

Prosthetic complications of dental implants

Dr.R.Narendra¹, Dr.R. Vijay kumar², Dr. Avernani.Premalatha³, Dr Manjiri Salkar⁴, Dr kapilaggarwal⁵, Dr. Sampada Thobbi⁶

¹Prof&HOD, Department of Prosthodontics, Government Dental College & Hospital, Vijayawada (Corresponding author)

²Associate professor, Dept of Dentistry / Dental surgery, Kunool Medical College.

³ MDS, Dept. Of Prosthodontics, Assistant professor, Govt. Dental college & Hospital, Vijayawada

⁴ Associate Professor (Reader) Department of Prosthodontics, Mahatma Gandhi Vidyamandir's, K B H Dental College & hospital, Nashik

⁵MDS Endodontist, Senior Lecturer Department of Conservative Dentistry and Endodontics, Uttaranchal dental college Dehradun.

⁶Assistant professor, Department of Prosthodontics, Dr. D. Y. Patil dental college and hospital, pune, Dr. D. Y. Patil vidyapeeth, pune

Abstract

Background: The purpose of this study was to assess the occurrence of prosthetic problems associated with dental implants.

Material and methods: A total of 100 patients who had undergone implant treatment were included in this investigation. The analysis of prosthetic problems associated with implants was conducted in the aforementioned participants.

Results: It was observed that the most common prosthetic complication of implants had been loosening of the overdenture retentive mechanism (45%) followed by implant loss in irradiated maxillae (28%), haemorrhage-related complications (16%), resin veneer fracture with fixed partial dentures (5%), implant loss with maxillary overdentures (3%), overdentures needing to be relined (1%), implant loss in type IV bone (1%), and overdenture clip/attachment fracture (1%).

Conclusion: The study's findings indicated that the predominant complication observed among prosthetic implants was the loosening of the overdenture retentive mechanism, which accounted for around 45% of the recorded occurrences.

Keywords: prosthetic complications, dental implants.

Introduction

Dental implants are considered a treatment option to replace missing teeth in edentulous patients. In many clinical situations, insufficient bone volume is a critical limiting factor for dental implant placement and successful osseointegration. Several surgical techniques have been described to obtain adequate bone volume, including bone grafts, sinus lifting, and nerve transposition. These surgeries are technically sensitive and might cause significant postoperative complications such as graft resorptions, severe pain or neurosensory disturbances. Short dental implants have been proposed as a simpler, cheaper, and faster alternative for the rehabilitation of atrophic edentulous areas to avoid the disadvantages of surgical techniques.¹⁻⁵ In edentulous situations, however, the choice of fixed or removable implant prostheses is more complex.⁶ 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.⁷⁻⁹

Hence, this study was carried out to evaluate prosthetic complications of dental implants.

Material and methods

In this study, a total of 100 participants who had undergone dental implant treatment were included. The participants were subjected to an analysis of the complications associated with prosthetic implants.

Results

It was observed that the most common prosthetic complication of implants had been loosening of the overdenture retentive mechanism (45%) followed by implant loss in irradiated maxillae (28%), haemorrhage-related complications (16%), resin veneer fracture with fixed partial dentures (5%), implant loss with maxillary overdentures (3%), overdentures needing to be relined (1%), implant loss in type IV bone (1%), and overdenture clip/attachment fracture (1%). (Table 1)

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

Complications	Number of subjects (%)
Loosening of overdenture retentive mechanism	45(45%)
Implant loss in irradiated maxillae	28(28%)
Haemorrhage related complications	16(16%)
Resin veneer fracture in FPDs	05(05%)
Implant loss with maxillary overdentures	03(03%)
Overdentures needing to be relined	01(01%)
Implant loss in type IV bone	01(01%)
Overdenture clip/attachment failure	01(01%)

Discussion

An attractive alternative to conventional dentures and bridges became available with the introduction of implants into dental industry.^{10,11} At present, both single crown implants and implant-supported fixed partial dentures (FPDs) are the available options. The basis for dental implants is osseointegration, where osteoblasts grow and directly integrate with the titanium surface of the implants surgically placed inside the alveolar bone. Dental implants have gained wide popularity over the years as they are capable of restoring the function to near normal in both partial and completely edentulous arches. Screw-connected implant systems can have microgaps of approximately 40–100 µm at the interface between the implant and abutment, which will accumulate plaques and increase the probability of peri-implantitis.¹² Locking-taper implant systems can greatly reduce the microgaps (1–3 µm) compared to the former and thus may decrease the probability of peri-implantitis. Hence, this study was carried out to evaluate prosthetic complications of dental implants. In this study, it was observed that the most common prosthetic complication of implants had been loosening of the overdenture retentive mechanism (45%) followed by implant loss in irradiated maxillae (28%), haemorrhage-related complications (16%), resin veneer fracture with fixed partial dentures (5%), implant loss with maxillary overdentures (3%), overdentures needing to be relined (1%), implant loss in type IV bone (1%), and overdenture clip/attachment fracture (1%). Goodacre et al.¹³ 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.^{14,15} In a systemic review by Pjetursson et al.¹⁶ 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.¹⁷

Conclusion

Based on the findings of this study, it was determined that the predominant prosthetic problem associated with implants was the loosening of the overdenture retentive mechanism, which accounted for 45% of the observed cases.

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