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ORIGINAL RESEARCH

Assessment of success rate of dental implants in diabetic patients

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ABSTRACT:
Backgrounds: Various modern research and discoveries have shown that diabetes mellitus, more or less, affects every tissues of body directly or indirectly through late complications. Hence; the present study was undertaken for assessing success rate of dental implants in diabetic patients. **Materials & methods:** A total of 100 diabetic patients were enrolled in the present study. Complete demographic details of all the patients were enrolled. Only those patients were enrolled which underwent prosthetic rehabilitation for missing mandibular first molars by dental implants. Blood samples were obtained from all the patients and blood sugar levels were evaluated. All the procedures were carried out under the hands of skilled and experienced Prosthodontist. Success rate of dental implants was recorded. All the results were recorded in Microsoft excel sheet and were analysed by SPSS software. **Results:** 49 percent of the patients belonged to the age group of 25 to 46 years. 64 percent of the patients were ales while the remaining were females. In the present study, success of dental implants was seen in 95 percent of the diabetic patients. **Conclusion:** In diabetic patients with controlled glycaemic levels, dental implants had excellent prognosis.
Key words: Diabetes, Dental implants

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INTRODUCTION

Diabetes mellitus is a chronic metabolic disorder that affects 25.6 million individuals or more than 11% of the adult US population. This prevalence represents a 28% increase in the number of patients with diabetes since 2005. Current projections of diabetes incidence suggest that as much as 33% of the US population may be diagnosed with diabetes by 2050, with type 2 diabetes mellitus accounting for 90 to 95% of all diabetes patients. World-wide over 150 million people were estimated as having diabetes in the year 1980, and that number had grown to over 350 million by 2008. Taken together, these trends highlight the urgency for better understanding diabetes as well as for improving the care of patients with diabetes.[1-3] The comforts like natural dentition, conservative treatment compared to teeth supported FPDs and long term success for the edentulous patients, as well as partially edentulous patients have made dental implants supported prosthetic treatment as an attractive substitute to traditional removable or fixed dental prosthesis besides being costly and lengthy procedures with surgical intervention. The growing economy of developing nations like china and India has also been playing a key role in popularizing the implant dental treatment. In light of above facts, the dental fraternity may encounter with more number of diabetic patients for dental implant treatments.[4, 5]

Various modern research and discoveries have shown that diabetes mellitus, more or less, affects every tissues of body directly or indirectly through late complications. Concerning the effect on oral tissues, previous authors have recognized the periodontal disease as sixth major complication of diabetes. Number of studies has proved the adverse effect of chronic hyperglycemia on oral mucosa and with some controversies on alveolar bone.[6] Hence; the present study was undertaken for assessing success rate of dental implants in diabetic patients.

MATERIALS & METHODS

The present study was conducted in the department of prosthodontics and it included assessment of success rate of dental implants in diabetic patients. A total of 100 diabetic patients were enrolled in the present study. Complete demographic details of all the patients were enrolled. Only those patients were enrolled which underwent prosthetic rehabilitation for missing

mandibular first molars by dental implants. Blood samples were obtained from all the patients and blood sugar levels were evaluated. All the procedures were carried out under the hands of skilled and experienced Prosthodontist. Exclusion criteria for the present study included:

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

Success rate of dental implants was recorded. All the results were recorded in Microsoft excel sheet and were analysed by SPSS software.

RESULTS

In the present study, a total of 100 patients were analysed who underwent prosthetic rehabilitation of missing mandibular molars by dental implants. Mean age of the patients was found to be 28.6 years. 49 percent of the patients belonged to the age group of 25 to 46 years. 64 percent of the patients were ales while the remaining were females. In the present study, success of dental implants was seen in 95 percent of diabetic patients.

