

Original Article

Assessment of various complications associated with Dental Implant Supported Over-Dentures- A Retrospective Study

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ABSTRACT:

Introduction: Edentulous patients with a severely resorbed mandible or maxilla often experience problems with conventional dentures, such as insufficient stability and retention, together with a decrease in chewing ability. Hence; we planned the present study to assess the complications associated with implant supported over dentures. **Materials & methods:** We planned the present study to retrospectively assess complications in patients rehabilitated with dental implant supported over-dentures. A total of 50 patients with 75 dentures were included in the present study. Follow-up records of the patients of the patients were analyzed by frequency and pattern of complications were recorded. All the results were analyzed by SPSS software. **Results:** A total of 50 patients were included in the present study. Out of 50, 40 patients were males while remaining were females. Denture fracture was the most common complication observed. **Conclusion:** Among partially edentulous patients, fewer complications are observed with denture fracture being the most common complication.

Key words: Complications, Implant, Over-denture.

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INTRODUCTION

Edentulous patients with a severely resorbed mandible or maxilla often experience problems with conventional dentures, such as insufficient stability and retention, together with a decrease in chewing ability. Because of the good prognosis of dental implants, these patients can be successfully treated with implant-retained or implant-supported overdentures.¹⁻³ Several studies reported the following benefits of overdenture in comparison to complete denture treatment in the mandible: better chewing ability, better fit and retention, improved function, and improved quality of life.⁴⁻⁷ Controversially, very few studies have evaluated patient satisfaction with maxillary overdentures.^{8,9} Hence; we planned the present study to assess the complications associated with implant supported over dentures.

MATERIALS & METHODS

We planned the present study in the department of prosthodontics of the dental institute. It included retrospective assessment of complications in patients rehabilitated with dental implant supported over-dentures. For the conducting the present study, we obtained ethical clearance from the institutional ethical committee. We completely analyzed data records of the departments and

obtained data of all the patients who underwent prosthetic rehabilitation by dental implant supported over dentures in the past two years. A total of 50 patients with 75 dentures were included in the present study. After assessing the data records, exclusion criteria for the present study was decided as follows:

- Patients with history of any systemic illness such as diabetes,
- Patients with history of cardiac disease, congenital oral defects,
- Patients with history of Sjogren's syndrome, history of corticosteroids.

The mean age of the patients in the present study was 62.5 years. Conventional 2-stage loading technique or 1-stage immediate loading technique was used for placement of dental implant. The length of dental implant varied from 9 mm to 16 mm on the basis of availability of bone. Follow-up records of the patients of the patients were analyzed by frequency and pattern of complications were recorded. All the results were analyzed by SPSS software. Chi-square test was used for assessment of level of significance. P-value of less than 0.05 was taken as significant.

RESULTS

A total of 50 patients were included in the present study. A total of 75 implant supported dentures were placed in these 50 patients. Out of 50, 30 patients belonged to the age group of 60 to 69 years. Out of 50, 40 patients were males while remaining were females (**Table 1**). Denture fracture was the most common complication observed followed by artificial tooth fracture and bar fracture.

Table 1: Demographic details of the patients

	Parameter	No. of patients	p-value
AGE (years)	50-59	10	0.00
	60-69	30	
	70-79	8	
	80-89	2	
SEX	Male	40	0.00
	Female	10	

Table 2: Prosthetic complications observed in partially and fully edentulous patients

Prosthetic complications	Partially edentulous (20 cases)	Fully edentulous (55 cases)
Denture fracture	3	7
Artificial tooth fracture	2	2
Bar fracture	0	3
Ball attachment detachment	0	1
Clip fracture	1	2
Magnet attachment detachment	1	2

DISCUSSION

In the present study, we observed that the most common prosthetic complication observed by patients of complete edentulous denture or partially edentulous denture was denture fracture followed by artificial tooth fracture. Karabuda C et al evaluated the prosthetic complications of patients with 2 to 4 implants splinted with a round bar or with 2 to 4 unsplinted implants with ball attachments during the follow-up period. A total of 26 patients were included in this study. Patients were randomly provided with a round bar or with ball attachments that were used to retain overdentures. During follow-up visits, the following prosthetic complications were recorded: round bar fracture, fractured overdenture, hygiene complications, abutment screw loose, worn O-ring or replacement of O-ring attachment, and fractured retention clip. The functioning period of overdentures in the round bar group ranged from 12 to 72 months (mean 49), and from 12 to 40 months (mean 23) in the ball attachment group. A total of 20 prosthetic complications were recorded in both groups. No differences in prosthetic complications were observed for 2 attachment systems. Implant-supported overdentures with bar or ball attachments may be considered to be reliable methods in the treatment of the edentulous individuals.¹⁰ Payne AG et al conducted randomized prospective trial on 59 edentulous patients details prosthodontic maintenance and complications of 52 mandibular overdentures (11 unsplinted, 41 splinted) over a 3-year period.

