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Evaluation of Clinical Single Dental Implants Made between 2013 and 2017

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ORIGINAL ARTICLE

Evaluation of Clinical Single Dental Implants Made between 2013 and 2017

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ABSTRACT

Objective: This retrospective study aimed to determine the profile of patients who underwent single tooth implants between 2013 and 2017 and to evaluate long-term follow-up and success. **Methods:** The results of 79 patients who underwent single dental intra-bone dental implantation in Diyarbakır Oral and Dental Health Hospital between 2013 and 2017 were evaluated separately in terms of gender, age, implanted area and number, systemic diseases affecting implant health, and missing implants. **Results:** In this study, single tooth implants were evaluated in 79 patients with a mean age of 39.55 years in men and 30.44 years in women. The 79 dental implants were placed as follows: 6.32% (n = 5) of the lower jaw anterior, 16.45% (n = 13) of the lower jaw premolar, 29.11% (n = 23) of the lower jaw posterior; 11.39% (n = 9) of the upper jaw anterior, 13.92% (n = 11) of the upper jaw premolar, and 22.78% (n = 18) of the upper jaw posterior. Smoking was observed in anamnesis taken from 47 patients. The patients were evaluated in terms of systemic disease risk groups. **Conclusion:** Dental implantation is the most preferred treatment option in adult patients with single tooth deficiencies with success rates up to 96.34%.

Key words: single tooth implant, risk factor, retrospective study

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INTRODUCTION

Dental implant is titanium-based material that is surgically placed under the mucosa, periosteum, or bone in the mouth for function, treatment, or aesthetic reasons after tooth loss to replace the root of the tooth.¹ Given their high success and long-term survival rates, dental implantation is a highly accepted treatment option in recent years to rehabilitate patients with partial tooth deficiency.^{2,3} The main purpose of implantation in single tooth deficiency is to protect the health of neighboring teeth and to obtain good aesthetics and function. Dental implants are preferred for aesthetic purposes in anterior tooth loss and for functional purposes in posterior tooth loss.⁴

Long-term clinical studies reported that implants in animal experiments yield successful results of 90% and above.⁵⁻⁷ However, the risk factors that affect the success of dental implantation should also be considered. These risk factors of patients include the following: age, sex, systemic health status (diabetes, hypertension, cardiovascular diseases, etc.), cigarette and alcohol use status, which jaw is made, which area in

jaws are made (front-back region, which tooth is made instead, etc.), and reasons for losing teeth in the implant area.⁸⁻¹³

In dental implantation, minimizing implant loss and increasing implant use duration are extremely important for the patient and the physician. Therefore, clinical and experimental studies are important to increase the success in this field by setting objective criteria on the basis of scientific literature.

This retrospective study aimed to profile patients who underwent implantation due to a single tooth deficiency in the operation room of Diyarbakır Oral and Dental Health Hospital between 2013 and 2017 and to report the criteria affecting the success of the operation.

METHODS

This study evaluated the results of single dental intra-bone implantations in 82 patients in Diyarbakır Oral and Dental Health Hospital operating room between 2014 and 2017. During the evaluation phase, three

patients experienced implant loss before prosthetic installation. These losses were not observed in the patient groups with systemic diseases affecting implant health. This situation was due to early-period infection at postoperation.

Results were calculated on 79 patients. Treatment planning was performed by taking the history of the patients and using clinical and radiological evaluations (panoramic graph). The standard protocol was applied to all patients. Prosthetic rehabilitation was conducted at 4 months postoperation. Clinical observations and radiographic evaluations were recorded during the control and evaluation sessions of the patients.

RESULTS

In this study, single dental implants were placed in 82 patients. Three of the implants were excluded from the study because they were lost during surgical follow-up. Of the 79 patients, 51 were male and 28 were female with a mean age of 39.55 and 30.44 years (range 18–60), respectively (Table 1).

The systemic health status of the participants is presented in Table 2. No systemic disease was found in 25 of all patients. Two of the patients had a history of chemotherapy about 6–8 years ago and no history of radiotherapy.

The 79 dental implants were placed as follows: the lower jaw anterior: 5(6.32%); the lower jaw premolar: 13(16.45%); the lower jaw posterior: 23(29.11%); the upper jaw anterior: 9(11.39%); the upper jaw premolar: 11(13.92%); and the upper jaw posterior: 18(22.78%) (Figure 1).

The causes of tooth loss in the patients admitted to our clinic were also examined. This study was performed because periodontal diseases affect the success of implant treatment. In this study, 20 of the 79 patients had a history of periodontal loss and required motivation and treatment before treatment. In addition, eight patients underwent implant treatment after orthodontic treatment due to congenital tooth deficiency (Table 3).

