

Influence of Polished Surface of Denture Made by Neutral Zone Technique Versus Conventional Method on Phonetics and Stability

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ABSTRACT

Background: Excessive thickness in the anterior part of palate can lead to lisping and distortion of the s sound. The denture should be kept thin on the regions not experiencing structural loss, as on the palate to make speech clearer. Overextended dentures may cause irritation to the velum and lead to stiffening of its muscles. Incorrect vertical dimension and labiolingual positioning of the anterior teeth may lead distortions. In this case we have to investigate the influence of polished surface on stability and phonetics (consonant words) in dentures made by neutral zone method.

Keywords: Phonetics, stability, denture.

INTRODUCTION

Natural teeth erupt into their respective position in the mouth under the influence of muscular environment according to stomatognathic system. This environment has a definite influence upon the position of the erupted teeth, the resultant arch form which is created by the forces exerted by the tongue, cheeks and lips. Neutral zone is that area in the potential denture space where the forces of the tongue pressing outward are neutralized by forces of the cheeks and lips pressing inward.¹

MATERIALS AND METHODS

Inclusion Criteria of Patients:

Patients who had moderate to severely resorbed ridges.

Patients who had good neuromuscular co-ordination.

Two sets of dentures were fabricated for each patient; one by conventional method and the other by neutral zone concept. Methodology included following clinical steps and lab procedure: Primary impression was made with type I impression compound material (Figure 6). Primary cast was poured with dental plaster. The Special tray was fabricated with self-cure polymethylmethacrylate resin with 1 mm wax spacer and four stops for selective pressure impression. Border molding was done with green stick compound and final impression was made with zinc oxide eugenol impression paste (Figure 7) and cast was poured with dental stone to get the first set of working casts. Cast was duplicated with agar – agar duplicating material to get second set of

Working cast. The wax occlusal rims were prepared on self-cure polymethylmethacrylate denture base. Spring Facebow was used and orientation jaw

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relation was recorded and transferred (Figure 8). Vertical and centric jaw relation was recorded. These jaw relations were transferred to semi adjustable Hanau Wide Vue articulator and casts

were mounted (Figure 9). Second set of occlusal rim was prepared with impression compound material on a second self-cure.

