Research Article

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COMPARISON OF PALATAL DEPTH BETWEEN STOCK TRAYS AND DENTULOUS INDIVIDUALS

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ABSTRACT

The palatal depth differs from patient to patient, but the available stock trays are of uniform depth. This may lead to inappropriate impression and loss of excessive impression material. This study aims to measure palatal depth of different individual casts and comparison of palatal depth with available stock trays.

KEYWORDS: Palate depth, stock trays, individuals.

INTRODUCTION

Good quality dental impression is the most important step in fabricating well fitting dentures and prosthesis. The impression trays play a vital role for cast manufacturing.[1] Stock tray comes in different uses made of **plastics and metal**. The impression tray should have sufficient extension to support the impression material.[2] However, there is not much improvement in design of available stock trays and they need modification before use.[1,3] Clinical experience are shown that the stock trays are not suitable for providing variation in palatal depth of different dental arches.[4] The palatal depth of stock tray is not sufficient *and* it varies from patient to patient. The palatal depth might be of different shapes and sizes.[5,6] The commercially available stock trays are with uniform palatal depth and it seems to be inadequate for a proper impression.[7] This study was based on comparison of palatal depth in individuals and stock trays.

AIM

The purpose of study was to evaluate the depth of palate in stock trays and comparison between the palatal depths of the individuals and to recommend a suitable design of stock tray for proper impression.

MATERIALS AND METHODS

Measurement of casts
A total of **50 dentulous patient cast from 3 size tray** were evaluated extra orally to obtain maxillary palatal depth. The palatal depth of the maxillary arches has been measured by **digital caliper.** The depth of palate is measured at the **intersection of midline and highest cusp of first molar**. The measurement of 50 dentulous patient casts is assigned as **Group A**. The data obtained was co-related with measurements obtained from the palatal depth of commercially available stock trays.

### Measurements of available trays
The three available types of perforated maxillary stock trays of different brands were measured. The maximum depth at the molar regions is measured by digital caliper in each tray. The commercially available **API, GDC RIMLOCK, SAMIT** stock trays is measured and assigned as **Group B, Group C, Group D** respectively.

STATISTICS AND RESULTS

The statistics (mean, standard deviation, standard error mean) of 50 variables for palatal depth measurements are presented in TABLE 1, which shows the average mean of 22-23 mm.
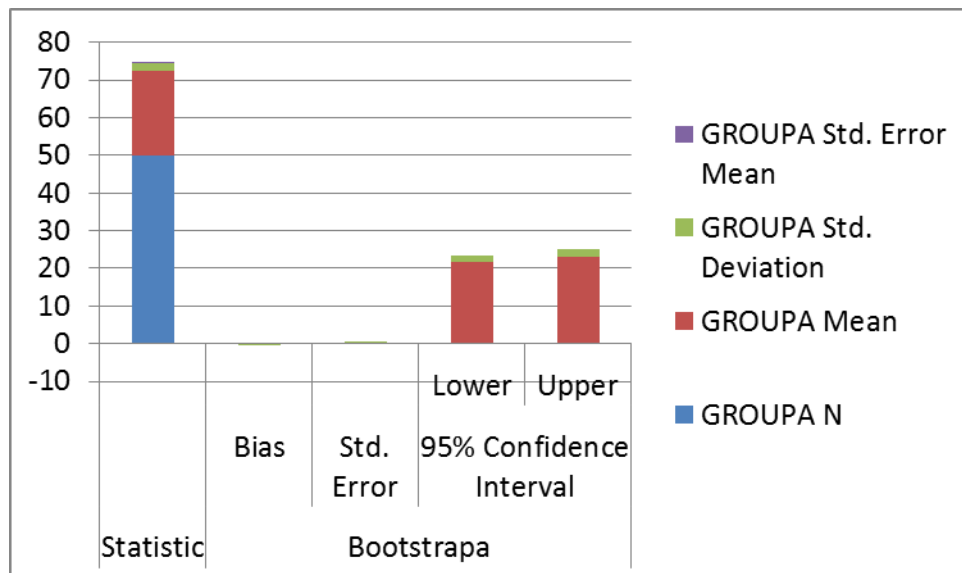
Table 1.

