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Comparison of patient satisfaction in complete denture patients with different occlusal schemes

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Abstract

Completely edentulous patients seek denture treatment to restore function and esthetics. Among various principles employed for the success of complete dentures, occlusion is one of the most important principle to be taken into consideration. Twenty completely edentulous patient's (12 males and 8 females) with an average age of 65 years were included in the study. Consequently, patient satisfaction was evaluated with a standard 5 point Likert scale questionnaire, which included subjective parameters such as initial adaptability, post insertion problems, aesthetics, masticatory ability, speech, retention. Patient's were asked to respond to question given in the questionnaire. Patients were reviewed after 24 hrs, then 3-4 months and yearly their after. Results have shown that patient's had better intital adaptability with BBO dentures ($p < 0.05$) and post-insertion problems where significant in CGO dentures ($p < 0.05$). Study suggest that initial patient's adaptation is better with balanced dentures when compared to canine guided dentures. Occlusal concept is not as crucial as often anticipated for long-term patient satisfaction.

Keywords: Denture, Occlusion

Introduction

Completely edentulous patients seek denture treatment to restore function and esthetics. Among various principles employed for the success of complete dentures, occlusion is one of the most important principle to be taken into consideration^[1]. Complete dentures exhibit different biomechanical characteristics when compared to natural teeth. In case of denture, if force is applied to one tooth, it is transferred to entire denture. This is one of the limitation of dentures, to surpass this, many occlusal concepts for complete dentures have emerged^[2]. To control the lateral forces, which leads to instability of denture, alterations to tooth morphology and occlusal scheme have been advocated. It has been proposed that any occlusal force applied to one part of denture should be balanced by force applied to the counterpart of denture i.e. balanced occlusion. Few authors have proposed that flat teeth have to be used to limit lateral forces and to improve denture stability^[3]. It has its own limitations in terms of esthetics and function.

Balanced occlusion (BBO) is simultaneous contact of maxillary and mandibular teeth on right and left and on anterior and posterior occlusal areas in centric and eccentric position. Proponents of this occlusion scheme have stated that this occlusal scheme can maintain denture stability and centralize occlusal forces on to the residual alveolar ridge. Whereas canine protected/guided occlusion (CGO) had also been a concept that could protect the occlusion from eccentric forces. In this, canines disengages the posterior teeth in the excursive movements of the mandible by vertical and horizontal overlap of the canines. Advantage of balanced occlusion remains in question as the food bolus separates the teeth while eating, preventing the function of the occlusion concept as it is proposed. Whereas, electromyography-based studies have shown that complete dentures with canine guidance reduce muscle activity in the elevator muscles^[4]. Apart from this, it is also easy and time-saving to establish and adjust canine-guided dentures. But, ultimately patient satisfaction is the decisive factor in success of prosthodontic treatment. So, the aim of this study was to evaluate effect of Bilateral Balanced Occlusion (BBO) & Canine guided occlusion (CGO) on patient satisfaction in complete denture patients.

Materials and Methodology

Twenty completely edentulous patient's (12 males and 8 females) with an average age of 65 years were included in the study. Exclusion criteria being dysfunctional disorders of masticatory system. Dentures were fabricated using a methacrylate based resin and acrylic resin denture teeth. 10 dentures were fabricated with bilateral balanced occlusion and remaining 10 with canine guided occlusion. So, in this way 10 patient's received dentures with bilateral balanced occlusion scheme and other 10 with canine guided occlusal scheme.

Consequently, patient satisfaction was evaluated with a standard 5 point Likert scale questionnaire, which included subjective parameters such as initial adaptability, post insertion problems, aesthetics, masticatory ability, speech, retention. Patient's were asked to respond to question given in the questionnaire. Patients were reviewed after 24 hrs, then 3-

4 months and yearly their after.

Results

Patient's satisfaction with BBO and CGO dentures were assessed in terms of subjective parameters with 5 point Likert scale questionnaire. Table 1 shows comparison of type of occlusions (Canine guided and Balanced) with respect to satisfaction by Mann-whitney U test. Table 2 shows comparison of type of occlusions (Canine guided and Balanced) with respect to total satisfaction scores by t test. Results have shown that patient's had better intial adaptability with BBO dentures (p<0.05) and post-insertion problems where significant in CGO dentures (p<0.05). Other parameters such as speech, esthetics, retention and masticatory ability were not influenced by occlusal scheme (p>0.05).

Table 1: Comparison of type of occlusions (Canine guided and Balanced) with respect to satisfaction by Mann-Whitney U test

Parameter taken into consideration	p	-	v	a	l	u	e
I n i t i a l a d a p t a b i l i t y	0	.	0	1	2	3	4
P o s t - i n s e r t i o n p r o b l e m s	0	.	5	2	3	4	5
S p e e c h	0	.	7	1	8	4	4
A e s t h e t i c s	0	.	1	3	4	2	2
M a s t i c a t i o n	0	.	2	4	4	1	1

Table 2: Comparison of type of occlusions (Canine guided and Balanced) with respect to total satisfaction scores by t test

Type of occlusion	M	e	a	n	S	D	t - v a l u e	p - v a l u e	
C a n i n e g u i d e d	1	8	.	3	3	1	. 7 2	- 1 . 9 5 8 3	0 . 0 6 2 4
B a l a n c e d	1	9	.	6	0	1	. 3 5		

Discussion

This study aimed to evaluate the influence of occlusal concept on patient satisfaction in terms of initial adaptability, speech, esthetics, masticatory ability, retention and post-insertion problems. After insertion, initial adaptation was better for BBO dentures, reason for this being BBO minimizes movements during protrusive and lateral movements and it reduces neuronal stimuli when compared to CGO [5]. However, with the further use of dentures, there is no difference in adaptation in between both the occlusal concepts.

Post-insertion problems were more significant in patient's with CGO, due to more dislocating forces acting on denture leading to ulcers. However, these ulcers were observed only during first week after placement of new dentures and patient's adjusted to this occlusal concept by avoiding movements which caused dislocation of dentures [6].

There was no significant difference between both occlusal concepts in terms of speech, masticatory ability, esthetics and retention. Although in CGO the canines had to be set up in a more prominent position, this did not affect patient's preference for esthetics. This is in contrary to the statement of Grunert and Bosch that canine-guided dentures provide better esthetics than balanced dentures.

Regarding masticatory efficiency, results were in agreement with that of Neto's study, in which masticatory efficiency was evaluated objectively, where in CGO showed equal masticatory efficiency with BBO [7].

Conclusion

Bilateral balanced occlusion is not the only occlusal concept recommended for the success of complete dentures. Even, canine guided occlusion can be used with success. However, results suggest that initial patient's adaptation is better with balanced dentures when compared to canine guided dentures.

Occlusal concept is not as crucial as often anticipated for long-term patient satisfaction.

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