

ORIGINAL ARTICLE

Assessment of the Treatment Outcome of Implant Supported Overdenture- A Clinical Study

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Background: Edentulism is well managed by either removable partial denture, fixed partial denture or by dental implants. The present study was conducted to determine the treatment outcome of implant supported overdenture in study population. **Materials & Methods:** The present study was conducted in the department of Prosthodontics. It comprised of 68 patients who received implant supported overdenture in the past 5 years. Presence of sore spots on the mucosa, change in the stability and retention of the overdentures, number of dental implants and failure rates etc. was recorded. **Results:** Out of 68 patients, males were 48 and females were 20. The difference was significant (P- 0.01). Out of 68 implant supported overdenture patients, 12 patients had 2 implants in which stability was good (4), moderate (6) and poor (2), 20 patients had 3 implants in which stability was good (5), moderate (12) and poor (3), 36 patients had 4 implants in which stability was good (30), moderate (4) and poor (2). The difference was significant (P- 0.01). 12 patients had 2 implants in which retention was good (3), moderate (5) and poor (4), 20 patients had 3 implants in which retention was good (6), moderate (7) and poor (7) and 36 patients had 4 implants in which retention was good (28), moderate (5) and poor (3). The difference was significant (P- 0.02). Common failures was fracture of base material seen in 5 males and 6 females, loosening of attachment in 7 males and 2 females, peri- implantitis in 12 males and 4 females and sore spots in 4 males and 3 females. The difference was significant (P- 0.01). **Conclusion:** Implant supported overdentures have been considered the best treatment modality in patients with resorbed ridges in which complete denture cannot be given. Patient education should be provided regarding care of denture.

Key words: Implant supported overdenture, Ridge, Sore spots

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INTRODUCTION

Edentulism is well managed by either removable partial denture, fixed partial denture or by dental implants. In cases of completely edentulous ridges, the only option left is the replacement of missing teeth in the form of complete denture. The amount of bone left plays an important role in the retention and stability of denture. Sometimes, the amount of bone is not sufficient that may provide stability to the denture base and hence the failure cannot be overcome.¹ Such cases are well maintained by implant supported overdenture. During the past decades advanced implantation techniques as well as experience and knowledge acquired in the field of implant treatments, have enabled fixed implant-supported prostheses as a treatment option for edentulous patients. An implant connection improves the retention and stability of the denture and also enhances oral health related quality of life.²

An implant overdenture can be categorized as either an implant-retained overdenture or an implant-supported overdenture according to the number of implants utilized with the prosthesis. By increasing the number of implants, the implant-supported overdenture results in improved retention and stability. At the same time, the loading placed on individual implants can be decreased correspondingly.³

An overdenture retained by two implants has often been regarded as the minimum standard of care for an edentulous mandible. An implant overdenture could be considered as a realistic implant treatment option for the majority of edentulous people worldwide. The insertion of implant supported overdenture minimizes the shortcomings of complete denture. However, complications may occur with this also. Various factors determines the outcome of the treatment.⁴ The present study was conducted to determine the treatment outcome of implant supported overdenture in study population.

MATERIALS & METHODS

The present study was conducted in the department of Prosthodontics. It comprised of 68 patients who received implant supported overdenture in the past 5 years. All were informed regarding the study and written consent was obtained. Ethical clearance was obtained prior to the study. General information such as name, age, gender etc. was recorded. Presence of sore spots on the mucosa, change in the stability and retention of the overdentures, number of dental implants and failure rates etc. was recorded. Results thus obtained were subjected to statistical analysis using chi- square test. P value less than 0.05 was considered significant.

RESULTS

Table I Distribution of patients

Total- 68		
Males	Females	P value
48	20	0.01

Table I shows that out of 68 patients, males were 48 and females were 20. The difference was significant (P- 0.01).

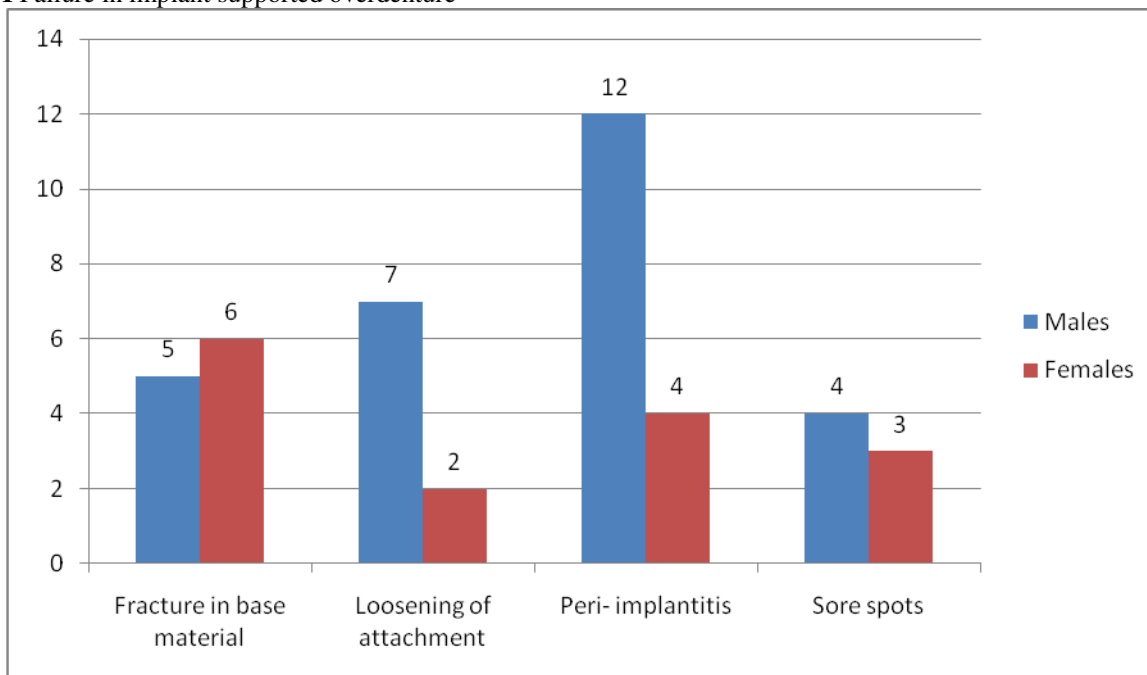
Table II Number of dental implants & Stability and retention of implant supported overdenture

