

Original Article

Comparison of two impression techniques for secondary impression for complete denture

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ABSTRACT:

Background: A dental impression is a negative imprint of an oral structure used to fabricate a dental restoration or prosthesis. The present study was conducted to compare functional and conventional technique in secondary impression. **Materials & Methods:** The present study was conducted in the department of Prosthodontics. It comprised of 60 patients of both genders. Patients were divided into 2 groups. In group I, secondary impression was made using conventional method in which zinc oxide eugenol wash impression was obtained after border moulding with green stick compound in open mouth position. In group II, functional technique was used. **Results:** In present study, group I and group II had 30 patients each. The mean force required to dislodge denture in group I was 12 N and in group II was 20 N. The difference was significant ($P < 0.05$). **Conclusion:** Authors found functional technique better as compared to conventional technique. However, large scale studies are required to substantiate the results obtained in this study.

Key words: Conventional, Functional, Secondary impression

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INTRODUCTION

Complete dentures are primarily mechanical devices but since they function in the oral cavity, they must be fashioned so that they are in harmony with the normal neuromuscular function. The wearing of complete dentures may have adverse effects on the health of both oral and denture supporting tissues. Residual ridge resorption is a complex biophysical process and a common occurrence following extraction of teeth. Ridge atrophy is most dramatic during the first year after tooth loss followed by a slower but more progressive rate of resorption thereafter.¹ A dental impression is a negative imprint of an oral structure used to fabricate a dental restoration or prosthesis. Precise impression is critical for fabricating dental restorations with adequate fit. Misfit of implant prosthesis by inaccurate impression brings about a mechanical and biological complications.² To achieve a passive fit between implant frameworks and implant body, numerous impression techniques have been tried. Various impression methods such as transfer or pick-up technique, impression materials and coping modification have been introduced for accuracy.³

A number of modified impression techniques for resorbed mandibular ridge have been suggested by various authors such as admixed, functional, all green, and cocktail technique. All these techniques capture the primary and secondary load-bearing areas without distortion of the residual ridge.⁴ The present study was conducted to compare functional and conventional technique in secondary impression.

MATERIALS & METHODS

The present study was conducted in the department of Prosthodontics. It comprised of 60 patients of both genders. All were informed regarding the study and written consent was obtained. Ethical clearance was taken from institutional ethical committee.

General information such as name, age, gender etc. was recorded. Patients were divided into 2 groups. In group I, secondary impression was made using conventional method in which zinc oxide eugenol wash impression was obtained after border moulding with green stick compound in open mouth position. In group II, denture bases with occlusal rim were fabricated on primary cast. Jaw relations were done to record appropriate horizontal and vertical dimensions.

Tissue conditioning material was applied on the tissue surface of mandibular denture base and patient was asked to close the mouth in the prerecorded vertical dimension and do various functional movements such as puffing, blowing, whistling, and smiling. Three applications of tissue conditioner material were done at an interval of 8–10 minutes and functional movements were made by the

patients. Final impression was made with light body addition silicone material with closed mouth technique. In both groups, force required to dislodge dentures were recorded. Results thus obtained were subjected to statistical analysis. P value less than 0.05 was considered significant.

RESULTS

Table I Distribution of patients

Total- 60		
Groups	Group I	Group II
Number	30	30

Table I shows that group I and group II had 30 patients each.

