

ORIGINAL ARTICLE

EVALUATION OF USEFULNESS OF IMPLANTS IN MEDICALLY COMPROMISED PATIENTS: A RETROSCEPTIVE STUDY

Santosh B S¹, Shivamurthy D M², Sachin B Mangalekar³, Johar Rajvinder Singh⁴

¹Professor, ²Prof&HOD, Department of Oral and Maxillofacial Surgery, Chhattisgarh Dental College and Research Institute, Rajnandgaon, ³Professor, Department Of Periodontics, Bharati Vidyapeeth Deemed University Dental College, Sangli, Maharashtra, ⁴Associate Professor, Dept of Orthodontics & Dentofacial Orthopedics, Chhattisgarh Dental College & Research Institute, Rajnandgaon

ABSTRACT:

Background: Dental implants have evolved as new treatment modality for the majority of patients with missing teeth. The aim of the study was to investigate the rate of complications and failures following dental implantation in medically compromised patients.


Material & Methods: This study was conducted in department of oral & maxillofacial surgery in 2015. The record of patients received implant in last 2 years was obtained. Total of 260 dental records were collected. Out of which, 200 patients (1040 implants) were included in the study. 2 groups were made. Study group which consisted of 102 patients with 550 implants.

And control group which consisted of 98 patients with 490 implants. Preoperative, intraoperative, and post operative clinical details were obtained from patients' records. The success rate and complications of the dental implants were evaluated clinically and radiographically. **Results:** In group I, out of 102 patients, 60 were females and 40 were males. In group II, out of 98 patients, 50 were females and 48 were males. In group I, number of implants in females was 358 (65%) and in males were 192 (35%). In group II, number of implants in females was 270 (55%) and in males were 220 (45%). group I, 41 (40%) were of cardiovascular diseases, 21 (20%) were of diabetes, 13 (12%) were suffering from osteoporosis, 13 (12%) were of hypothyroidism and 14 (15%) were suffering from combination of systemic diseases. **Conclusion:** No significant difference was found in success rate and complications of implants in both study and control group. **Clinical Significance:** We have tried to evaluate the usefulness of implants in medically compromised patients. This can be considered as alternative treatment modality in these patients.

Key Words: cardiovascular diseases, implant, medically compromised, osteoporosis.

Corresponding author: Dr. Santosh B S, Professor, Department of oral and maxillofacial surgery, Chhattisgarh Dental College and Research Institute, Rajnandgaon, Email: drsantoshbs@gmail.com

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INTRODUCTION

A dental implant is a surgical component that interfaces with the bone of the jaw or skull to support a dental prosthesis such as a crown, bridge, denture, facial prosthesis or to act as an orthodontic anchor.¹ Earlier the missing teeth were used to be replaced by either removable or fixed partial denture. Nowadays, dental implants have evolved as new treatment modality for the majority of patients and are expected to play a significant role in oral rehabilitation in the future.² A success rate of 90%-95% has been reported over the 10 years. Pain, infection and

haemorrhage and occasionally neuropathy are early complications of implant. Implants have got failure rates also. The reasons for implants failure are lack of osseointegration during early healing, infection of the peri-implant tissues and breakage.³ The contraindications of implant placement are children & adolescents, epileptic patients, endocarditis, osteoradionecrosis, smoking and diabetes. Absolute contraindications consists of myocardial infarction and cerebrovascular accident, bleeding disorder, cardiac transplant, immunosuppression, active treatment of malignancy, drug abuse, and psychiatric

illness, and intravenous bisphosphonate (BPs) use.^{4,5} Contraindications are mainly based on both the risk of medical complications related to implant surgery and the rate of implant success in medically compromised patients. Diz et al.⁶, the relative advantages and disadvantages of various treatment modalities should be evaluated depending upon the status of medical health and demand of patients. In patients with systemic health problem, few additional precautions such as the placement of implant with strict asepsis, minimal trauma, avoidance of stress, and hemorrhage should be considered. It is crucial in these patients to ensure proper maintenance therapy with optimal standards of oral hygiene, cessation of smoking, and avoidance of any other controllable risk factors. The present study was conducted to investigate the rate of complications and failures following dental implantation in medically compromised patients.