No. of implants	Good	Moderate	Poor	P value
Stability				
2 (12)	4	6	2	0.01
3 (20)	5	12	3	
4 (36)	30	4	2	
Retention				
2 (12)	3	5	4	0.02
3 (20)	6	7	7	
4 (36)	28	5	3	

Table II shows that out of 68 implant supported overdenture patients, 12 patients had 2 implants in which stability was good (4), moderate (6) and poor (2), 20 patients had 3 implants in which stability was good (5), moderate (12) and poor (3), 36 patients had 4 implants in which stability was good (30), moderate (4) and poor (2). The difference was significant (P- 0.01).

12 patients had 2 implants in which retention was good (3), moderate (5) and poor (4), 20 patients had 3 implants in which retention was good (6), moderate (7) and poor (7) and 36 patients had 4 implants in which retention was good (28), moderate (5) and poor (3). The difference was significant (P- 0.02).

Graph I Failure in implant supported overdenture



Graph I shows that common failures was fracture of base material seen in 5 males and 6 females, loosening of attachment in 7 males and 2 females, peri- implantitis in 12 males and 4 females and sore spots in 4 males and 3 females. The difference was significant (P- 0.01).

DISCUSSION

Although many edentulous patients are satisfied with their conventional mandibular complete dentures, some problems such as insufficient retention and stability of the prosthesis, decreased chewing efficiency, and discomfort during mastication, continue to remain. These issues can be addressed effectively by using a dental prosthesis in combination with dental implants. The present study was conducted to determine the treatment outcome of implant supported overdenture in study population. Advantage of an implant-supported overdenture is a decreased need for denture relining resulting from ridge resorption. These advantages have been cited in several similar studies previously. Some studies, however, have reported contradictory results.^{5,6}

In our study, out of 68 patients, males were 48 and females were 20. In a study by Yu Hawa Pan⁷, mandibular implant-supported overdentures were placed in 61 patients. These patients were categorized into two groups such as group A which included 31 patients whose denture was retained by a Hader bar and cast ERA attachments, whereas group B included 30 patients whose denture was retained by a Hader bar and bilateral, extension cantilevers with clips. At the end of the follow-up period, 238 implants remained. Among the failed implants, two implants were in group A, whereas four implants were in group B. Fifty percent (3/6) of the failed implants were placed in the distal anterior mandible and 50% (3/6) were placed in the middle anterior mandible. The condition of the opposing arch was also analyzed in relation to the survival rate. The failure rate among patients with maxillary complete dentures was only 1.6%, whereas those wearing maxillary removable partial dentures had the highest implant failure rate (4.9%).

It has been generally admitted that immediate or early loading (two to six weeks after implantation) is possible when adequate primary stability of the implants is achieved with implantation surgery. The idea of immediate loading without actual healing time after surgery was implemented by using four one-piece implants splinted together with a bar. The prosthetic work was started immediately or very soon and the patients got their new implant-supported overdentures quickly thus reducing the time of prosthetic rehabilitation. The results and experiences of the treatments were mainly positive and the success rates have been high.⁸ In a study by Aiten et al⁹, 70 were women (75%) and 23 were men (25%). The mean age in the follow-up varied from 62 to 69 years. The most usual general diseases were cardiovascular diseases and arterial hypertension, and 30–50 % of the patients had medication for these diseases. Also rather usual were asthma, gastric and thyroid diseases. Only 11% of the patients examined were smokers.

In present study, out of 68 implant supported overdenture patients, maximum patients had good stability with 4 dental implants as compared to 2 and 3. Similarly when retention was considered patients with 4 dental implants had good retention. This is in agreement with Bhatia et al.¹⁰ Few

authors^{11,12} have suggested that implant supported overdentures have been found to be associated with high implant survival rates, there is still no consensus regarding which treatment is preferable, and thus, additional studies are still required to clarify the findings.

In a study by Maitan et al¹³, retention of implant supported overdenture was recorded as good in 74.1%, moderate in 15.5% and poor in 10.3% of the 58 cases treated intraorally, and in the cases treated extraorally with the tent pole technique, retention was good in 64.7% and moderate in 35.3%. The recordings of stability and retention with mandibular overdentures were approximately similar both with ordinary implant-supported and in cases treated with tent-pole grafting and implant overdentures. All the cases treated with tentpole grafting and implant overdentures had a bar construction as an attachment and the number of implants was four, except in one case being three.

CONCLUSION

Implant supported overdenture have been considered the best treatment modality in patients with resorbed ridges in which complete denture cannot be given. Patients education should be provided regarding care of denture.

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