



Prosthetic Complications of Dental Implants

Dr. Ashwani Sachdeva¹, Dr. Swati Sachdeva², Dr. Sudhanshu Kamboj³, Dr. Ajay Gupta⁴, Dr. Urvi Mittal⁵, Dr. Neha Babbla⁶

¹Reader, Department of Prosthodontics. JCD Dental College, Sirsa.

²Reader, Department of Prosthodontics. JCD Dental College, Sirsa.

³Reader, Department of Prosthodontics. JCD Dental College, Sirsa.

⁴MDS 2nd year Department of prosthodontics, Jcd Dental College, Sirsa.

⁵Senior lecturer Department of prosthodontics, Jcd Dental College Sirsa.

⁶MDS Final year Department of prosthodontics Jcd Dental college sirsa.

Corresponding Author : Dr. Ashwani Sachdeva

Reader, Department of Prosthodontics. , JCD Dental College, Sirsa

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ABSTRACT:

Background: The aim of the current research was to evaluate the prosthetic challenges related to dental implants.

Material and methods: This analysis included a cohort of 100 individuals who had received implant treatment. An investigation of prosthetic issues related to implants was carried out in the patients indicated earlier.

Results: The most prevalent complication observed in prosthetic implants was the loosening of the overdenture retentive mechanism, accounting for 53% of cases. This was followed by implant loss in irradiated maxillae (14%), complications related to haemorrhage (12%), fracture of resin veneer with fixed partial dentures (10%), implant loss with maxillary overdentures (09%), and the need for relining of overdentures (02%).

Conclusion: The study's results revealed that the most common issue identified with prosthetic implants was the loosening of the overdenture retentive mechanism, which accounted for around 53% of the reported instances.

Introduction

Understanding the pattern of tooth loss in a population helps in determining the quality of dental health care being provided, which varies geographically and culturally between countries. Studies have demonstrated that dental caries and periodontal diseases are frequent reasons for tooth extraction.¹⁻⁴ In Pakistan, advanced dental caries (63.1%) followed by periodontitis (26.2%) are two major reasons for tooth loss.⁵

Once a tooth is lost, an individual may seek its replacement so that his/her function and esthetics could be restored. Clinical prosthodontics, during the past decade, has significantly improved and developed

according to the advancements in the science and patient's demands and needs. Conventional options in prosthodontics for substituting a missing single tooth include the removable partial denture, partial and full coverage bridgework, and resin-bonded bridgework.⁶

An attractive alternative to conventional dentures and bridges became available with the introduction of implants into dental industry.^{6,7}

In edentulous situations, however, the choice of fixed or removable implant prostheses is more complex.⁸ A major driver of the decision is facial esthetics (ie, the need for facial tissue support). If both fixed and removable prostheses may be considered, the next factor influencing



the selection is the complexity of the surgical interventions required. With pronounced horizontal and/or vertical bone loss, large amounts of hard and soft tissue regeneration may be needed for fixed implant prostheses.⁹⁻¹¹

The aim of the current research was to evaluate the prosthetic challenges related to dental implants.

Material and methods

This analysis included a cohort of 100 individuals who had received implant treatment. An investigation of prosthetic issues related to implants was carried out in the patients indicated earlier.

Results

The most prevalent complication observed in prosthetic implants was the loosening of the overdenture retentive mechanism, accounting for 53% of cases. This was followed by implant loss in irradiated maxillae (14%), complications related to hemorrhage (12%), fracture of resin veneer with fixed partial dentures (10%), implant loss with maxillary overdentures (09%), and the need for relining of overdentures (02%). (Table 1)

Table 1: prosthetic complications of dental implants among the subjects.

Complications	Number of subjects (%)
Loosening of overdenture retentive mechanism	53(53%)
Implant loss in irradiated maxillae	14(14%)
Haemorrhage related complications	12(12%)
Resin veneer fracture in FPDs	10(10%)
Implant loss with maxillary overdentures	09(09%)
Overdentures needing to be relined	02(02%)

Discussion

The dental industry introduced implants as an appealing alternative to traditional dentures and bridges. Currently, there are two choices available: single crown implants and implant-supported fixed partial dentures (FPDs). Dental implants rely on osseointegration, a process in

which osteoblasts adhere and fuse with the titanium surface of the implants that are surgically inserted into the alveolar bone.¹²

Dental implants have been more popular due to their ability to restore near-normal function in both partially and totally toothless arches. Screw-connected implant systems may exhibit microgaps ranging from roughly 40 to 100 μm at the interface between the implant and abutment. These microgaps might develop plaques and raise the likelihood of peri-implantitis.¹³

Locking-taper implant systems have the potential to significantly decrease the presence of microgaps (1–3 μm) compared to previous systems. This reduction in microgaps may lower the likelihood of peri-implantitis.¹⁴

The aim of the current research was to evaluate the prosthetic challenges related to dental implants.

In this study, the most prevalent complication observed in prosthetic implants was the loosening of the overdenture retentive mechanism, accounting for 53% of cases. This was followed by implant loss in irradiated maxillae (14%), complications related to hemorrhage (12%), fracture of resin veneer with fixed partial dentures (10%), implant loss with maxillary overdentures (09%), and the need for relining of overdentures (02%).

McDermott NE et al (2003)¹⁵ This study sought to identify the types, frequencies, and risk factors associated with complications following placement of dental implants. It was hypothesized that one or more factors could be identified that are associated with an increased risk for complications and may be modified by the clinician to enhance outcome. A retrospective cohort study design was used that included patients who received Bicon implants (Bicon, Boston, MA) between 1992 and 2000. Predictor variables were grouped into demographic, medical history, implant-specific, anatomic, prosthetic, and reconstructive categories. Complications were grouped into inflammatory, prosthetic, operative, and major or minor categories. Cox proportional hazards regression models were developed to identify risk factors for complications. The sample was composed of 677 patients. The overall frequency of implant complications was 13.9% (10.2% inflammatory, 2.7% prosthetic, 1.0% operative), of which 53% were minor. The multivariate Cox model revealed that smoking, use of 1-stage implants, and reconstructive



procedures were statistically associated with an increased risk for overall complications ($P < \text{or} = .05$). The median duration of follow-up was 13.1 months (range 0 to 85.6 months). A lower frequency of complications was found compared to mean frequencies calculated from past reports. Investigations examining the influence of smoking and reconstructive procedures on implant complications are recommended. Of the 3 factors associated with an increased risk for complications, tobacco use and implant staging may be modified by the clinician to enhance outcome.

Goodacre et al (2003)¹⁶ stated that screw loosening or fracture prevailed more with the prosthetic screws as opposed to the abutment screws. Implants restored with single crowns have shown more screw loosening as compared to multiple implants with multiple restored units, and mandibular molar implant restorations are more affected by screw loosening as compared to the maxillary ones. In another study, the incidences of loosening of the abutment screw or the abutment were found to be 59.6% in a follow-up of 15 years.^{17,18} In a systemic review by **Pjetursson et al.**¹⁹ the yearly rate of abutment or screw loosening ranged from 0.62% to 2.29% that converts into a 5-year complication rate ranging from 3.1% to 10.8%. In another follow-up study of Branemark single-tooth implants, screw loosening was reported to be the most frequent complication.²⁰

Conclusion

The study's results revealed that the most common issue identified with prosthetic implants was the loosening of the overdenture retentive mechanism, which accounted for around 53% of the reported instances.

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