



ANALYSIS INTO IMPLANT SITE AND PREFERRED TYPE OF IMPLANT PROSTHESIS - AN INSTITUTIONAL BASED STUDY

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Abstract

In implant dentistry, a fixed dental prosthesis can be either secured by screws to the implant - screw retained or cemented to the abutment - cement retained. This study aims to analyze the implant site and preferred implant prosthesis - screw retained or cement retained restorations to the integrated implant. The study was designed as a retrospective study. In this study, 683 patients with stage 2 prosthetic construction done between June 2020-March 2021 at Saveetha dental college and hospitals were included in the study. Data collection was done using Dental information archiving software (DIAS). Data were collected, analyzed using SPSS Software version 22 and the results were recorded. Out of the 683 patients, 374 were male and 309 were female. The mandibular first molars, 36 - 20.50% and 46- 18.30% were the most frequent sites replaced by implants. Cement retained prosthesis were highly prevalent with 79.80 % than screw retained prosthesis with 20.20%. The screw retained prosthesis were placed more commonly in females and in the 2nd molar region.

Keywords: Cement retained , Fixed prosthesis, Implant prosthesis, Screw retained, innovative technology.

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1. Introduction

Dental implants are surgical components that are positioned within the bone of the jaw to support an artificial crown or bridge where the natural teeth are missing.(1)Replacement of missing teeth with osseointegrated implants has been a major advancement in dentistry. Dental implants have shown high rates of clinical success of more than 90% in fully and partially edentulous patients.(2) A good implant stability, controlled loading conditions as well as osteoconductive implant surface are responsible for a good predictable outcome.(3) In addition, implant designs, surfaces and dental materials have increased the success rate and improved the treatment outcome. The selection of final restoration for the implant is an important part of the treatment concerning implant prosthodontics. The restoration may either be cement-retained or screw-retained.(4)

There are many complications and factors responsible for the implant failure. The factors can be host related like the age, gender and systemic illness of the patient or factors related to the implant placement site - position in the arch, quality and quantity of bone, surgery-related factors like the initial stability, implant fixture related factors like length and diameter of the implant and implant prosthesis-related factors like screw retained or cement retained.(5)

Based on the site of the implant placement, there is a significant lower survival rate or success rate for the maxillary implants than for the mandibular implants especially implants that have been placed in the anterior portion of the maxilla failed significantly than those implants placed in the posterior region.(6)

Cement retained restorations are similar to the conventional crowns where they are fabricated in the laboratory and cemented intraorally which makes the process of fabrication easier.(7) In regards to the esthetics, when the implant is placed in an ideal position predictable esthetics can be achieved in cement retained restorations.(8) Also

there is easy access to the posterior region of the oral cavity especially in patients with limited mouth openings. Obtaining a proper occlusion is an integral part of any prosthesis, and there are no problems in achieving this in cement retained restorations as there are no screw access holes therefore providing an ideal and stable occlusal contacts.(9)

In screw retained implant prosthesis, there were very minor occurrences of peri implantitis and the responses of the peri implant soft tissue were favorable in terms of bleeding on probing and plaque index.(10)The significance of screw-retained prosthesis is known to be effective in regards to retrievability, simpler procedures and oral hygiene.(11)Our team has extensive knowledge and research experience that has translate into high quality publications (12–21))

2. Materials and Method

The study was designed as a retrospective cross clinical study analyzing all the patients with dental implants. The data of 86000 patient records were reviewed and analyzed between June 2020 and March 2021 from which 683 patients with single dental implants with prosthetic construction were identified. The records with incomplete medical documentation, replication of results, improper clinical photographs or diagnosis were excluded from the study. Patient details like age, gender, implant site, type of restoration were recorded. The collected Data was described as frequency distribution and percentage. Statistical analysis was performed using Statistical Package for the Social Sciences, version 22(SPSS). Descriptive analyses were based on quantitative variables and frequencies for categorical variables. A Chi square test was applied to determine the significance between groups. P value < 0.05 was considered to be statistically significant with a confidence interval of 95%.

3. Result and Discussion

The sample size consisted of 683 individuals who were treated with dental implants where the male and female patients ranged 18 yrs of age to 60 and above .

Gender	Percentage
Male	54.76
Female	45.24
Age	Percentage
18-30 yrs	25.62

31-45 yrs	37.92
46-60 yrs	29.28
>60 yrs	7.17
Type of Prosthesis	Percentage
Cement retained	79.8
Screw retained	20.2

Figure 1: Shows the distribution of age, gender and the type of prosthesis among 683 patients evaluated. Cement retained prosthesis were more widely used (79.8%) than screw retained prosthesis.

