

A Retrospective Investigation of Determining the Factors of Dental Implant Survival Rate

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ABSTRACT

Aim: Dentists have developed as both a novel potential treatment for the majority of the patients, and they are projected to play a significant part in oral rehabilitation in future. The latest research was carried out to evaluate several parameters influencing the chance of survival of dental work.

Methods: The current investigation was carried out in Services Hospital, Lahore. This study includes 5300 individuals who had dental implants implanted between June 2020 and May 2021. Individuals with hormonal imbalances, chronic infectious illnesses, immunosuppressive medication, pregnant women, drug and alcohol abusers, and suffering from chronic periodontal disorders have also been excluded. Name, age, gender, length of implant, diameter of implant, placement of implant, and biomechanical properties were among the parameters reported.

Results: There were 2900 men and 2500 women among 5400 individuals. Highest implantation losses (56) were observed in patients above the age of 59 (males – 560, females – 740). There were 21 unsuccessful implantations in the 41-year-old age category (males 760, women 560). There were 46 unsuccessful implants in the age category 40–61 years (males – 1600, women – 1100). The change remained not statistically substantial ($P = 0.22$). Implant with a length of more than 12.6 mm (44/720) failed the most, followed by implant with a length of 11 mm (23/1670) and 11–11.6 mm (63/2870). The increase was statistical implication ($P 0.06$). Fasteners with just a diameter of 4.77 mm (17/1640) and implantation with a length of 5.77–3.6 mm (53/2700) failed the most (33/1050).

Conclusion: The existence rate of prostheses is resolute by limitations just like age, entrenched length, diameter, bone quality, also implanted location. Researchers discovered that implants more than 12.6 mm in height and 4.76 mm in diameter, put in the mandibular posterior area of Type III bones, had the highest failure rate.

Keywords: Dental Implant Survival Rate, potential treatment.

INTRODUCTION

To replace missing teeth in ancient times, either removable or fitted partial dentures were employed. Dental work has emerged as an innovative therapeutic approach for the great percentage of patients, and they are expected to play a significant role in oral regeneration in the coming. A cosmetic dentistry is a mechanical element that attaches to jaw or skull bone to maintain the dental prosthesis just like a bridge, bridge, denture, face prostheses, or to serve as an orthodontic anchorage [1]. Over the last 15 years, the overall performance of implantation has indeed been estimated to be between 91 and 96 percent. Though it has been the therapy of choice for the majority of dentists, the difficulties due to dental stent placement remain the most difficult obstacle. Early problems of implant include bleeding from the implant site, infection, and discomfort. Rejection of dental implants is extremely prevalent [2]. Transplant placements have limited advantages and limitations. Individuals without epilepsy, children and adolescents, individuals experiencing endocarditis, a past of osteoradionecrosis, smokers, and diabetic patients are all contraindicated for implant insertion [3]. Patients diagnosed of myocardial infarction, cerebrovascular accident, hemorrhage, a history of heart transplant, immunological suppression, active cancer treatment, drug abusers, and psychiatric disorder are absolute contraindications. There are also several interconnected elements that contribute to graft rejection. The first set of characteristics is host-related, the second is implants insertion homepage, the third is multiple surgeries, the fourth is implant refers to keeping, and the fifth was implanted prosthesis-related [4]. The participant's age and sex, smoking habits, systemic illness, and oral hygiene are all host related variables. Implant insertion site considerations include arch position, reduced bone, and quantity. Surgery related considerations include cohesive strength, implantation angulations and orientation, and an operator's expertise [5].

METHODOLOGY

The study was carried out by two trained personnel who conducted radiographic and medical exams on patients with dental implants

at future visits to estimate the possibility of implant survival based on implant length, thickness (4.76–12.6 mm), and biomechanical parameters. At 96 percent level of certainty and 0.68 probability value, a sample size of 5300 was chosen from a total of 7020 treated patients. There were 5300 patients, 2900 men and 2500 females, ranging in age from 42 to 61 years. All persons who took part provided informed consent. The Institution Companies Must carefully granted approval from the ethics. Individuals with hormonal imbalances, respiratory syncytial illnesses, immunological medication, pregnant females, drug and alcohol abusers, and moderate to severe periodontal disorders were also excluded. Name, age, gender, duration of implantation, thickness of prosthetic, placement of implant, and biomechanical properties were among the parameters reported. The collected data remained statistically examined. $P 0.06$ were considered vital. Statistical analysis was performed with IBM SPSS Statistics for Windows, Version 21.0, IBM Corp., Armonk, NY, USA, using Significant chi-square trial with a statistical significance of 0.06.