N	Mean	Std. Deviation	Std. Error Mean
50	22.3448	1.94995	0.27577
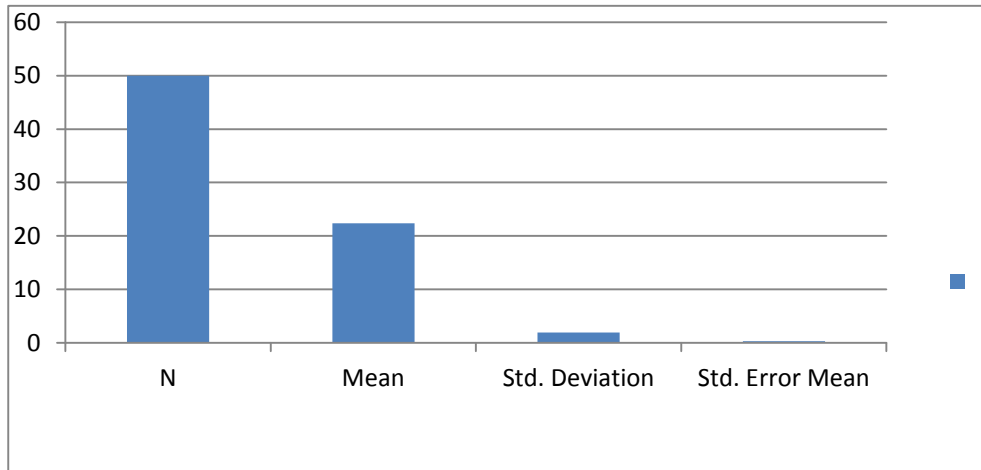
One-Sample Statistics

|		Statistic	Bootstrap[a]			
			Bias	Std. Error	95% Confidence Interval	
					Lower	Upper
Group A	N	50				
	Mean	22.3448	.0131	.2758	21.8092	22.8909
	Std. Deviation	1.94995	-.03781	.18023	1.54605	2.25046
	Std. Error Mean	.27577				
a.	Unless otherwise noted, bootstrap results are based on 1000 bootstrap samples					

The palatal depth of GROUP B stock tray is 12 mm. The comparison between GROUP A and GROUP B is presented in TABLE 2.

Table 2: One-Sample Test.
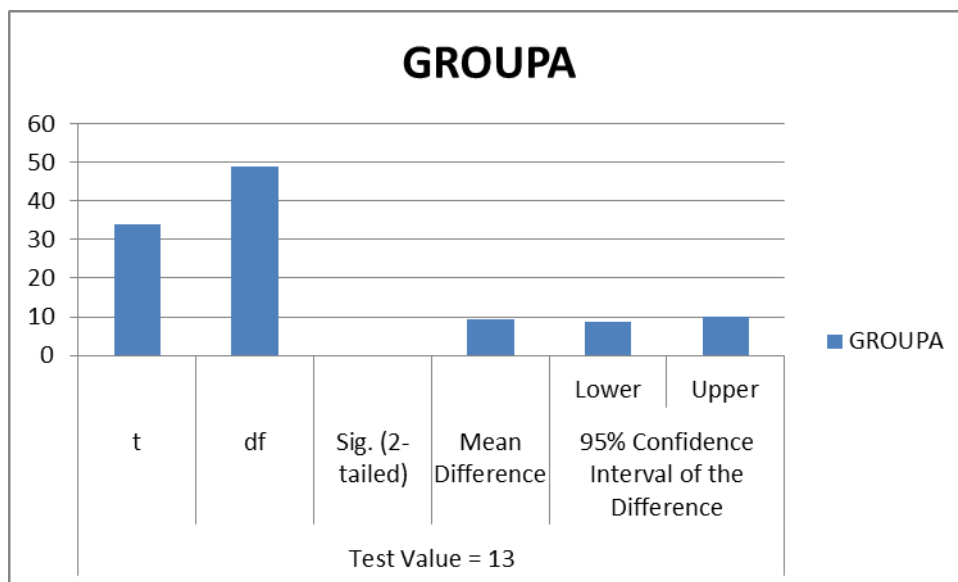
	Test Value = 12					
	t	df	Sig. (2-tailed)	Mean Difference	95% Confidence Interval of the Difference	
					Lower	Upper
Group A	37.513	49	.000	10.34480	9.7906	10.8990
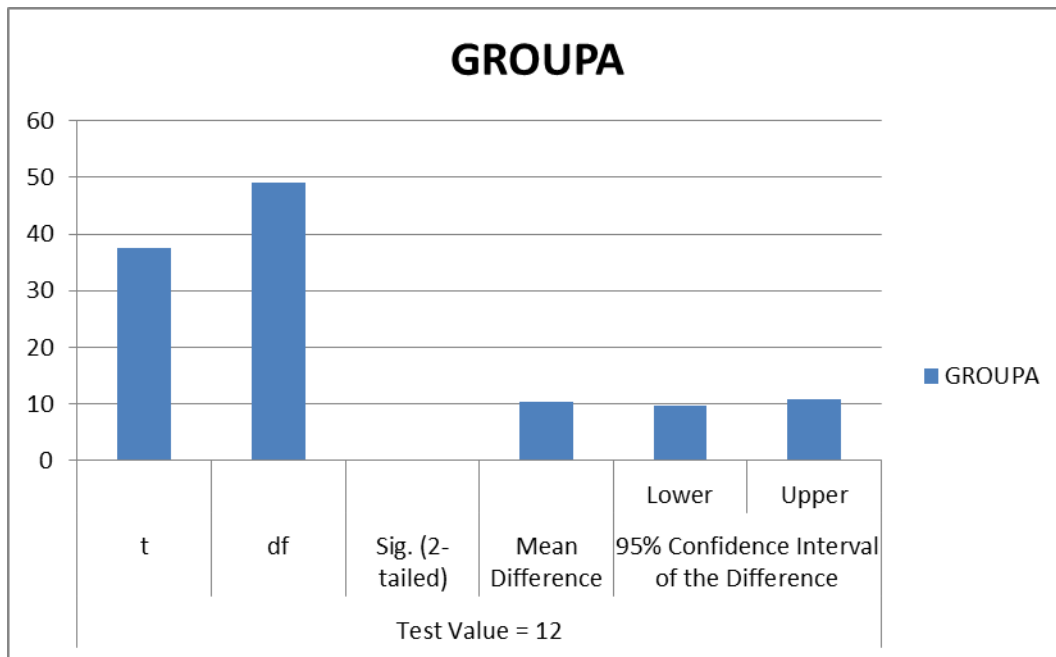
The palatal depth of GROUP C stock tray is 13mm. The comparison between GROUP A and GROUP C is presented in TABLE 3.

