ORIGINAL ARTICLE

INTRA-OPERATOR RELIABILITY FOR THE EVALUATION OF THE RETENTION OF MAXILLARY DENTURE BASES CONSTRUCTED THROUGH CLOSE MOUTH IMPRESSION TECHNIQUE

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ABSTRACT

This study was conducted to establish the reliability of the results by three operators for evaluation of retention in maxillary denture bases constructed by closed mouth impression technique. A cross-sectional comparative study was carried out in the Department of Prosthodontics, de,Montmorency College of Dentistry / Punjab Dental Hospital, Lahore. The duration of the study was six months. Data was collected, statistical analysis done by SPSS software program and results were tabulated.

Fourty otherwise healthy (21 males and 19 females) in an age range of 50-65 years, who visited the Department of Prosthodontics, de,Montmorency College of Dentistry / Punjab Dental Hospital, Lahore. New denture wearers, edentulous patients of both genders otherwise healthy were included in the study. Patient suffering from neuromuscular disease, any oral pathology, short primary impressions patient suffering from neuromuscular disease or oral pathology were excluded from the study. After taking consent structured three proformas were filled for every patient. Denture base constructed by closed mouth impression technique was evaluated by three operators in the anterior, right and left canine area using Kapur index.3 Results were analyzed and compared using descriptive statistical analysis protocol. In 73.97% of the results, retention of upper complete denture base constructed through closed mouth technique showed the intra operator reliability.

Intra operator reliability was seen among the results showing retention of the upper complete denture base constructed through closed mouth technique.

Key Words: *Complete denture base, Retention, impression techniques.*

INTRODUCTION

In Pakistan complete denture is a most common treatment option for edentulous patients. Retention is one of the desirable characteristics of complete dentures. It is considered at the stage of an impression making. They are made either through open or closed mouth impression technique. Retention is evaluated by forces of dislodgement along the path of placement.[1,2] It can be quantified by three ways, subjective analysis, operator's evaluation, and by using mechanical devices.[3-8]

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The literature lacks the evidence where denture base was fabricated for a patient are evaluated for retention by different operators and then intra operator results are compared. Retention is affected by many confounding variables.[2-7] The purpose of the study was to compare the evaluation of retention by different operators for a maxillary denture base constructed through close mouth impression technique.

METHODOLOGY

A blind study was carried out on forty edentulous patients (21 males and 19 females) in an age range of 50-65 years, who visited the Department of Prosthodontics, de,Montmorency College of Dentistry/ Punjab Dental Hospital, Lahore.

Inclusion criteria: New denture wearers, edentulous patients of both gender otherwise healthy. **Exclusion criteria:** Patient suffering from neuromuscular disease, any oral pathology, Short primary impressions.

The detailed procedure of the study was explained to the patient and a written consent was obtained and

demographic data were recorded. Primary impression of the edentulous patient was made in a stock tray with the impression compound and alginate wash impression. Custom made tray was processed using auto polymerizing acrylic without spacer and/or perforations. Extensions of the tray were checked in the patient's mouth. Record occlusion rims were fabricated and jaw relations were recorded. Closed mouth secondary impression of both arches was recorded using metallic oxide impression paste and required oral muscular movements were performed. Denture bases were constructed with heat cured acrylic. Six anterior teeth were placed with cold cured acrylic using biometric guide lines. Three experienced Prosthodontists examined the denture base and quantified for retention in three designated areas by using Kapur[3] index, where, denture bases that showed slight resistance to vertical pull or forces scored poor or 1. Denture bases that showed moderate resistance to vertical pull or forces scored fair or 2. Denture bases that showed good resistance to vertical pull or forces scored good or 3. The operators were explained and trained prior to data collection procedure. It was made clear to them that how to pull the denture bases along path of placement. The teeth were grasped with the help of finger and thumb in the corresponding area and not to any other parts of the denture base, so that they might not break the peripheral seal with the thumb. A total of 120 assessments were made and quantified by each operator on 40 patients. The results were recorded by each operator on separate proforma for every patient. Thus three proformas for the same patient were filled. The results of the assessment were not shown or disclosed to the other operators before and during the study. Three minutes interval was given between every reading. The measurements made by the three operators were presented in the tabulated form. Reliability of the result was evaluated as the common of results.

