

Research was Carried Out to Evaluate the Various Factors Influencing the Survival Rate of Dental Implants

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ABSTRACT

Aim: Dental implants had appeared to be the novel therapeutic strategy for vast popularity of respondents, and they are predicted to part in key role in oral restoration in future. The current research remained carried out to evaluate aspects that influence the rate of survival of dental implants.

Methods: The latest research was carried out in Department of Endodontics. The above research included 5600 clients who had dental implants placed between March 2021 and Feb 2022 in Sir Ganga Ram Hospital, Lahore. Patients to hormonal imbalances, chronic contagious diseases, drug therapies, pregnant women, drug and alcohol addicts, and cases of severe chronic periodontitis have altogether been excepted. Name, oldness, sex, length, diameter, position, and bone quality remained one of the specifications recorded. IBM SPSS Statistics version 24.0, was used to tabulate and statistically significant analyze data.

Results: There have been 2900 males and 2700 females among the 5600 patient populations. Maximum implant failures (56) were observed in patients over the age of 63 (males – 560, females –720). 22 ended in failure implants were found in the 42-year-old age category (males 760, females 570). There were 46 failed implants in the age group 42–61 years (males – 1600, females – 1270). The difference is not significant ($P = 0.22$). Implants with such a length of >12.6 mm (41/720) failed the most, accompanied by implants with either a length of 11 mm (23/1750) and 11–12.6 mm (65/2960). The distinction was statistically significant ($P 0.06$). Implants with just a diameter of 4.78 mm failed the most (40/1500), shadowed through implants having the width of >6.7 mm (17/1700) and implants with such the width of 4.78–5.6 mm (50/2600). The Chi-square test yielded statistically substantial ($P 0.06$). Mandibular posterior implants failed at 4.4 percent, maxillary posterior at 3.3 percent, maxillary anterior at 3.3 percent, and mandibular anterior at 2 percent; the current variance remained substantial ($P 0.06$). Type I bone had a 0.4 percent implant failure rate, Type II had the 1.96 percent disappointment degree, Type III had a 4 percent failure rate, and Type IV had a 0.9 percent failure rate; above distinction was substantial ($P 0.06$).

Conclusion: The survival degree of implants is determined by variables just like age, implant measurement, radius, bone quality, but instead implant location. We discovered that implants greater than 12.6 mm in measurement and 4.76 mm diameter, placed in mandible posterior portion of Type III bone, had the highest failure rate.

Keywords: Dental implants, new therapeutic strategy, oral restoration in the future.

INTRODUCTION

In ancient times, either changeable or fixed partial dentures have been utilized to replace missing teeth. Dental implants have appeared as a novel therapeutic strategy for the significant proportion of cases, and they are anticipated to predict important part in oral recovery in future [1]. A dental implant remains very surgical module that interfaces to jaw or skull bone to sustenance the dental prosthesis including a crown, bridge, denture, facial prosthesis, or to act by way of an orthodontic doctor [2]. Over past 12 years, the rate of success of implants has indeed been revealed to be between 91 and 96 percent. Despite the fact that it has become the treatment of choice for the majority of dentists, the adverse effects associated with dental implant remain the much more challenging task. Initial problems of implant comprise bleeding from the implant site, disease, and pain. Failure of dental implants is quite common. Implant failure is caused by a lack of osseointegration throughout initial healing, infection of new or amended tissues, and breakage. Surgical treatment has few hints and potential side effects [3]. Doctors to epilepsy, children and teenagers, clients to endocarditis, a history of osteoradionecrosis, smokers, and diabetic patients are all potential side effects to implant placement. Individuals with a history of myocardial injury, cerebrovascular accident, health care workers through such a history of bleeding, a history of heart transplantation, immune suppression, active handling of spite, drug addicts, in addition psychiatric disease remain ultimate potential side effects. There seem to be numerous interconnected aspects that relate to implant disappointment. The first set of aspects is host related, the second is proper installation, the third would be surgery related, the fourth is fixed prosthesis fixture related, and the fifth is spinal cord stimulator prosthesis related [4]. The participant's age and gender, smoking habits, illness, and oral hygiene are all host associated aspects. Implant placement site related variables

include bone quantity and quality. Surgery connected aspects include steadiness, implant angulations and direction, and an operator's skill. Surface finish, diameter and length of a dental implant, macrostructure and microstructure of an implant fixture remain all contributing aspects to implant fixtures. Implant prosthesis variables include prosthesis type, retention method, and occlusal scheme [5].