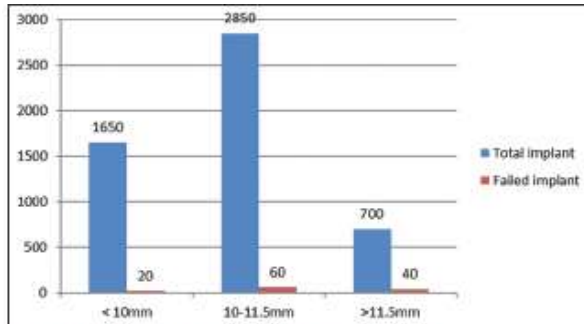
RESULTS

According to Table 1, there were 2900 men and 2500 females among the 5300 participants. Table 1 reveals that the majority of complications associated (56) occurred in people above the age of 61 (males – 560, females – 710). There were 21 failed implants in the 41-year-old age group (males 760, females 560). 47 failed implants were found in the 40–62 age range (males – 1600, females – 1160). The P value for the Chi-square test is nonsignificant [Table 1]. Graph 1 indicates that implantation with both a length of >12.6 mm (45/710) failed the most, following by implant with a length of 11 mm (21/1660) and 11–12.6 mm (65/2870), and the differential was substantial ($P 0.06$). Graph 2 indicates that implanted with either a diameter of 4.76 mm failed the most (32/1100), trailed by implant with a diameter of >5.6 mm (17/1700) and implanted with a height of 4.76–5.6 mm (55/2700). The Chi-square test yielded statically meaningful findings ($P 0.06$). Graph 3 reveals that mandible posterior implants failed at 4.4

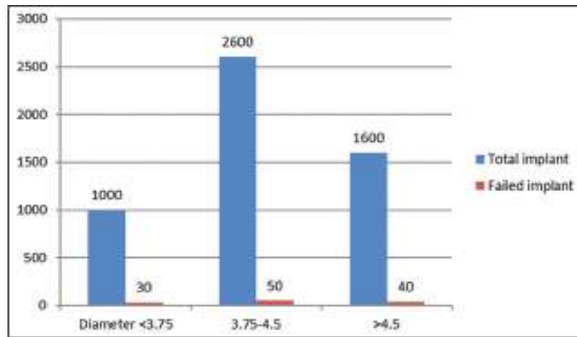
percent, maxillary anterior at 3.3 percent, maxillary anterior at 3.2 percent, and mandibular anterior at 2 percent. The increase was statistical significance (P 0.06). Graph 4 reveals that Type I bone had a 0.5 percent implantation failure rate, Type II had a 2.97 percent failure rate, Type III had a 5 percent fail rate, and Type IV had a 0.9 percent failure rate. The increase was statistically significant (P 0.06).

Table 1:

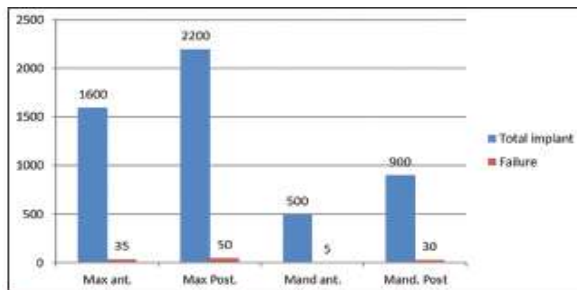
| Age group | Female | Male | Failed implants | P |
|-----------|--------|------|-----------------|------|
| <41 | 760 | 560 | 22 | 0.23 |
| 42- 61 | 1600 | 1170 | 46 | |
| >61 | 570 | 710 | 57 | |
| Total | 2930 | 2430 | 123 | |



Graph 1: Survival rate according to implant length



Graph 2: Survival rate according to implant diameter



Graph 4: Survival rate according to bone quality

DISCUSSION

New development in dentistry have revolutionized any use of dental implants. As a result, missing teeth can really be effectively treated. Dental implants are in high demand these days. Transplant failure, on the other hand, are not uncommon [6]. There are two types of failure rates: early failing and late failure. Rapid failure occurs when bone formation fails within the next few weeks to months. Early failure can be caused by bone necrosis, bacterial infection, surgical stress, insufficient initial stiffness, and early occlusal loading. Late failure is defined as breakdown that

manifests itself within a duration of practical stress [7]. It occurs as a result of infection and overburdening. We discovered that the majority of complications associated occurred in those over the age of 60. There were 21 failure implants in the 41-year-old age group. There were 46 unsuccessful implants in the 40–61 age range. It has been shown that as patients' ages grow, so does their rate of failure. We discovered that implants with lengths more than 12.6 mm failed the most, trailed by implants with lengths of 11 mm and 11–12.6 mm [8]. This is consistent with the findings of Albertson et al. Nevertheless, Esposito discovered that implant with a length of 11 to 12.6 mm had the highest probability of failure. In the current study, implanted with just a diameter of 4.76mm failed the most, trailed by implants with a diameter of >5.6 mm and implantation with just a diameter of 3.76–4.6 mm [9]. This is consistent with the findings of Shirota et al. In the latest research, 4.4 percentage of mandibular anterior prostheses collapsed, 3.3 percentage of maxillary anterior implants failed, 3.2 percent of maxillary front implant did fail, and 2% of molar region implantation continued to fail. Type I bone had a rate of failure of 0.4 percent, Type II had a failure of 2.96 %, Type III had a failing rate of 4 percent, and Type IV had a failure of 0.9 percent. Type I bone has the highest implant survival rate [10].

CONCLUSION

Considerations including such ages, device length, diameter, biomechanical properties, and implant placement all influence implant survival duration. Researchers discovered that implants larger than 12.6 mm in diameter, implants with just a diameter of 4.76 mm, implants put in the mandibular posterior area, and implants implanted in Type III bone had the highest probability of failure.

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