TABLE 1: GENDER DISTRIBUTION (n = 40)

Gender	Frequency	Percentage
Male	21	52.5
Female	19	47.5

TABLE 2: AGE DISTRIBUTION OF THE SUBJECTS (n = 40)

Age range	Frequency	Percentage
<50	7	17.5
50-54	7	17.5
55-59	5	12.5
60-64	15	37.5
65>	6	15.0

TABLE 3: COMPARISON OF RETENTION EVALUATION BY THREE OPERATORS OF DENTURE BASES CONSTRUCTED THROUGH CLOSED MOUTH IMPRESSION TECHNIQUE n=40

Retention (Frequency %)	Anterior				Rt Canine				Lt Canine				Mean R	Mean of Mean R
	A1	A2	A3	R	A1	A2	A3	R	A1	A2	A3	R		
Poor	1 (02.5)	4 (10.0)	4 (10.0)	1/4 (25)	4 (10.0)	6 (15.0)	5 (12.5)	4/6 (66.6)	4 (10.0)	6 (15.0)	6 (15.0)	4/6 (66.66)	52.77	73.97
Fair	30 (75.0)	29 (72.5)	26 (65.0)	26/30 (86.66)	28 (70.0)	27 (67.5)	26 (65.0	26/28 (92.8)	28 (70.0)	27 (67.5)	26 (65.0)	26/28 (92.8)	90.75	
Good	9 (22.5)	7 (17.5)	10 (25.0)	7/10 (70)	8 (20.0)	7 (17.5)	9 (22.5)	7/9 (77.7)	8 (20.0)	7 (17.5)	8 (20.0)	7/8 (87.5)	78.4	

Key: A1=Operator 1. A2=Operator 2. A3=Operator 3. R= RELIABILITY

Gender and age distribution is shown in Table 1 & 2. Intra operator results for retention are shown in the Table 3.

DATA ANALYSIS

The collected data was analyzed using SPSS version 16. Results by each operator were presented in tabular form.

RESULTS

Gender and age distribution is shown in Table 1 & 2. Intra operator results for retention are shown in the Table 3.

DISCUSSION

Three operators evaluated the retention on the same study population in this way it was a homogenous sample size in term of gender and age of the patient. Hence every subject served as his or her own control. This is in agreement with other studies like Kikuchi[9] et al; they considered 10 dentate patients in their study and fabricated mucosa supported palatal bases. Retention was evaluated before and after the base was modified by the abrasion of the same individual tray. Sample size was similar study by Corrigan[10] et al. In that study they included 40 subjects, comprising 17 men and 23 women. Similarly Uysal[11] et al in their study included 32 patients (18 females and 14 male). They had been edentulous an average of more than 10 years. They evaluated the masticatory function and the retention of the maxillary dentures. Retention of the dentures was scored by the Kapur[3] index. In this study the patients were evaluated for the retention before and after the application of the denture adhesives. Similarly, Colón[12] et al conducted a study in which each patient behaved as his own control. They evaluated dislodging forces in three different parts on the three different denture base plates constructed for the same patient. One anterior, middle and posterior in relation to the different palate forms. It was found that maximum dislodging force, evaluated through a mechanical system, was in the anterior region and least in the posterior region. The reproducibility and reliability of the study inter-operator results are in an agreement with the study of the Bernier[13] et al. They developed a criterion to clinically evaluate denture base stability and retention.

CONCLUSION

It was concluded that intra operator reliability was seen in 73.97% of the results showing retention of the upper complete denture base constructed through closed mouth technique showed the intra operator reliability. The study showed good inter-operator results repeatability and thus Internal Consistency. It was found that the Kapur retention scale is sufficiently sensitive enough to discriminate between poor, fair and good retention of the upper denture bases.[4]

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