Table 3: One-Sample Test.

	Test Value = 13					
	t	df	Sig. (2-tailed)	Mean Difference	95% Confidence Interval of the Difference	
					Lower	Upper
Group A	33.887	49	.000	9.34480	8.7906	9.8990

The palatal depth of GROUP D stock trays is 12.5 mm. The comparison between GROUP A and GROUP D is presented in TABLE 4.

Table 4: One-Sample Test.

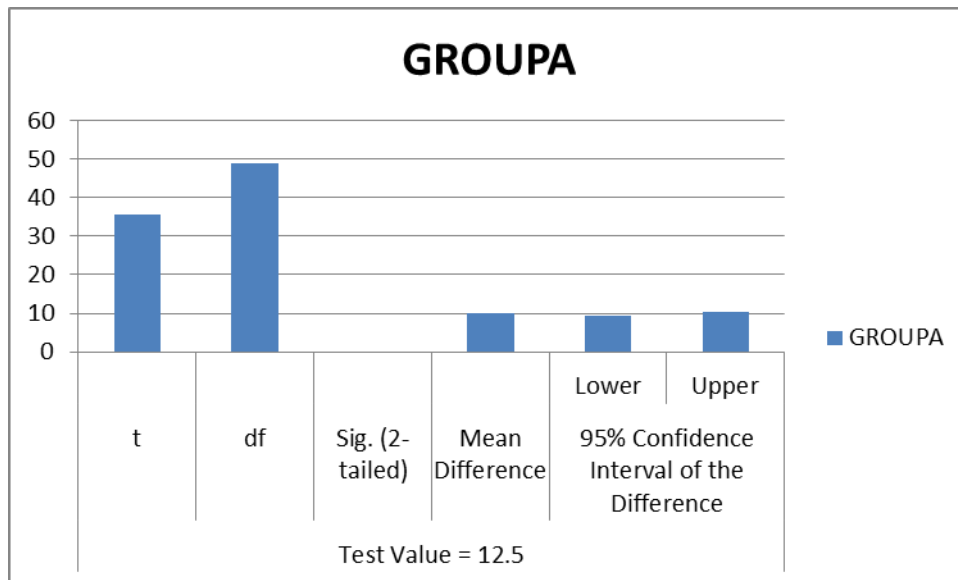|	Test Value = 12.5					
	t	df	Sig. (2-tailed)	Mean Difference	95% Confidence Interval of the Difference	
					Lower	Upper
Group A	35.700	49	.000	9.84480	9.2906	10.3990

Table2, Table 3, Table 4 demonstrates high significant differences of almost 9-10 mm. Thus the available trays are not adequate for proper impression.

CONCLUSION

Within the limitations of study from the result applying, it was concluded that existing palatal depth of dentulous stock trays are not sufficient, according to dentulous arches and increase in palatal depth is required to be done on trays for making more accurate impressions.

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