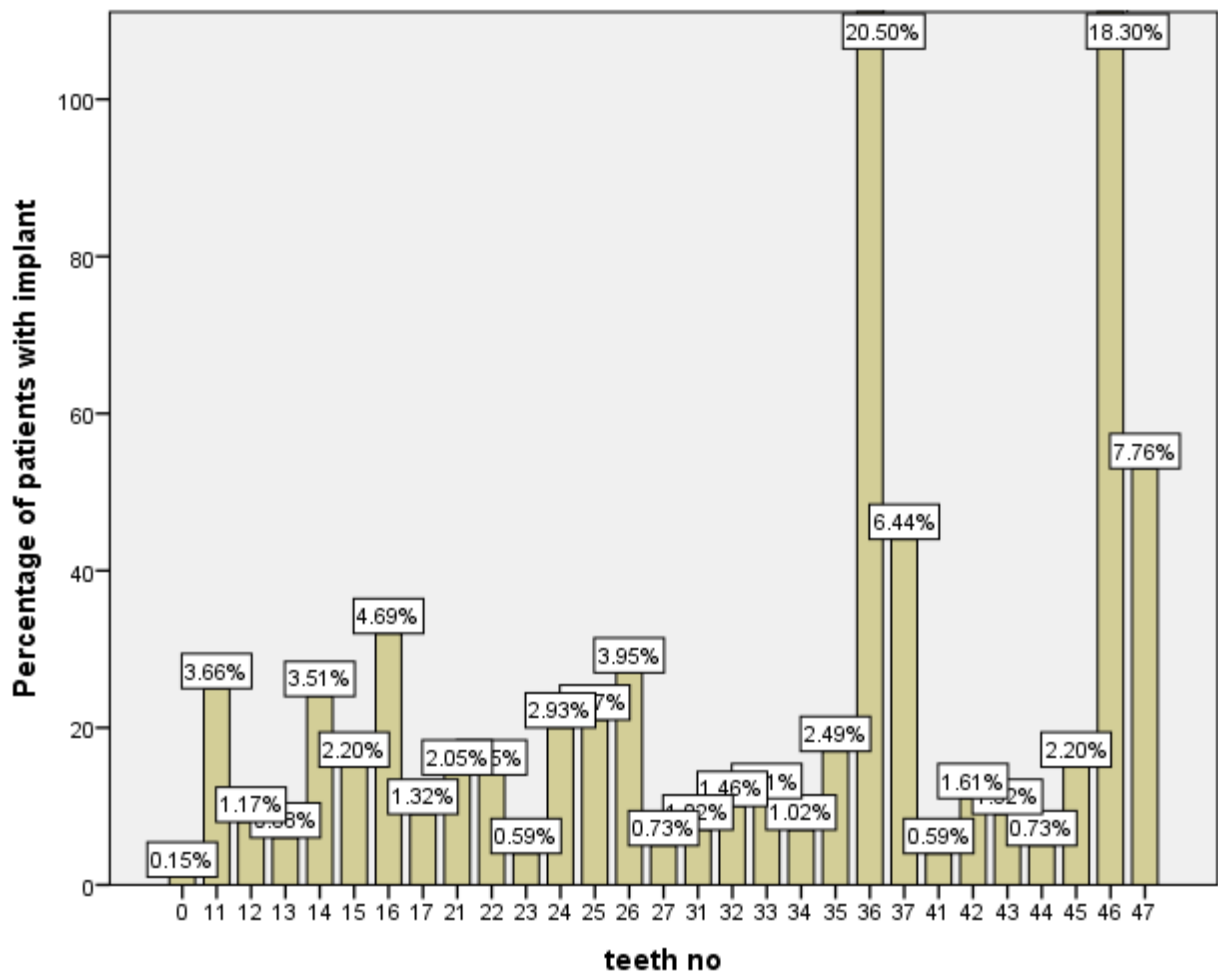


Figure 2- Figure shows the distribution of the dental implant based on the site. X axis represents the site and Y axis represents the percentage of patients with dental implants. 36 and 46 were the most frequently replaced sites with 20.50% and 18.30% respectively. 16 was the mostly frequently replaced site in the maxilla.