Table II Comparison of mean retention force in both groups

Mean force	Group I	Group II	P value
	12 N	20 N	0.01

Graph I Comparison of mean retention force in both groups

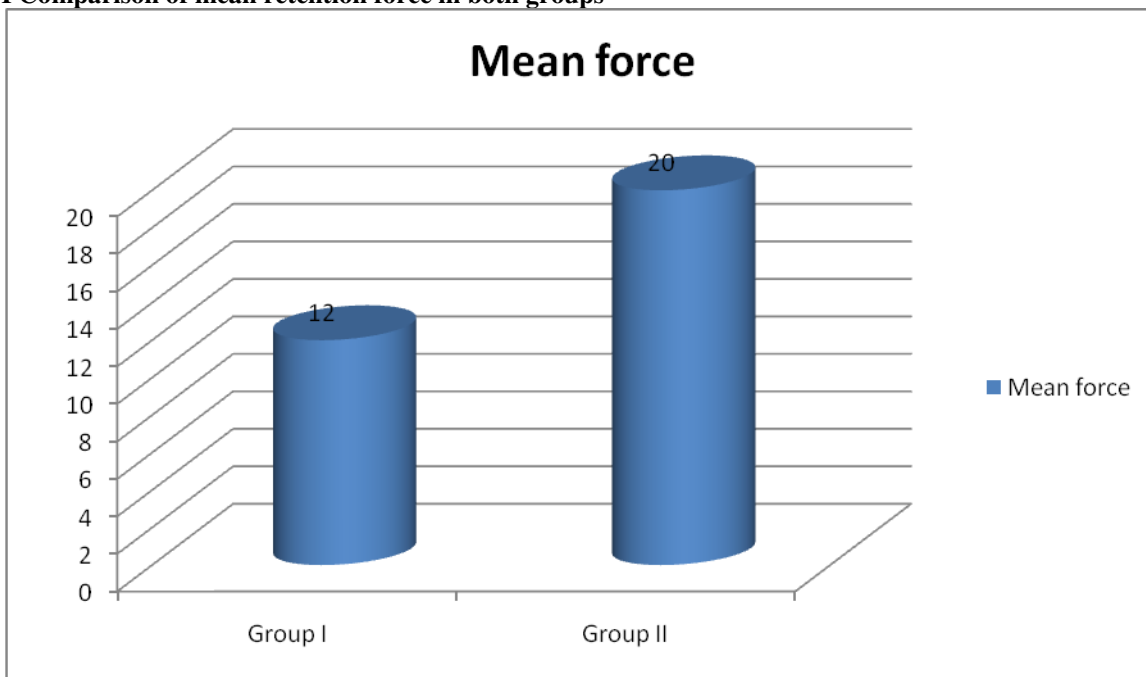


Table II, graph I shows that mean force required to dislodge denture in group I was 12 N and in group II was 20 N. The difference was significant (P < 0.05).

DISCUSSION

A dental impression is defined as "a negative imprint or a positive digital image display of intraoral anatomy used to cast or print a 3D replica of the anatomic structure that is to be used as a permanent record or in the production of a dental restoration or prosthesis". Dental practitioners can make the impression in a single stage (abbreviated impression) or in two stages (preliminary impression made for the purposes of diagnosis, or for the construction of a tray, followed by final impression). The final-impression techniques and materials used for complete dentures date back to 1900s.⁵

They make the impression using an open-mouth or closed-mouth approach, in one or two steps. In the single-step procedure, border moulding and recording the final impression are performed simultaneously, using the same material, either a resinous wax, or a monophasic elastomer. The two-step final-impression technique begins with border moulding, followed by a final-impression procedure. Border moulding is defined as "the shaping of impression material along the border areas of an impression tray by functional or manual manipulation of the soft tissues adjacent to the borders to duplicate the contour and size of the vestibule". The present study was conducted to compare functional and conventional technique in secondary impression.⁶

In present study there were 60 patients which were divided into 2 groups of 30 each. In group I patients, secondary impression with functional technique and in group II patients secondary impression with conventional technique was taken.

We found that mean force required to dislodge denture in group I was 12 N and in group II was 20 N. The difference was significant ($P < 0.05$). The success of every complete denture relies on the fulfilment of the three basic properties of retention, stability, and support. Mandibular dentures usually present more difficulties in achieving these three properties, basically because of the larger number of anatomic limitations that requires added attention. The retention of the dentures is influenced by the factors like cohesion, adhesion, fluid, viscosity, atmospheric pressure, external factors arising out of oral-facial musculature, and occlusion. The accuracy of complete denture impression techniques has been debated for many years.⁷ A wide diversity of denture border outlines, resulting from the use of the same impression procedure for all patients, has been shown and documented. Numbers of impression techniques have been described in the literature for resorbed mandibular ridge; each technique has its own advantages and disadvantages.

Drago et al⁸ conducted a study compared the retention of complete dentures made by using different impression techniques like conventional, admixed, all green, and functional techniques. The results showed that there was significant difference in retention between the six techniques where functional technique showed the highest mean value of retention followed by elastomeric, all green, and admixed, while cocktail and green stick compound showed the lowest mean value. However, on clinical examination, the retention produced by the six techniques was satisfactory.

CONCLUSION

Authors found functional technique better as compared to conventional technique. However, large scale studies are required to substantiate the results obtained in this study.

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