**ORIGINAL RESEARCH**

# Assessment of success rate of dental implants in medically compromised patients

Chandandeep Singh[1], Rohit Goyal[2], Jagdeep Singh[3], Hardip Singh[4]

[1]Assistant Professor, [2]Professor, Department of Oral and Maxillofacial Surgery, Maharaja Ganga Singh Dental College & Research centre, Ganganagar, Rajasthan, India
[3]Assistant Professor, Department of Surgery, Govt. Medical College, Amritsar, Punjab, India
[4]Professor & HOD, Department of Medicine, Govt. Medical College, Amritsar, Punjab, India

**Corresponding Author**
Hardip Singh
Professor & HOD, Department of Medicine, Govt. Medical College, Amritsar, Punjab, India

Received: 14 June, 2023 Accepted: 18 July, 2023

**ABSTRACT**

**Background:** Patients with a healthy immune system show 90% and 95% success rates for dental implants, according to data from 10 years of follow-up. The present study was conducted to assess the success rate of dental implants in medically compromised patients. **Material & methods:** 58 medically compromised patients of both genders and an equal number of healthy subjects was taken as control. Parameters such as the amount of bone loss around the implant, signs of infection, and level of bone around the implant were recorded. The survival rate was recorded. **Results:** Group I had 23 males and 35 females with 86 dental implants. Group II had 25 males and 33 females with 90 dental implants. In group I, 24 patients were diabetic, 16 had hypertension, 4 had hypothyroidism, 10 had cardiovascular disease and 4 had osteoporosis. The difference was significant (P<0.05). The survival rate in group I was 65% and in group II was 92%. The difference was significant (P< 0.05). **Conclusion:** Patients such as diabetes, osteoporosis and hypothyroidism etc. had lower survival rate as compared to healthy subjects.

**Key words:** diabetes, osteoporosis, hypothyroidism



## INTRODUCTION

Patients with a healthy immune system show 90% and 95% success rates for dental implants, according to data from 10 years of follow-up.[1] Due to breakage, infection of the peri-implant tissues, or lack of osseointegration during early healing or while the implant is already functioning, dental implants can fail.[2] This results in the loss of implant support. Pain, infection, and in rare cases neuropathy are possible early consequences following implant implantation. Severe early complications such as hemorrhage, infection, facial spaces cellulitis, or descending necrotizing mediastinitis have also been described.[3,4] Type of bone, amount of bone, length of edentulous jaw segment, hidden pathologies such as root pieces, inflammatory processes etc., play vital role in implant success.[5] Systemic conditions such as hypothyroidism, diabetes, mellitus, bleeding disorders, thyrotoxicosis, xerostomia, smoking, osteoporosis, CVS etc., are few conditions which pose challenge to dental implant treatment. Absolute contraindications consist of myocardial infarction and cerebrovascular accident, cardiac transplant, immunosuppression, active treatment of malignancy, drug abuse, and psychiatric disorders.[6] The present study was conducted to assess the success rate of dental implants in medically compromised patients.

## MATERIALS & METHODS

This study was conducted on 58 medically compromised patients of both genders who underwent dental implants 5 years back. An equal number of healthy subjects was taken as control. All gave their written consent to participate in the study. Data such as name, age, gender, etc. were retrieved from the case file. Parameters such as the amount of bone loss around the implant, signs of infection, and level of bone around the implant were recorded. The survival rate was recorded. The results obtained were subjected to statistical analysis. P value less than 0.05 was considered significant.

## RESULT

**Table I: Distribution of patients**

| Groups | Group I | Group II |
|---|---|---|
| M:F | 23:35 | 25:33 |
| Dental implants | 86 | 90 |

Table I shows that group I had 23 males and 35 females with 86 dental implants. Group II had 25 males and 33 females with 90 dental implants.

**Table II: Medically compromised patients**

| Medical condition | Number | P value |
|---|---|---|
| Diabetes | 24 | 0.01 |
| Hypertension | 16 | |
| Hypothyroidism | 4 | |
| CVD | 10 | |
| Osteoporosis | 4 | |

Table II, graph II shows that in group I, 24 patients were diabetic, 16 had hypertension, 4 had hypothyroidism, 10 had cardiovascular disease and 4 had osteoporosis. The difference was significant (P<0.05).

