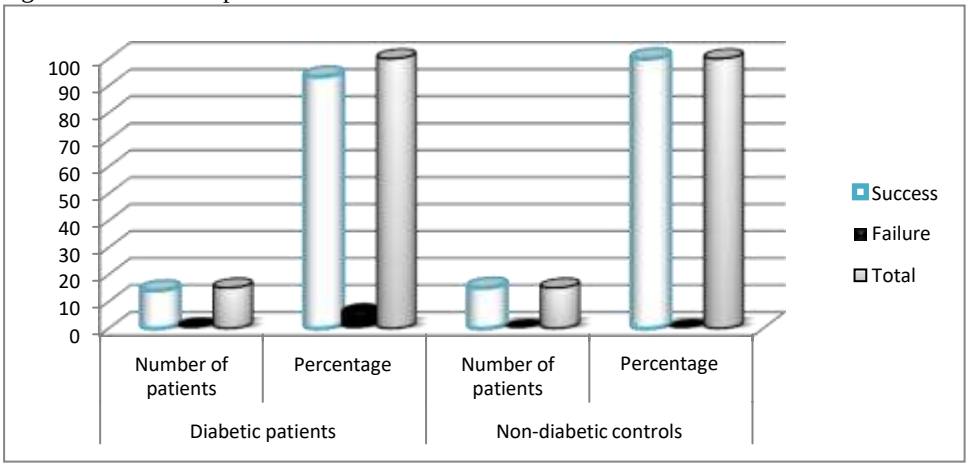
Table 2: Gender-wise distribution of patients

Gender	Diabetic patients		Non-diabetic controls	
	Number of patients	Percentage	Number of patients	Percentage
Males	11	73.33	10	66.67
Females	4	26.67	5	33.33
Total	15	100	15	100

Table 3: Prognosis of dental implants

Prognosis	Diabetic patients		Non-diabetic controls	
	Number of patients	Percentage	Number of patients	Percentage
Success	14	93.33	15	100
Failure	1	6.67	0	0
Total	15	100	15	100
Chi- square value	63.85			
p- value	0.75 (Non-significant)			

Graph 1: Prognosis of dental implants



DISCUSSION

Diabetes is a group of metabolic diseases in which there are high blood sugar levels over a prolonged period. When looking at the complications and side effects resulting from diabetes, it is important to know which type of diabetes the patient suffers from, if there is any therapy, which kind of therapy, the grade of glycemic control, and duration of the disease.

In the present study, 53.33 percent of the patients of diabetic patients and 60 percent of the patients of the non-diabetic controls belonged to the age group of 51 to 60 years. 33.33 percent of the patients of the diabetic patients and 20 percent of the patients of the non-diabetic controls belonged to the age group of 41 to 50 years. Mean age of the patients of the diabetic patients and non-diabetic controls was found to be 45.13 years and 46.07 years respectively. Only few case studies for histological observation of dental implant osseointegration in human being have been reported. In one report, an implant was placed and intended to support an overdenture in 65-year-old diabetic women was retrieved after 2 months due to prosthetically unfavorable condition. In histological analysis, no symptoms of implant failure recognized with 80% bone implant contact ratio. A case of diabetes mellitus type-2 having implant failure within 6 months, was reported by Park JBwith conclusion that osseointegration was not affected by diabetes mellitus as there was no sign and symptoms of failure before loading.[10, 11]

In the present study, 73.33 percent of the patients of the diabetic patients and 66.67 percent of the patients of the non-diabetic controls were males while 26.67 percent of the patients of the diabetic patients and 33.33 percent of the patients of the non-diabetic controls were females. Farzad P et al investigated how many diabetic patients and types of cases that are treated with dental implants. Medical records from 782 patients were examined in patients treated by the Brånemark method for partial or total edentulism with implant supported bridges. From these records, 25 patients (3.2%) with diabetes before implant treatment (136 implants) were identified and further studied with respect to age, gender, type of diabetes, treated jaw, degree of edentulism, bone graft, implant survival, periimplant inflammation, bleeding on probing, and radiographic bone loss. Furthermore, the patients' opinion about the outcome of the treatment was registered. The implant success rate was 96.3% during the healing period and 94.1% 1 year after surgery. Of all 38 bridges, one was lost. Few complications occurred and all patients, except for one, were satisfied with the treatment. Diabetics that undergo dental implant treatment do not encounter a higher failure rate than the normal population, if the diabetics' plasma glucose level is normal or close to normal as assessed by personal interviews.[12]

In the present study, among the patients of the diabetic group, success of dental implants was 93.33 percent whereas in the dental implant group, success of dental implants was 100 percent. While comparing the prognosis in between the two study groups, non-significant results were obtained. There is no doubt that these elevated glycemic levels are directly associated with increased risk of numerous systemic co-morbidities, including periodontal disease. Given the documented risks of diabetic subjects for inflammatory periodontal disease, compromised wound healing, and infection, the potential for long-term peri-implant complications may represent a similar vulnerability. Previous studies have shown that glycemic control can affect bone physiology, and impaired osseous healing has been demonstrated in animal models. These studies also suggest concerns with establishing and maintaining the health of the supporting tissues for implants.[13- 16]

CONCLUSION

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

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