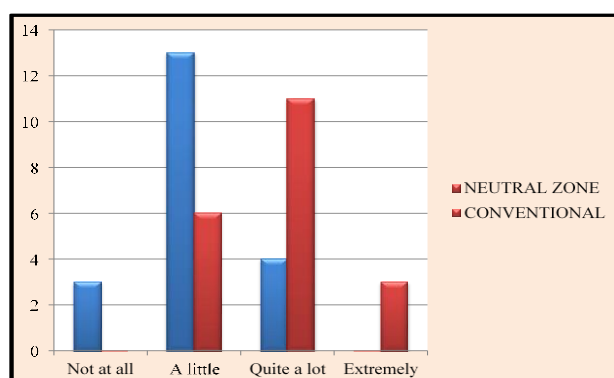
RESULTS

Table 1: Data Recorded; Spectrographic Analysis Of Sound

DURATION (s)			INTENSITY (decibels)			FREQUENCY (Hz)		
G1	G2	G3	G1	G2	G3	G1	G2	G3
0.03452	0.0332	0.02983	73.3948	78.6874	77.3736	200.2837	198.3737	220.2132
0.03723	0.03782	0.03182	66.3843	72.2748	72.8737	188.2837	193.383	201.2673
0.03382	0.03782	0.03282	68.7837	70.3847	70.1876	177.2873	192.8272	198.2836
0.04029	0.03293	0.02939	70.3748	74.3948	81.2837	178.2837	186.2736	188.6483
0.03782	0.03198	0.03382	71.2837	78.3947	78.3837	176.2862	193.2927	186.4847
0.03309	0.03672	0.03382	69.3874	80.0034	83.2938	186.2937	188.2727	190.3736
0.04028	0.03728	0.03003	73.8856	69.4867	80.2739	190.2383	200.2726	205.2736
0.04102	0.03293	0.034	74.0034	72.283	77.2938	200.2836	197.2736	220.2736
0.03389	0.03482	0.02998	70.3847	77.3847	74.2834	198.2837	188.2726	223.2837
0.03898	0.03102	0.0336	67.3745	69.3843	80.1928	189.2927	204.2525	207.2836
0.03989	0.03382	0.03217	70.6835	72.2837	78.2837	196.2832	198.2736	207.2836
0.041	0.03892	0.03167	72.3846	74.2876	71.2938	188.2823	188.2928	201.2836
0.03402	0.03092	0.0289	68.6827	77.3974	82.2831	196.2827	200.2873	211.2726
0.032093	0.03782	0.03273	66.2837	71.2937	80.7868	199.2873	198.2837	208.2827
0.03787	0.03773	0.02983	74.024	68.8839	75.2938	188.2827	200.2872	211.2822
0.03209	0.03283	0.03028	68.005	76.3747	77.2267	187.282	195.2837	206.2362
0.04038	0.03293	0.02883	69.8837	75.8394	70.2738	183.2827	188.2837	199.1726
0.03872	0.03773	0.02983	72.2734	72.3947	72.7379	177.2736	179.3637	195.2636
0.03929	0.03288	0.033273	66.5867	70.3844	73.2837	169.2827	190.2827	193.7363

Table 2: Groups frequency.

QUESTION 5	GROUPS (FREQUENCY)		p VALUE
	NEUTRAL ZONE	CONVENTIONAL	
Not at all	5	1	0.0001*
A little	14	2	
Quite a lot	1	12	
Extremely	0	5	

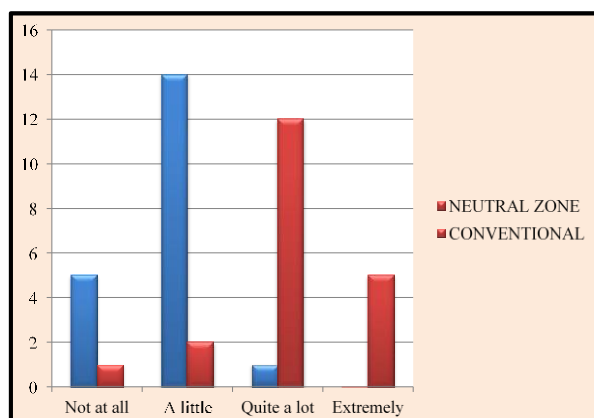


Graph 1: Patients belonging to different zones.

A substantial number of patients belonging to the neutral zone (80%) had no to little loosening of dentures while laughing when compared to patients belonging to the conventional group wherein large number of them (70%) presented with lot to extreme loosening of dentures while laughing. (P=0.001)

Quite a lot to extreme loosening of dentures while eating was shown by patients belonging to the conventional group (75%) when compared to a meager (5%) in the neutral zone group. Majority in

the neutral zone group (95%) had no or little loosening of dentures while eating. This difference was found to be statistically significant. ($P= 0.0001$)



Graph 2: Patients belonging to conventional group.

DISCUSSION

During childhood, the teeth erupt under the influence of muscular environment created by forces exerted by tongue, cheeks and lips, in addition to the genetic factor. These forces have a definite influence upon the position of the erupted teeth, the resultant arch form. This Study also concluded that dentures with Neutral zone contoured polished surface showed an improvement in stability compared with conventional denture.

CONCLUSION

It can be concluded from the present study:

Patients showed speech improvement with the neutral zone dentures immediately after insertion when compared the normal dentures.

Individual sounds showed different levels of speech intelligibility.

The Duration of sound (T) decreased with the neutral zone dentures immediately after insertion when compared with normal dentures.

SUMMARY

Phonetics and stability are two important factors in complete denture construction. Frequently, however, phonetics is neglected because of the adaptability of patients. It is true that most patients can learn to produce satisfactory speech in spite of

an unsatisfactory denture. The need to consider phonetics is not recognized in most instances until a patient complains of inability to produce certain sounds with the dentures. Stability is mainly concerned with the mandibular denture particularly when there is moderate to severe resorption of the alveolar ridges. It is a challenge for the dentist to give a stable denture in such cases.

CONFLICTS OF INTEREST

The authors declare they have no potential conflict of interests regarding this article.

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