**Graph II: Medically compromised patients**

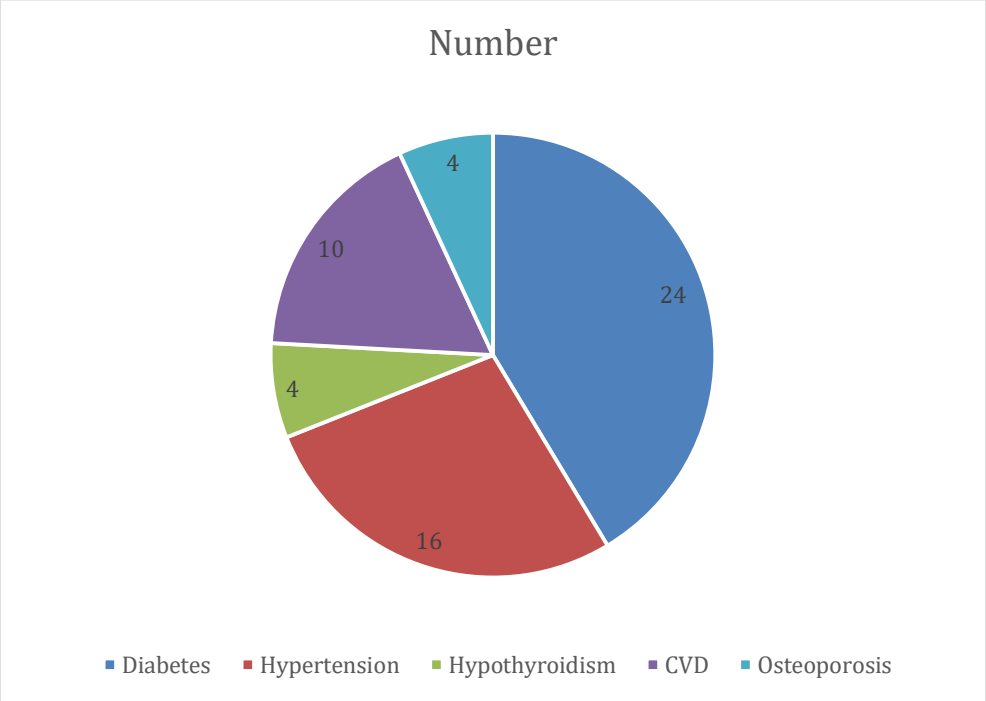
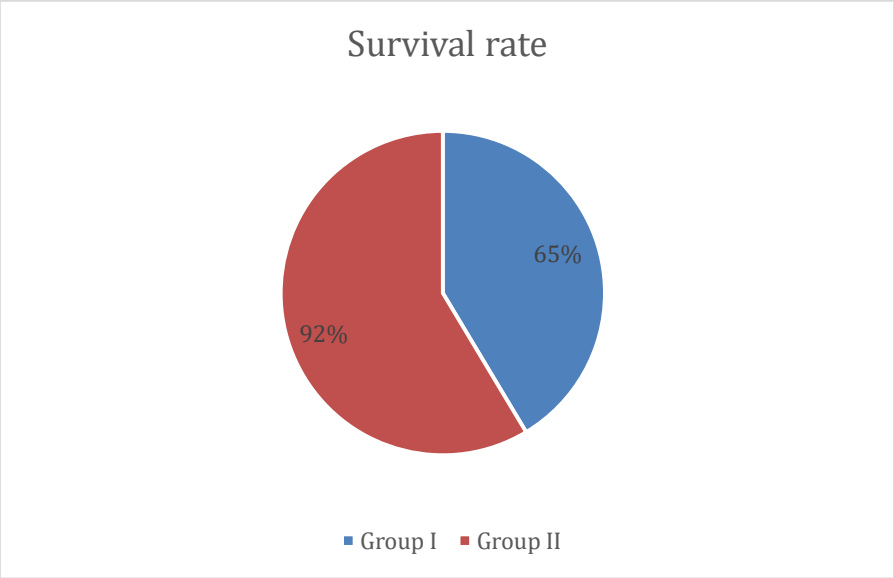



**Table III: Outcome of dental implant treatment**

| Groups | Survival rate | P value |
|---|---|---|
| Group I | 65% | 0.02 |
| Group II | 92% | |

Table: III graph II shows that survival rate in group I was 65% and in group II was 92%. The difference was significant (P< 0.05).