METHODOLOGY

The above research was carried out in the Department of Sir Ganga Ram Hospital in Lahore. Only those dental implants that met inclusion criteria and were placed between March 2021 and Feb 2022 were involved in the study. The current research conducted through two trained individuals who performed radiographic and scientific examinations of patients to dental implants at regular checkup visits to determine the survival rate of dental implants predicated on implant measurement, diameter (4.76–12.6 mm), and bone quality. At 96 percent confidence level and 0.68 standard error, a representative sample of 5200 has been chosen from a sum of 7050 dealing with mental. There were 5600 diagnoses, 2900 men in addition 2700 women, ranging in age from 40 to 60 years. Only those people who took part provided informed consent. The Institutional Organizations Must carefully granted ethical clearance. Service users having the hormonal imbalances, chronic contagious diseases, immunosuppressive therapy, pregnant females, drug and alcohol addicts, and people with acute chronic periodontitis remained altogether excluded. Name, phase, sex, measurement, width, place of implant, and bone quality were all documented variables. Implant survival rates were calculated using length, diameter, placement, and bone quality. The acquired data was statistically analyzed. $P 0.06$ has been considered important.

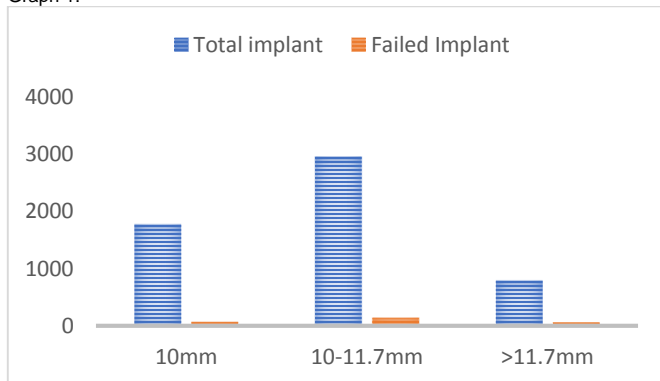
RESULTS

According to Table 1, there were 2900 males and 2700 females among the 5600 patient populations. Table 1 presents that the greatest number of implant failures (67) occurred in patients over the age of 61 (males – 560, females – 750). 22 failed implants were found in the 41-year-old age group (males 760, females 560). There were 46 ended in failure implants in the age set 41–61 years (men – 1700, women – 1260). The P value for the Significant chi-square test is non-important [Table 1]. Graph 2 demonstrates that implants with a length of >12.6 mm (46/800) failed the most, followed by implants having the length of 10 mm (21/1760) and 10–11.5 mm (62/2870), and the distinction was substantial (P 0.06). Figure 2 indicates that implants with something like a diameter of 4.76 mm failed the most (50/1100), accompanied by implants with just a diameter of >5.6 mm (18/1700) and implants having the diameter of 4.76–5.6 mm (56/2700). The Significant chi-square test yielded substantial result (P 0.06). Graph 3 displays that inframaxillary subsequent implants failed at 4.4 percent, maxillary posterior at 3.3 percent, maxillary anterior at 3.2 percent, and mandibular occipital at 2 percent. The distinction has been statistically important (P 0.06). Graph 4 shows that Type I bone had a 0.4 percent prosthetic letdown rate, Type II had the 1.96 percent failure rate, Type III had a 4 percent failure rate, and Type IV had the 0.9 percent rate of failure. The distinction was statistically relevant (P 0.06).

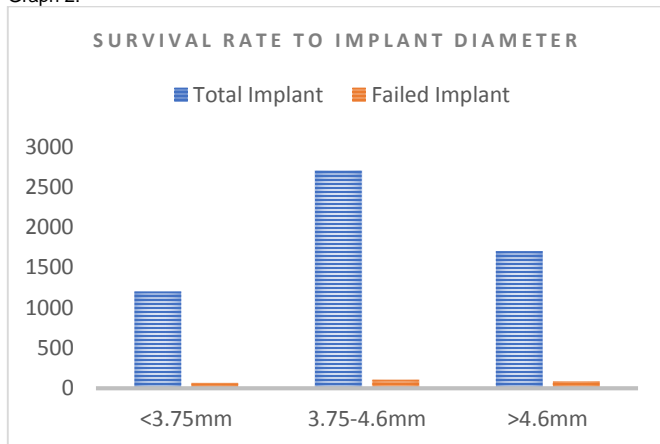
Table 1:

Age	Female	Male	Failed implants	P value
<41	670	860	25	0.22
42- 63	1360	1700	47	
>64	900	670	59	

Graph 1:



Graph 2:



DISCUSSION

New progress in dentistry had transformed usage of dental implants. As a result, missing teeth could remain effectively achieved. Dental implants are in high demand these days. Implant failures, on the other hand, are not uncommon. There are two types of system failures: initial failure and late inability. Initial failure occurs when osseointegration fails within several weeks or even months [6]. Initial failure can be caused by bone necrosis, bacterial infection, surgical trauma, insufficient preliminary consistency, as well as initial osseous loading. Delayed failure is defined as failure that manifests itself for a time frame of functional loading. It occurs as a result of infectious disease and overburdening [7]. The point of the study would have been to look at the different variables that impact the rate of survival of dental implants. We discovered that the age group over 61 years old had the highest rate of graft rejection [8]. 25 failed implants were found in the 41-year-old age group. There were 46 failed implants in the age group 40–62 years. It has been observed that as clients' ages increase, so does their failure rate. We discovered that implants with lengths greater than 12.6 mm failed the most, accompanied by implants with lengths of 11 mm and 11–12.6 mm. Nevertheless, Esposito discovered that implants with something like a length of 10 to 11.5 mm had the highest failure rate [9-10]. In his research, Misch discovered that implants 12 mm in length had lower success rates (8 percent – 26 percent) than longer 12 mm implants.

CONCLUSION

The survival degree of implants is determined by variables just like age, implant extent, diameter, bone quality, and implant location. Humans discovered that implants larger than 12.6 mm in size, implants with such a diameter of 4.76 mm, implants located in mandibular subsequent area, and implants placed in Type III bone had the highest failure rates.

REFERENCES

1. Kowal P, Chatterji S, Naidoo N et al (2021) Data resource profile: the World Health Organization Study on global AGEing and adult health (SAGE). *Int J Epidemiol* 41:1639–1649. <https://doi.org/10.1093/ije/dys210>
2. Organization WH (2016) World health statistics 2019: monitoring health for the SDGs sustainable development goals. World Health Organization
3. Saeedi P, Petersohn I, Salpea P et al (2019) Global and regional diabetes prevalence estimates for 2019 and projections for 2030 and 2045: results from the International Diabetes Federation Diabetes Atlas, 9(th) edition. *Diabetes Res Clin Pract* 157:107843. <https://doi.org/10.1016/j.diabres.2019.107843>
4. Kumar A, Arora A, Sharma P et al (2020) Is diabetes mellitus associated with mortality and severity of COVID-19? A meta-analysis. *Diabetes Metab Syndr* 14:535–545. <https://doi.org/10.1016/j.dsx.2020.04.044>
5. Strain WD, Paldanius PM (2019) Diabetes, cardiovascular disease and the microcirculation. *Cardiovasc Diabetol* 17:57. <https://doi.org/10.1186/s12933-018-0703-2>
6. Taboza ZA, Costa KL, Silveira VR et al (2018) Periodontitis, edentulism and glycemic control in patients with type 2 diabetes: a cross-sectional study. *BMJ open diabetes Res care* 6:e000453. <https://doi.org/10.1136/bmjdr-2017-000453>
7. Lima SMF, Grisi DC, Kogawa EM et al (2019) Diabetes mellitus and inflammatory pulpal and periapical disease: a review. *Int Endod J* 46:700–709. <https://doi.org/10.1111/iej.12072>
8. Genco RJ, Graziani F, Hasturk H (2020) Effects of periodontal disease on glycemic control, complications, and incidence of diabetes mellitus. *Periodontol* 2000 83(1):59–65. <https://doi.org/10.1111/prd.12271>
9. Poudel P, Griffiths R, Wong VW et al (2020) Perceptions and practices of general practitioners on providing oral health care to people with diabetes-a qualitative study. *BMC Fam Pract* 21:34. <https://doi.org/10.1186/s12875-020-1102-9>
10. Jiang X, Zhu Y, Liu Z et al (2021) Association between diabetes and dental implant complications: a systematic review and meta-analysis. *Acta Odontol Scand* 79:9–18.