MATERIALS & METHODS

This study was conducted in department of oral & maxillofacial surgery in 2015. The record of patients received implant in last 2 years was obtained. Out of which, medically compromised patients were taken into consideration. Total of 260 dental records were collected. Out of which, 200 patients (1040 implants) were included in the study. 2 groups were made.

STUDY GROUP: It consisted of 102 patients with 550 implants.

CONTROL GROUP: It consisted of 98 patients with 490 implants.

Inclusion criteria was

1. Patients with controlled systemic diseases and treated with dental implants in last 2 years.
2. Patients with complete medical data.

Exclusion criteria

1. Patients with uncontrolled diabetes, uncontrolled hypertension, patient’s post radiation therapy, patient’s under intravenous bisphosphonates treatment.
2. Patients with incomplete records.
3. Patients not available for follow-up.

The survival of the dental implants was evaluated during the follow-up period and according to the radiographic data available and to clinical follow-up.

The following points were considered.

1. Bone loss around the implant.
2. Signs of infection around the implant.
3. Level of bone around the implant according to radiographic images.

For implant failure, following points were taken into account.

1. Implants with >1mm of marginal bone loss in the first year.

2. Implants with >0.2 mm marginal bone loss every year during the follow-up.

3. The number of exposed threads of the implants was determined clinically and radiographically by panoramic images from patient’s record.

Results obtained were subjected to statistical analysis. Chi square test was applied and p value less than 0.05 was considered significant.

RESULT

Table I shows distribution of patients. Total of 200 patients were included in the study. Group I (Study group) consisted of 102 patients with 550 implants. Group II (Control group): consisted of 98 patients with 490 implants.

Table II shows that in group I, out of 102 patients, 60 were females and 40 were males. In group II, out of 98 patients, 50 were females and 48 were males. In group I, number of implants in females was 358 (65%) and in males were 192 (35%). In group II, number of implants in females was 270 (55%) and in males were 220 (45%).

Table III shows distribution of smokers and non smokers and rate of implant failure in both groups. The difference of smokers in study group was significantly higher as compared to control group. In group I, out of 32 smokers, 4(12.5%) showed implant failure and in non smokers 7 (10%) showed implant failure. In group II, out of 20 smokers, 3 (15%) and 14 (18%) non smokers showed implant failure. Implant failure rate was more in smokers in study group and non smokers in control group. But the difference was statistical non significant.

Table IV shows that in group I, 41 (40%) were of CVS, 21 (20%) were of diabetes, 13 (12%) were suffering from osteoporosis, 13 (12%) were of hypothyroidism and 14 (15%) were suffering from combination of systemic diseases.

Table V shows the failure rate of dental implants among the patients was 16.3 % in group I (16 patients) and 13.7 % (14 patients) in group II. The survival rate was found to be 84 % in the study group and 87 % in the control group. The difference was statistical non significant.

Table VI shows complication in both the groups. 2 patients (2.04%) in group I and 5 (5%) patients in group II showed complications like bone loss around the implant, peri-implantitis. The difference was non significant.

TABLE I: Distribution of patients

		GROUP I		GROUP II	
No. Of Patients	No. Of Implants	No. Of Patients	No. Of Implants	No. Of Patients	No. Of Implants
	102	550	98	490	

TABLE II: Distribution of patients according to gender

	GROUP I (102)		GROUP II (98)	
	MALE	FEMALE	MALE	FEMALE
GENDER	42	60	48	50
NO. OF IMPLANTS	192 (35%)	358 (65%)	220 (45%)	270 (55%)

TABLE III: Distribution of smokers & non smokers & rate of implant failure in both groups