**Graph II: Outcome of dental implant treatment**




## DISCUSSION

Although a number of disorders may raise the likelihood of treatment failure or complications, there are relatively few recognised absolute medically related contraindications to dental implant treatment.[7] Prior to implant therapy, an individual's medical equilibrium should be established because the level of systemic illness control may be significantly more crucial than the disorder's actual type. The benefits of dental implants in terms of life quality and functionality may be greater for many of these people than the dangers.[8] The present study was conducted to assess the failure of dental implants in medically compromised patients. We found that group I had 23 males and 35 females with 86 dental implants. Group II had 25 males and 33 females with 90 dental implants. Parihar et al[9] assessed failure rate of dental implant in medically compromised patients. This study comprised of 68 medically compromised patients of both genders who underwent dental implants 5 years ago (Group I). Equal number of healthy subjects was taken as control (Group II). Amount of bone loss around the implant over 1mm of bone loss in the first year and over 0.3 mm bone loss every subsequent year were considered as failures. The age group of 30-40 comprised of 25 patients in group I and 35 in group II, 40-50 years had 27 in group I and 23 in group II and 50-60 years had 16 in group I and 10 in group II. Medically compromised patients were diabetes (25) with 30 dental implants followed by osteoporosis (16) with 17 dental implants, hypothyroidism (12) with 14 dental implants, organ transplant (10) with 12 dental implants and CVD (5) with 7 dental implants. In group I, there were 18 (22.5%) and in group II, there were 4 (5.56%) dental implant failures. The difference with chi- square test found to be significant $P < 0.05$). We found that in group I, 24 patients were diabetic, 16 had hypertension, 4 had hypothyroidism, 10 had cardiovascular disease and 4 had osteoporosis. The survival rate in group I was 65% and in group II was 92%. Bhatia et al[10] 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. 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 al[11] 27.3 % of cases of cardiovascular disease patients developed peri-implantitis and 3.0 % of individuals developed peri-implant mucositis. Mathpati et al[12] assessed dental implant failure in medically compromised patients compared to control group. This study comprised of 50 medically compromised patients of both genders who underwent dental implants 7 years ago (Group I). Equal number of healthy subjects was taken as control (Group II). The most commonly seen medically compromised patients were diabetes (20) with 24 dental implants followed by Hypothyroidism (12) with 12 implants, osteoporosis (8) with 15 dental implants, organ transplant (7) with 8 dental implants and CVD (3) with 3 dental implants. The implant failure was 15 (30%) in group I, and 3 (6%) in group II. At first year, in group I, mean bone loss around implant was 1.18 mm and 0.4 mm in group II. Up to 5 years, in group I, mean bone loss around implant was 2.8 mm and 1.3 mm in group II.

## CONCLUSION

Authors found that patients such as diabetes, osteoporosis and hypothyroidism etc. had lower survival rate as compared to healthy subjects.

## REFERENCES

1. Al-Sabbagh M, Okeson JP, Khalaf MW, Bhavsar I. Persistent pain and neurosensory disturbance after dental implant surgery: pathophysiology, etiology, and diagnosis. Dent Clin N Am 2015; 59: 131–142.
2. Balshi TJ, Wolfinger GJ. Management of the posterior maxilla in the compromised patient: historical, current, and future perspectives. Periodontol 2003; 33:67–81.
3. Teswe, Schiegnitz E, Al-Nawas B, Kammerer PW, Grotz KA. Oral rehabilitation with dental implants in irradiated patients: a meta-analysis on implant survival. Clin Oral Investig 2014; 18:687–698.
4. Moraschini V, Poubel LA, Ferreira VF, Barboza Edos S. Evaluation of survival and success rates of dental implants reported in longitudinal studies with a follow-up period of at least 10 years: a systematic review. Int J Oral Maxillofac Surg 2014; 44:377–388.
5. Scully C, Hobkirk J, Dios PD. Dental endosseous implants in the medically compromised patient. J Oral Rehabil 2007; 34:590–599.
6. Ashok, Balshi TJ, Latur. Management of the posterior maxilla in the compromised patient: historical, current, and future perspectives. Periodontol 2003; 33:67–81.
7. Diz PA, Scully CB, Sanz MC. Dental implants in the medically compromised patient. J Dent. 2013; 41:195–206.
8. Mehta, Alberktsson T, Zarb G, Worthington P, Eriksson AR. The long-term efficacy of currently used dental implants: A review and proposed criteria of success. Int J Oral Maxillofac Implants 1986;1:11– 25.
9. Parihar AS, Madhuri S, Devanna R, Sharma G, Singh R, Shetty K. Assessment of failure rate of dental implants in medically compromised patients. Journal of family medicine and primary care. 2020 Feb;9(2):883.
10. Bhatia A, Bains SK. Assessment of outcome of dental implant therapy in different age groups- A clinico-radiographic study. Int J Res Health Allied Scie. 2019; 5(1): 45-48.
11. Spiekermann H, Jansen VK, Richter EJ. A 10-year follow-up study of IMZ and TPS implants in the edentulous mandible using bar-retained overdentures. Int J Oral Maxillofac Implants 1995; 10:231–243.
12. Mathpati SK, Halli VM, Gupta A, Patidar M, Batham PR, Jerry JJ. Evaluation of dental implants failure rate in medically compromised patients: A randomized case control study. Journal of Pharmaceutical Negative Results. 2022 Oct 20:3209-12.