Graph 1: Age and gender-wise distribution

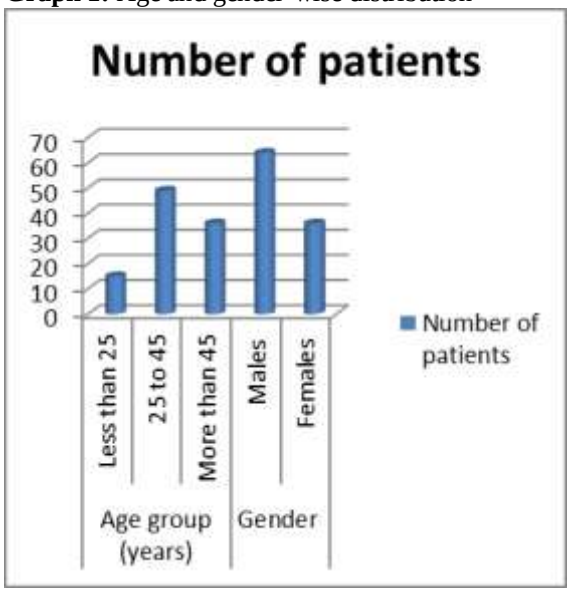

Table 1: Success rate of dental implants in diabetic patients

Dental implants prognosis	Number of patients
Success	95
Failure	5

DISCUSSION

The increased prevalence of diabetes mellitus has become a public health problem. Hyperglycaemia entails a rise in the morbidity and mortality of these patients. Although a direct relationship with periodontal disease has already been shown, little is known about the results of dental implants in diabetics. In experimental models of diabetes, a reduced level of bone-implant contact has been shown, and this can be reversed by means of treatment with insulin. Compared with the general population, a higher failure rate is seen in diabetic patients. Most of these occur during the first year of functional loading, seemingly pointing to the microvascular complications of this condition as a possible causal factor. These complications also compromise the healing of soft tissues. It is necessary to take certain special considerations into account for the placement of implants in diabetic patient. A good control of plasma glycaemia, together with other measures, has been shown to improve the percentages of implant survival in this patients.[7- 9] Hence; the present study was undertaken for assessing success rate of dental implants in diabetic patients.

In the present study, a total of 100 patients were analysed who underwent prosthetic rehabilitation of missing mandibular molars by dental implants. Mean age of the patients was found to be 28.6 years. 49 percent of the patients belonged to the age group of 25 to 46 years. 64 percent of the patients were ales while the remaining were females. 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 glycaemic 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 of dental implants was seen in 95 percent of the diabetic patients. Marchand F et al assessed the success of dental-implant treatment in patients with diabetes. Dental-implant treatment is an efficient means of replacing lost teeth. However, diabetes can be considered a relative contraindication for this type of treatment because of the slightly higher failure rate compared with populations without diabetes. Prerequisite selection of suitable diabetic patients, eradication of co-morbidities (poor oral hygiene, cigarette-smoking, periodontitis), stabilization of glycaemic control (HbA(1c) at around 7%) and preventative measures against infection can increase the success of dental implantation in diabetic patients to a satisfactory rate of 85-95%. Implant surgery is never a matter of urgency; thus, diabetes patients with the best chances of success should be conjointly selected and prepared by both dental and diabetes clinicians.[11] Olson JW et al assessed the success of 2-stage endosseous root-form implants (3 different implant systems) placed in the mandibular symphysis of 89 male type 2 diabetic subjects. The

implants were uncovered approximately 4 months after placement, restored with an implant-supported, Hader bar clip-retained overdenture, and maintained at scheduled follow-up data collection examinations for 60 months after loading. Sixteen (9.0%) of the 178 implants failed. Life table methods calculated implant survival at approximately 88%, from prosthesis placement through the 60-month follow-up, and at approximately 90% from implant placement through the observation period. No implants failed between surgical placement and uncovering, 5 failed at uncovering, 7 failed after uncovering before prosthesis placement, and 4 failed after prosthesis placement. Fasting plasma glucose (FPG) and glycosylated hemoglobin (HbA1c) values were determined before implant placement (baseline) and approximately 4 months later at surgical uncovering (follow-up). The 5-year implant outcomes (successes versus failures) were analyzed against the following predictor variables: (1) baseline and follow-up FPG values, (2) baseline and follow-up HbA1c values, (3) subject age, (4) duration of diabetes (years), (5) baseline diabetic therapy, (6) smoking history, and (7) implant length. Regression analysis found only duration of diabetes ($P < .025$) and implant length ($P < .001$) to be statistically significant predictors of implant failure. There was no statistically significant difference in failure rates between the 3 different implant systems used. This study supports the use of dental implants in type 2 diabetic patients.[12]

CONCLUSION

Under the light of above mentioned results, the authors concluded that in diabetic patients with controlled glycaemic levels, dental implants had excellent prognosis.

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