DISCUSSION

Dental implantation is a commonly used treatment in the rehabilitation of lost teeth in modern dentistry. In recent years, dental implant applications have increased with the consciousness of patients in single tooth deficiency. This study evaluated the dental profile, clinical results of implants, oral survival rates, and risk factors of individuals who underwent single den-

Table 1. Age range of patients

Age range (years)	Male n(%)	Female n(%)	Total n(%)
18–25	14(27.45)	11(39.28)	25(31.64)
26–35	21(41.17)	9(32.14)	30(37.97)
36–45	9(17.64)	6(21.42)	15(18.98)
45–60	7(13.72)	2(7.14)	9(11.39)
Total	51(100)	28(100)	79(100)

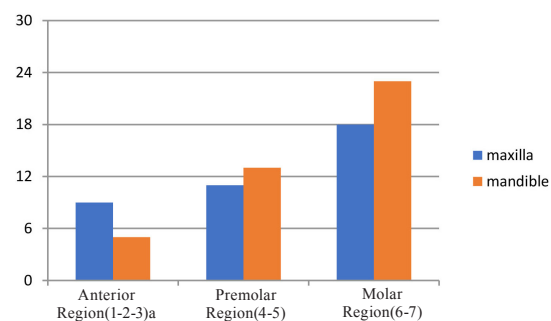


Figure 1. The number of implants according to the site in the oral cavity

tal implantation in Diyarbakır Oral and Dental Health Hospital between 2013 and 2017.

Implant success is more than 95% in a 5-year period.^{14,15} Berglundh et al. reported that the rate of implants falling before loading ranges from 2.16% to 2.53%.¹⁵ In the present study, as a result of early loss of three implants, this rate was 3.65% and the success rate was 96.34%. Literature reviews reported that age factor influences implant success. They reported that some degenerations occur in bone tissue as age increases, which in turn affects implant success.¹⁶⁻²⁰ However, in the present study, age and sex factors showed no effect on implant success. Only the number of treatments due to single tooth deficiency was higher in the younger group than in the older group (55 patients between the ages of 18 and 35; 69.62% of all patients).

The effect of smoking was also evaluated in the present study. Some studies reported that smoking has a negative effect on implant success.²¹ Nitzan et al. expressed that a correct ratio exists between smoking and marginal bone loss.²² Mundt et al. reported a significant difference in implant success between those who used to smoke and those who continued to smoke.²³ However, Kumar et al. studied 1183 implants with an 18-month follow-up and reported that the success rate (97%–94.4%) does not differ significantly between smokers and nonsmokers.²⁴ In the present study, no implant loss was observed in the smoker and non-smoker groups during patient follow-up. These results indicate that smoking exerts no significant effect on the result of implantation.

Table 2. Number of patients and systemic risk factors

Systemic risk factors	Male n (%)	Female n (%)	Total n (%)
Smoking	34 (66.7)	13 (46.4)	47(59.5)
Cardiovascular disease	16 (31.3)	7 (25.0)	23 (29.1)
Diabetes	9 (17.6)	2 (7.1)	11 (13.9)
Hypertension	4 (7.8)	5 (17.9)	9 (11.3)
Tuberculosis	1 (1.9)	-	1 (1.2)
Asthma	2 (3.9)	3 (10.7)	5 (6.3)
Anemia	1 (1.9)	2 (7.1)	3 (3.8)
CA	-	2 (7.1)	2 (2.5)
No systemic disease (Healthy)	18 (35.2)	7 (25.0)	25 (31.6)

Table 3. Gender distribution of causes of dental loss

Causes of tooth loss	Male n(%)	Female n (%)	Total n (%)
Caries	31 (60.8)	16 (57.1)	47 (59.4)
Periodontal disease	14 (27.4)	6 (21.4)	20 (25.3)
Trauma	3 (5.9)	1(3.6)	4 (5.0)
Congenital deficiency	3 (5.9)	5 (17.9)	8 (10.1)

Periodontal disease is an important criterion of implant success. The rate of periodontal disease in the study was 25.31%. Ong et al. found that periodical disease must be controlled before the operation to minimize its effect on implant success.²⁵ Therefore, we prevented bone loss by performing periodontal treatment first.

CONCLUSION

Dental implantation is a successful treatment option for single tooth deficiency. Patients should be evaluated in detail in terms of risk groups and tooth loss to increase the success rate of the operation. Future studies should consider more patients and longer follow-up term to discuss the issue and obtain more accurate results.

CONFLICT OF INTEREST:

The author declares no conflict of interest.

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