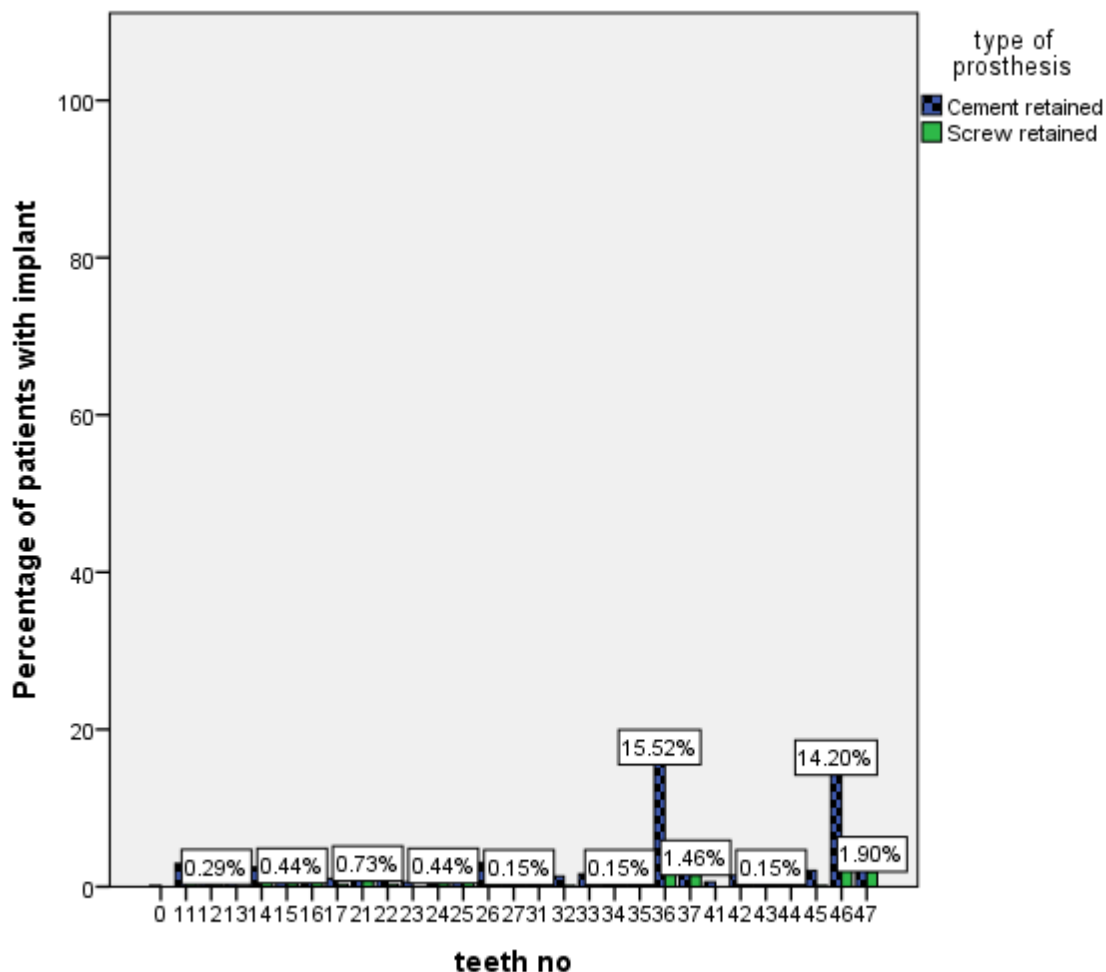


Figure 3- Figure shows the association between site and Type of prosthesis. X axis represents the Teeth no and Y axis the percentage of patients with dental implants . Orange represents cement retained and red represents screw retained. Cement retained was the most common type of prosthesis in 36 and 46 with 15.52% and 14.20% respectively. This was found to be statistically not significant. Pearson Chi square,p= 2(P>0.05,statistically not significant).

In the present study, dental implants were placed more in males than females among the age group 30-45 yrs. Based on the site, the mandibular molar 36 and 46 were the most frequently replaced site than the maxillary implants. In a previous study consisting of 1,920 implants there was a significantly lower success rate for maxillary implants with 37.9% at 100 months of follow up when compared to mandibular implants with 90.4% at 100 months of follow-up.(6)

The current study shows that the cement retained was used more frequently than the screw retained prosthesis. Cement retained prosthesis are easier to fabricate than that of screw retained due to the similarity in the conventional fabrication technique.(7) The extra components in the screw retained prosthesis makes them more expensive than cement retained.(22) Cement retained

prosthesis have better access than screw retained especially in patients with limited mouth opening, also screw retained prosthesis have a risk of aspirating the screws.(22) When comparing the esthetics, both cement retained and screw retained offer good predictability.(23) Cement retained prosthesis provide an ideal and stable occlusion than screw retained as there are occlusal screw access holes that cause hindrance and interfere with protrusive and lateral excursions which might compromise the anterior guidance.³⁴ The present study indicates screw retained prosthesis were more common in 2nd molar region indicating a compromised interarch space or inadequate abutment height are the factors for opting screw retained prosthesis. Similar reports were suggested, as retention is an important factor that affects the longevity of the prosthesis. Cement retained

depends on factors such as taper of abutment like 6 degree, surface roughness (increased), surface area and height - 5 mm and type of cement.(24)However screw retained has good retrievability, lesser occurrence of peri implantitis and improved oral hygiene. Hence screw retained becomes more necessary in extensive cases like cantilevered prosthesis and full arch implant reconstruction.(24) Many previous studies stated that screw retained prosthesis have more complications during follow up periods than the cement retained counterpart.(25),(26),(27),(28),(29),(30),(31)

4. Conclusion

The present retrospective analysis indicates cement retained prosthesis was a more favored line of treatment in single or two teeth replacement in comparison to the screw retained prosthesis. More commonly treated in males than in females and implant prosthesis treatment was more prevalent among the 30-45 age group. Mandibular left first molars were the frequently replaced site. Both screw retained and cement retained prosthesis have some advantages and disadvantages and one type of prosthesis might serve more purpose in a certain clinical situation than the other. Here in the study, it looks like interarch space and abutment height plays a major role in the type of prosthesis being chosen since screw retained were seen more in 2nd molar region.

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Conflict Of Interest:

There was no potential conflict of interest.

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