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Original Article

Retrospective Evaluation of Success of Dental Implants in Medically Compromised Patients

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***ABSTRACT*:**
Background: Dental implants are one of the most successful treatment choices for edentulous areas. The surgical and rehabilitation phases of dental implant surgery are greatly affected by the history and clinical examination of the patient. Surgical procedure for dental implant requires minimal trauma and circumvent excessive bleeding and stress. Hence; we planned the present study to assess the success of dental implants in patients with medically compromised status. **Materials & methods:** This retrospective study included assessment of the files of the patients selected for study was grouped into Study group and Control group. Study group consisted of medically compromised patients whereas control group consisted of normal healthy patients. Patient's age, gender and ASA status were studied for demographic profile. The collection of data for the study was done after obtaining ethical clearance from the ethical committee of the institute. The statistical analysis of the data was done using t test and chi square test by SPSS software. **Results:** We included a total of 100 patients. 50 patients belonged to the study group, while the remaining 50 belonged to the control group. In the control group, dental implant failure occurred in a single patient while in the study group, dental implant failure occurred in 3 patients. Removal of dental implants occurred in 10 patients of control group; while it was done in 9 patients of the study group. **Conclusion:** Similar rate of success occurs in medically compromised patients.
Key words: Dental, Implants, Medically Compromised

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INTRODUCTION

In the present times of modernisation, Dental implants are one of the most successful treatment choices for edentulous areas.[1]The surgical and rehabilitation phases of dental implant surgery are greatly affected by the history and clinical examination of the patient. Surgical procedure for dental implant requires minimal trauma and circumvent excessive bleeding and stress.[2] Moreover, a patient requiring dental implant has a number of fears such as fear of pain during the procedure. For the reduction of pain to minimally possible, it is required to properly manage the anxiousness of the patient regarding minimal to moderate stress.[3]From the follow up studies conducted over 10 years, it has been reported that in healthy patients the success rate of dental implants is 90 to 95%.[1, 2] The reasons for the failure of dental implant are deficient osseointegration, breakage of implant during functioning and peri-implant tissues infection that leads to loss of support to implant. Complications experienced following insertion of implant pain, peri-implantitis, and intermittent neuropathy.[3] Studies have also reported severe complications such as facial spaces cellulitis, haemorrhage, infection, and necrotising mediastinitis seen in early stages of implant insertion.[4-7]Hence; we planned the present study to assess the success of dental implants in patients with medically compromised status.

MATERIALS & METHODS

This retrospective study was conducted in the institute from the files of the patients selected for study were grouped into Study group and Control group. Study group consisted of medically compromised patients whereas control group consisted of normal healthy patients. Patient's age, gender and ASA status were studied for demographic profile.

Clinical information retrieved from the files of the patients was preoperative, intraoperative and

postoperative parameters. The periodontal status of all the patients before implant insertion was stable. The assessment of survival of dental implants was done by evaluating clinical parameters during follow up and information from radiographs. The evaluation was done for implant stability, bone loss, signs of infection and level of bone around implant on the basis of clinical and radiographic situations. The classification of implants was done on the basis of their survival and success rate. The inability of dental implant to survive at its location or exposed threads of implants at follow up visit was determined as parameters for implant failure. The evaluation of number of exposed threads of implants was done using clinical and radiographic data from the records. Based on the determination of previous criteria, implants with more than 1 mm of marginal bone loss in 1st year and 0.2 mm marginal bone loss each subsequent year were considered as failed implants and were grouped accordingly. This criterion is still used today and is known as Bgold standard for implant success.

The functional implants without clinical signs of infection or rejection at the examination time even with bone resorption seen radiographically were regarded in implant survival rate. The dental implants that meet the criteria for success were included in implant success rate. The evaluation of exposure of implant threads was done by selecting one implant with highest exposed threads as observed during followup visit. For the patients with more than one failed implants, only one implant was considered. Patients with uncontrolled diabetes, uncontrolled hypertension, post-radiation therapy and on IV bisphonates treatment were included in the study only after their condition was in stable stage. Patients with incomplete data in files and unavailable to follow up were excluded from the study. The collection of data for the study was done after obtaining ethical clearance from the ethical committee of the institute.The statistical analysis of the data was done using t test and chi square test by SPSS software. P- value of less than 0.05 was taken as significant.

RESULTS

In the present study, we included a total of 100 patients. 50 patients belonged to the study group, while the remaining 50 belonged to the control group. Mean age of the patients of the study group and control group was 29.5 and 32.3 years respectively. In the control group, dental implant failure occurred in a single patient while in the study group, dental implant failure occurred in 3 patients. Removal of dental implants occurred in 10 patients of control group; while it was done in 9 patients of the study group.

