

# International Journal of Research in Health and Allied Sciences

Journal home page: [www.ijrhas.com](http://www.ijrhas.com)

Official Publication of "Society for Scientific Research and Studies" [Regd.]

ISSN: 2455-7803

Index Copernicus value [ICV] = 68.10;

## ORIGINAL RESEARCH

### Efficacy of immediate complete denture, tooth and implant supported overdenture on the maintenance of vertical dimensions

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#### ABSTRACT

**Background:** Edentulous patients with complete dentures are generally satisfied but up to 30% of the patients have complaints. Facial height is retained as the facial muscles will function at their natural length, neutral zone is maintained because the artificial teeth are arranged in a similar manner to their natural predecessors. Hence; the present study was undertaken for assessing the efficacy of immediate complete denture, tooth and implant supported overdenture on the maintenance of vertical dimensions. **Materials & methods:** Thirty subjects were included in the present study. After meeting the inclusion and exclusion criteria, three study groups were formed with 10 subjects in each group as follows: Group I: Subjects who received mucosal supported denture, Group II: Subjects who received tooth supported denture, and Group III: Subjects who received implant-supported denture. Complete demographic and clinical details of all the subjects were obtained. Radiographic and cephalometric examination of all the subjects was carried out. Prosthesis was placed according to their respective study group. Follow-up was done and clinico-radiographic examination was carried out. **Results:** Mean alteration in the occlusal dimension on follow-up among the subjects of group I, Group II and group III was found to be 0.558, 0.681 and 0.596 respectively. While analysing statistically, it was seen that mean alteration was similar in all the three study groups. **Conclusion:** From the above results, the authors conclude that all the three type of denture have similar effect on vertical dimension.

**Key words:** Tooth, Implant, Vertical dimension.

Received: 23 March, 2020

Revised: 25 May, 2020

Accepted: 29 May, 2020

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**This article may be cited as:** Bashir U, Singla IK, Sharma V. Efficacy of immediate complete denture, tooth and implant supported overdenture on the maintenance of vertical dimensions. Int J Res Health Allied Sci 2020; 6(5): 120-122.

#### Introduction

Edentulous patients with complete dentures are generally satisfied but up to 30% of the patients have complaints. They suffer from a variety of problems with their dentures, especially with regard to the lower denture, such as insufficient stability, retention and pain during mastication. With time, the resulting pain and difficulty may increase during oral functions to an extent that proper nutritional intake and the patients' ability to communicate with ease and confidence are jeopardized.<sup>1-3</sup>

Facial height is retained as the facial muscles will function at their natural length, neutral zone is maintained because the artificial teeth are arranged in a similar manner to their natural predecessors. Mastication is easy or even better than after a period of edentulousness without dentures and minimal speech impairment as there is minimal loss of masticatory efficiency because patient is not without teeth anytime.<sup>4-6</sup> Hence; the present study was undertaken for assessing the efficacy of immediate complete denture, tooth and implant supported overdenture on the maintenance of vertical dimensions.

## Materials & methods

The present study was conducted with the aim of assessing the efficacy of immediate complete denture, tooth and implant supported overdenture on the maintenance of vertical dimensions. 30 subjects were included in the present study. All the subjects were within the age range of 40 to 70 years. Patients with history of any systemic illness, known drug allergy or presence of TMJ deformity were excluded. After meeting the inclusion and exclusion criteria, three study groups were formed with 10 subjects in each group as follows:

- Group I: Subjects who received mucosal supported denture,
- Group II: Subjects who received tooth supported denture, and
- Group III: Subjects who received implant-supported denture

Complete demographic and clinical details of all the subjects were obtained. Radiographic and cephalometric examination of all the subjects was carried out. Prosthesis was placed according to their respective study group. Follow-up was done after 12 months and and clinico-radiographic examination was carried out. All the results were analysed by SPSS software. Chi-square test was used for evaluation of level of significance.