	GROUP I		GROUP II		P value
	SMOKERS	NONSMOKER	SMOKERS	NONSMOKER	
TOTAL PATIENTS	32 (33%)	70 (67%)	20 (20%)	78 (80%)	0.02
IMPLANT FAILURE	4 (12.5%)	7 (10%)	3 (15%)	14 (18%)	0.8

TABLE IV: Distribution of medically compromised patients

	Cardiovascular disease	Diabetes	Osteoporosis	Hypothyroidism	Combination
Number	41(40%)	21 (20%)	13 (13%)	13 (12%)	14 (15%)

TABLE V: The survival rate and success rate of dental implants by groups

GROUP	NO. OF PATIENTS	REMOVED IMPLANTS	FAILED IMPLANTS	SURVIVAL RATE	P VALUE
GROUP I	102	16	3	84%	0.4
GROUP II	98	14	5	87%	

TABLE VI: Complications in both groups

	EARLY COMPLICATIONS	P value
GROUP I	2 (2.04%)	0.27
GROUP II	5 (5%)	

DISCUSSION

Edentulism can be well managed with implants. Due to recent advancements in the field of implants, there use is increasing day by day. For placement of implants, medical condition plays a vital role. The placement is quite simple and easy in healthy individual as compared to unhealthy subjects. In medically compromised patients such as patients with hypertension, diabetes, hypothyroidism, severe bleeding disorders etc., special care has to be done before placing implant.⁷

In this study, a total of 260 dental records were collected. Out of which, 200 patients (1040 implants) were included in the study. 2 groups were made. The study group (group I) which consisted of 102 patients with 550 implants and the control group which consisted of 98 patients with 490 implants.

From the patients records (clinical and radiographs), we evaluated bone loss around the implant, signs of infection

around the implant, level of bone around the implant according to radiographic images. For implant failure, implants with >1mm of marginal bone loss in the first year was considered. For this, the criteria given by Alberktsson et al. followed.⁸

In present study, (group I), out of 102 patients, 60 were females and 40 were males. In group II, out of 98 patients, 50 were females and 48 were males. In group I, number of implants in females was 358 (65%) and in males were 192 (35%). In group II, number of implants in females was 270 (55%) and in males were 220 (45%).

We analyzed, rate of implant failure in both groups. In group I, out of 32 smokers, 4(12.5%) showed implant failure and in non smokers 7 (10%) showed implant failure. In group II, out of 20 smokers, 3 (15%) and 14 (18%) non smokers showed implant failure. Implant failure rate was more in smokers in study group and non smokers in control group. But the difference was statistical non significant.

According to studies, dental implant failure rate have been found about 3–5% among nonsmokers higher rate of 5–9 % among smokers.^{9,10}

Few studies have mentioned the implant failure cases in smokers and patients with head and neck radiotherapy and patients suffering from osteoporosis undergoing bisphosphonates therapy.^{11,12}

In present study, 41 patients (40%) were of CVS, 21 (20%) were of diabetes, 13 (12%) were suffering from osteoporosis, 13 (12%) were of hypothyroidism and 14 (15%) were suffering from combination of systemic diseases. In the literature, various studies regarding success of implants in medically compromised patients have been discussed.^{13,14} 2 patients (2.04%) in group I and 5 (5%) patients in group II showed complications like bone loss around the implant, peri-implantitis. The difference was not significant.

In our study, we also evaluated the failure rate of dental implants among the patients in both groups. It was 16.3 % in group I (16 patients) and 13.7 % (14 patients) in group II. The implant survival rate in group I and II was 84% and 87% respectively. The difference was statistical non significant. Our results agree with results of Giro et al.¹⁵ who in their study revealed, failure rate of 10.9 % in osteoporotic subjects, 8.29 % in osteopenic, and 11.43 % in healthy patients.

However, Ata- Ali J et al¹⁶, did a meta-analysis on the impact of bisphosphonates on implant survival rates and concluded that there is no negative effect of bisphosphonates on dental implant survival rate and their use does not reduce their success rate.

CONCLUSION

Author concluded that the success rate and complication of implant placement in healthy and in medically compromised patients are almost same.

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