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**Original Research**

**Determination of success and failure of dental implants in medically compromised patients**

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***ABSTRACT***

**Background:** Systemically healthy patients, demonstrate 90 and 95 % success rates of dental implants as reported over 10 years of follow-up. The present study was conducted to assess success and failure of dental implants in medically compromised patients. **Material & methods:** The present study was conducted on 48 medically compromised patients and equal number of healthy subjects. Amount of bone loss around the implant, signs of infection and level of bone around the implant were recorded. Survival rate was assessed. **Results:** Group I (medically compromised) consisted of 48 patients with 70 dental implants. Group II (healthy subjects) consisted of 48 patients with 72 implants. In group I, 14 patients were diabetic, 6 had hypothyroidism and 10 had cardiovascular disease, 6 had osteoporosis and 12 had hypertension. The difference was statistical significant (P<0.05). Survival rate in group I was 68% and I group II was 92%. The difference was significant (P< 0.05). **Conclusion:** Authors found that medical compromised state affects the outcome of dental implant treatment. Patients such as diabetes, osteoporosis and hypothyroidism etc. had lower survival rate as compared to healthy subjects.

**Key words:** Dental implants,Diabetes, Hypertension

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**INTRODUCTION**

Systemically healthy patients, demonstrate 90 and 95 % success rates of dental implants as reported over 10 years of follow-up. Dental implants fail due to lack of osseointegration during early healing or when already in function due to breakage, or infection of the peri-implant tissues

leading to loss of implant support. Early complications after implant insertion can include pain, infection, and occasionally neuropathy. Severe early complications such as hemorrhage, infection, facial spaces cellulitis, or descending necrotizing mediastinitis have also been described.1

Severe complications during implant surgery such as hemorrhage in the floor of the mouth or descending necrotizing mediastinitis are rare, and have not usually been related to the medical background of the patient.2 The longer term outcome of implant therapy can be affected by local or systemic diseases or other compromising factors, in fact, it has been suggested that some local and systemic factors could represent contraindications to DI treatment. The contraindications of implant placement are children & adolescents, epileptic patients, endocarditis, osteoradionecrosis etc. Absolute contraindications consists of myocardial infarction and cerebrovascular accident, bleeding disorder, cardiac transplant, immuno-suppression, active treatment of malignancy, drug abuse, and psychiatric illness.3 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. The present study was conducted to assess success and failure of dental implants in medically compromised patients.

**MATERIALS & METHODS**

This study was conducted in department of Prosthodontics. It comprised of 48 medically compromised patients of both genders who underwent dental implants 10 years back. Equal number of healthy subjects was taken as control. The study protocol was approved from ethical committee. Data such as name, age, gender etc. were retrieved from the record file. Radiographic record was obtained from departmental record. Amount of bone loss around the implant, signs of infection and level of bone around the implant were recorded. Survival rate was assessed. Results obtained were subjected to statistical analysis. P value less than 0.05 was considered significant.

**RESULTS**

**Table I Distribution of patients**

|  |  |  |
| --- | --- | --- |
| **Groups** | **Group I (Medically compromised)** | **Group II (Healthy)** |
| Number | 48 | 48 |
| Implants | 70 | 72 |

Table I, graph I shows that group I (medically compromised) consisted of 48 patients with 70 dental implants. Group II (healthy subjects) consisted of 48 patients with 72 implants.

**Graph I** **Distribution of patients**

**Table II Medically compromised patients in group I**

|  |  |  |
| --- | --- | --- |
| **Medical Condition** | **Number** | **P value** |
| **Diabetes** | 14 | 0.01 |
| **Hypothyroidism** | 6 |
| **CVD** | 10 |
| **Osteoporosis** | 6 |
| **Hypertension** | 12 |

Table II, graph II shows that in group I, 14 patients were diabetic, 6 had hypothyroidism and 10 had cardiovascular disease, 6 had osteoporosis and 12 had hypertension. The difference was statistical significant (P<0.05).

**Graph II** **Medically compromised patients in group I**

**Table III Outcome of dental implant treatment in both groups**

|  |  |  |
| --- | --- | --- |
| **Groups** | **Survival rate** | **P value** |
| Group I | 72% | 0.001 |
| Group II | 94% |

Table III graph III shows that survival rate in group I was 68% and I group II was 92%. The difference was significant (P< 0.05).

**Graph III Outcome of dental implant treatment in both groups**

**DISCUSSION**

The impact of systemic disease risks on the outcome of implant therapy is unclear, since there are few if any published randomized controlled trials (RCTs). There are very few accepted absolute medically related contraindications to dental implant treatment, although a number of conditions may increase the risk of treatment failure or complications. The degree of systemic

disease control may be far more important than the nature of the disorder itself, and individualized medical equilibrium should be established prior to implant therapy. For many of these patients, the life quality and functional benefits from dental implants may outweigh the risks.4 The present retrospective study was conducted to assess outcome of dental implants in medically compromised patients.

In present study, group I consisted of 48 patients with 70 dental implants. Group II consisted of 48 patients with 72 implants. Group I was medically compromised and group II was healthy subjects. Bhatia et al5 found that a total of 204 patients were included in the research, in the study group, 93 patients with 528 dental implants and in the control group, 111 patients with 475 dental implants. No significant differences were found between the groups regarding implant failures or complications. The failure rate of dental implants among the patients was 11.8%in the study group and 16.2%in the control group (P = 0.04). It was found that patients with a higher number of implants (mean 6.8) had failures compared with patients with a lower number of implants (mean 4.2) regardless of their health status. According to Spiekermann et al6 27.3 % of cases of cardiovascular disease patients developed peri-implantitis and 3.0 % of individuals developed peri-implant mucositis.

We found that in group I, 14 patients were diabetic, 6 had hypothyroidism and 10 had cardiovascular disease, 6 had osteoporosis and 12 had hypertension. The survival rate in group I was 68% and I group II was 92%. A further potential complication in osteoporotic patients is the possible effects on bone turnover at the OI interface of systemic medication used to manage the problem. Failures in patients using bisphosphonate therapy are well recognized but it is now evident that bisphosphonates, and Pamidronate, Zoledronate and Alendronate, in particular, are linked to painful refractory bone exposures (sometimes termed osteochemonecrosis) in the jaws, although this complication is more common in patients who have received intravenous agents in high doses, usually for the management of hypercalcemia of malignancy.7

Most case series, cohort studies, and systematic reviews support that DI in diabetics with good metabolic control have similar success rates when compared to matched healthy controls, maintenance programme receiving conventional or advanced implant surgery (sinus floor elevation, immediate loading, and guided bone regeneration). However, impaired implant integration has been reported in relation to hyperglycaemic conditions in diabetic patients and in animal models.8,9

Severe periodontitis is frequent in patients with congenital neutrophil deficiencies and therefore, high occurrence of peri-implant infection should be expected when implants are placed in these patients. There are however some case reports of successful implant placement in patients with Papillon-Lefevre syndrome and von Gierke syndrome.10

**CONCLUSION**

Authors found that medical compromised state affects the outcome of dental implant treatment. Patients such as diabetes, osteoporosis and hypothyroidism etc. had lower survival rate as compared to healthy subjects.

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