## Results

In the present study, 30 subjects were included in the present study. Three study groups were formed with 10 subjects in each group as follows: Group I: Subjects who received mucosal supported denture, Group II: Subjects who received tooth supported denture, and Group III: Subjects who received implant-supported denture. Mean alteration in the occlusal dimension on follow-up among the subjects of group I, Group II and group III was found to be 0.558, 0.681 and 0.596 respectively. While analysing statistically, it was seen that mean alteration was similar in all the three study groups.

**Table 1:** Mean alteration in occlusal dimension on follow-up

Group	Group I	Group II	Group III
Mean alteration	0.558	0.681	0.596
SD	0.125	0.134	0.142
p- value	0.822 (Non-significant)		

## Discussion

Edentulous patients with complete dentures are generally satisfied but up to 30% of the patients have complaints. They suffer from a variety of problems with their dentures, especially with regard to the lower denture, such as insufficient stability, retention and pain during mastication. With time, the resulting pain and difficulty may increase during oral functions to an extent that proper nutritional intake and the patients'

ability to communicate with ease and confidence are jeopardized. Psychosocial problems are the result of diminished attractive facial appearance, difficulties with speech and avoidance of social contacts.<sup>7-9</sup>Hence; the present study was undertaken for assessing the efficacy of immediate complete denture, tooth and implant supported overdenture on the maintenance of vertical dimensions.

In the present study, 30 subjects were included in the present study. Mean alteration in the occlusal dimension on follow-up among the subjects of group I, Group II and group III was found to be 0.558, 0.681 and 0.596 respectively. Gupta S et al studied efficacy of immediate complete denture, tooth and implant supported overdenture on the maintenance of vertical dimension. Group 1: Three patients receiving conventional acrylic immediate complete mandibular denture (mucosal-supported); Group 2: Three patients who will be receiving acrylic immediate complete mandibular denture supported by reduced root canal treated canines (tooth-supported). Group 3: Three patients who will be receiving acrylic immediate complete mandibular denture supported by osseointegrated fixtures in the canines region (implant-supported). The comparison of mean differences in occlusal vertical dimension was done. The mean occlusal vertical dimension changes in Group 1 were -0.49 at time 1, -0.71 at time 2, and -2.93 at time 3; in Group 2 were -0.55 at time 1, -0.66 at time 2, -1.52 at time 3; in Group 3 were -0.39 at time 1, -0.66 at time 2, and -2.11 at time 3. Comparison between mean differences in occlusal vertical dimension for tested times were statistically non-significant. It was concluded that immediate implant overdenture prosthesis can be successful with increased clinical efficiency under specific clinical situations.<sup>10</sup>The demand for dental treatment from patients with missing teeth is increasing worldwide. Various types of treatment, including the use of conventional complete and partial dentures and tooth- and implant-supported fixed and removable prostheses, may be indicated for partially or completely edentulous patients. The purpose of dental treatment is to respond to unique patients' needs. Thus, treatment should be highly individualized according to the patient and the disease. With the advent of dental implant-supported prostheses and the increased life expectancy of the elderly population, the restoration of mastication, phonetic function, and esthetics in elderly patients is a challenging task, even for the experienced clinician.<sup>8-10</sup>

In the present study, While analysing statistically, it was seen that mean alteration was similar in all the three study groups. Aziz S et al studied efficacy of immediate complete denture, tooth and implant supported overdenture on the maintenance of vertical dimension. All the patients were divided into three study groups with 6 patients in each group. Group A included patients receiving mucosal supported denture, Group B included patients receiving tooth

supported denture and Group C included patients receiving implant-supported denture. Radiographs were taken and cephalometric assessment was done. Mean alteration in occlusal dimension after prosthesis insertion among subjects of group A, group B and group C was found to be -0.438, -0.824, and -1.622 respectively. Non-Significant results were obtained while comparing the mean alteration in occlusal dimension after prosthesis insertion. Immediate implant overdenture prosthesis can be successful with equal clinical efficiency.<sup>11</sup>

### Conclusion

From the above results, the authors conclude that all the three type of denture have similar effect on vertical dimension.

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