Table 1: Comparison of success of dental implants in patients of both the study groups

Parameter	Control group	Study group
No. of patients	50	50
No. of dental implants removed	10	9
No. of dental implants failed	1	3

DISCUSSION

Medically compromised patient (MCP) is defined as the person who has distinctive physical and mental health as compared to people of same age. These patients have high risk of medical and surgical complications for implant insertion and maintenance. So, a detailed surgical and medical history and clinical examination is required to undertake definite measures to reduce the risk of complications.[8, 9]Nowadays, medical and technological advancement in the field implantology has increased the success rate of implants in MCP. This has led to the increased frequency of MCP asking for rehabilitation of their edentulous arches using implants as it improves the patients' quality of life by its benefits to the patient and high success rate of surgical procedure.[10]Hence; we planned the present study to assess the success of dental implants in patients with medically compromised status.

In the present study, we observed that in the control group, dental implant failure occurred in a single patient while in the study group, dental implant failure occurred in 3 patients. Manor Y et al conducted a retrospective study for assessment of rate of complication and failure of dental implants in medically compromised patients for identification of risk factors for dental implants. 204 patients (1003 dental implants) who had implant surgery from 2008-2014 were included and their files were studied. The patients were grouped into study group and control group. Study group consisted of patients with history of systemic illness (93 patients, 528 implants) and control group (111 patients, 475 implants) consisted of healthy patients. Clinical details of the patients regarding preoperative, intraoperative and postoperative details were extracted from their files. Evaluation of success and failure rate was calculated using clinical and radiographic information. On comparing study and control group for implant failure and complications non-significant results were observed. In the study group, failure rate of implants was 11.8% and in control group failure rate was 16.2% (p=0.04). High failure rate was seen in patients with high number of implants (mean 6.2) as compared to patients with low number of implants (mean 4.2) ($p<0.01$). Failure rate and complication rate of implants was observed to be similar in medically compromised and healthy patients. It was concluded by the authors that medically compromised patients have similar complications and failure rate as healthy patients thus, medically compromised patients can successfully opt for dental implants.[11]Goiato MC et al conducted study to estimate trans- and postoperative complications for patient who underwent surgical procedure for dental implant. Analysis of 39 patients in 3 call centres was conducted for determination of anxiety levels, pain levels, and pre and postoperative histories using Stait-Trait (STAI) questionnaire. Insertion of 93 dental implants was done with a success rate of 100%. Hypertension was the most common disorder observed. Effective torque to mandibular bone was significantly increased as compared to maxillary bone. The relation of adjustment in mouth opening and daily habitual exercises was statistically significant. Similarly, the anxiety level was significantly

reduced from the day of surgery to the day of postoperative follow up. The complications related to surgical procedure had significant effect on surgical time and increased level of anxiety on evaluation conducted preoperatively.[12]

Gómez-de Diego R et al conducted a review of current scientific literature for the assessment of indications and contra-indications for dental implants in medically compromised individuals. They reviewed articles on dental implants and medically compromised from PubMed published from 1993 to 2013. The clinical studies with as a minimum 10 treated patients, consensus studies, review studies and meta-analysis for dental implants were included in the study. They included 16 studies out of 64 studies founded in the search. They reported that controlled metabolic disorders and cardiac system diseases are neither total nor partial contraindications for dental implants. Radiotherapy in head and neck region; and tobacco addiction has higher implant failure rate thus, a total contraindication for dental implants. An enhanced rate of developing bone necrosis following oral surgery was observed in patients suffering from osteoporosis and on biphosphonates therapy particularly in patients receiving drugs intravenously.[13]

Kachhadia R et al conducted study for evaluating efficiency of dental implants in medically compromised patients. They investigated the rate of failure and complications of dental implants in medically compromised patients. Patients who underwent implant surgery in last 3 years were included in the study. The patients were grouped into study and control group. The study group included 117 patients having history of systemic condition whereas control group included 103 normal healthy patients with no history of systemic illness. On the basis of this data, they investigated efficiency of implants in medically compromised patients. Study group consisted of 57 females and 60 males. The control group consisted of 48 females and 55 males. In Study group, 83.37% implants (n=331) were in healthy condition owing to success rate of 83.37% and 16.63% implants (n=66) failed owing to failure rate of 16.63%. In control group, 89.96% implants (n=287) were in healthy condition owing to 89.96% success rate and 10.04% failed owing to failure rate of10.04%. They concluded that in patients with medically compromised condition show far amount of success.[14]

CONCLUSION

From the above results, the authors conclude that similar rate of success occurs in medically compromised patients. However; future research is recommended.

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