Prosthodontic maintenance was greater in the first year than in subsequent years, regardless of design. Comparison between the splinted designs with round bars revealed no statistically significant difference with either retentive clip activation or fractures. More than 70% of the retention clips in the 2-implant (single round bar) design needed activation, as compared to 44% of those with the 3-implant (double round bar) or 4-implant (triple round bar) design. Retention clip fracture occurred in 30% of patients with 3 or 4 implants and 16% of those with 2 implants. Relining the overdentures, regardless of design, revealed an excessive maintenance burden in 40% of overdentures. Remaking of overdentures was necessary in 21% of patients. Multiple round bars splinting 3 or 4 implants can still be a treatment concept in mandibular overdenture treatment. Results from prospective evaluation of this design indicate less prosthodontic maintenance of clip activation but more clip fractures than with 2 implants splinted with single round bars, although not at statistically significant levels.¹¹

Krennmair G et al evaluated the prosthodontic maintenance required for mandibular overdentures supported by 4 implants and splinted with either a round bar and resilient overdenture anchorage or a milled bar with rigid anchorage over a 5-year period. In a randomized prospective trial, 51 edentulous patients received 4 mandibular interforaminal implants to support an overdenture and maxillary complete dentures. For the implant-supported overdentures (IODs), bar architecture and denture stabilization were chosen randomly; 25 patients received round bars (group 1) and resilient anchorage and 26 patients received milled bars (group 2) and rigid anchorage. The prosthodontic maintenance required for the IODs and opposing dentures were evaluated during a 5-year follow-up period and compared between the 2 retention modalities used for IODs. Forty-six patients (22 in group 1, 24 in group 2) were available for a 5-year follow-up (dropout rate: 9.8%). Prosthodontic maintenance efforts were significantly greater ($P < .01$) with the round bar design (group 1) than with the overdentures stabilized with milled bars (group 2). In group 1, prosthodontic maintenance efforts were more frequent in the early phase of use (1 to 2 years), as compared with an evenly distributed incidence over the 5-year period with the rigid milled bar system. Major prosthetic complications (IOD remaking, bar fracture) were only seen in cases without metal-reinforced frameworks (group 1). When 4 interforaminal implants are used to anchor mandibular overdentures, the design of the anchorage system will significantly affect prosthodontic maintenance efforts and complication rates. Rigid anchorage using milled bars and a metal-reinforced denture framework required less prosthodontic maintenance, ie, for clip activation/fracture, than resilient denture stabilization using multiple round bars without a rigid denture framework.¹²

CONCLUSION

Under the light of above results, the authors conclude that among partially edentulous patients, fewer complications

are observed with denture fracture being the most common complication. However; future studies are recommended.

REFERENCES

1. Barnabé W, MendonçaNeto T, Pimenta FC, Pegoraro LF, Scolaro JM. Efficacy of sodium hypochlorite and coconut soap used as disinfecting agents in the reduction of denture stomatitis, *Streptococcus mutans* and *Candida albicans*. *J Oral Rehabil* 2004;31:453-459.
2. Souza RF, Paranhos HFO, Silva-Lovato CH, Abu-Naba'a L, Fedorowicz Z, Gurgan CA. Interventions for cleaning dentures in adults. *Cochrane Database Syst Rev* 2009;4:CD007395.
3. Augsburger RH, Elahi JM. Evaluation of seven proprietary denture cleansers. *J Prosthet Dent*. 1982;47:356-359.
4. Fernandes RAG, Zaniquelli O, Paranhos HFO. Análise dos métodos de contagem de pontos e planímetro na quantificação do biofilme da dentadura: um estudo de validação metodológica. *Pesqui Odontol Bras*. 2002;16:63-68.
5. van der Mei HC, White DJ, Ateema-Smit J, van de Belt-Gritter E, Busscher HJ. A method to study sustained antimicrobial activity of rinse and dentifrice components on biofilm viability in vivo. *J Clin Periodontol* 2006;33:14-20.
6. Grimoud AM, Lodter JP, Marty N, Andrieu S, Bocquet H, Linas MD, et al.. Improved oral hygiene and *Candida* species colonization level in geriatric patients. *Oral Dis* 2005;11:163-169.
7. Webb BC, Thomas J, Whittle T. A 2-year of *Candida*-associated denture stomatitis treatment in aged care subjects. *Gerodontology* 2005;22:168-176.
8. Augsburger RH, Elahi JM. Evaluation of seven proprietary denture cleansers. *J Prosthet Dent*. 1982;47:356-359.
9. Fernandes RAG, Zaniquelli O, Paranhos HFO. Análise dos métodos de contagem de pontos e planímetro na quantificação do biofilme da dentadura: um estudo de validação metodológica. *Pesqui Odontol Bras*. 2002;16:63-68.
10. Karabuda C1, Yaltirik M, Bayraktar M. A clinical comparison of prosthetic complications of implant-supported overdentures with different attachment systems. *Implant Dent*. 2008 Mar;17(1):74-81. doi: 10.1097/ID.0b013e318166d88b.
11. Payne AG1, Solomons YF. Mandibular implant-supported overdentures: a prospective evaluation of the burden of prosthodontic maintenance with 3 different attachment systems. *Int J Prosthodont*. 2000 May-Jun;13(3):246-53.
12. Krennmair G1, Krainhöfner M, Piehslinger E. The influence of bar design (round versus milled bar) on prosthodontic maintenance of mandibular overdentures supported by 4 implants: a 5-year prospective study. *Int J Prosthodont*. 2008 Nov-Dec;21(6):514-20.

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