Lateral Throat form Measurement Using Customised Gauge

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Abstract

Introduction: Lateral throat form is an area situated at the distal end of the alveololingual sulcus. The extension of denture into this area can resist horizontal forces, increase border sealing, act as a displacing lever on the denture border and contribute to neuromuscular control.

Aim: To check accuracy of customised gauge in measuring lateral throat form for completely edentulous patients and to relate the length obtained dentures to the diagnostic value intra orally.

Methodology: In total 20 patients a customised gauge is used to measure the lateral throat form depth intra orally and in dentures. The obtained values are noted and checked for statistical analysis using SPSS software.

Results: Table 1 showed the mean difference (SD) between the measurements carried out using customised gauge intraorally and in dentures on right side. The difference was 0.05 (0.07), which is not statistically significant (p = 0.527 i.e. > 0.05) showing strong correlation.

Table 2 showed the mean difference (SD) between the measurements carried out using conventional method and from final denture on left side. The difference was 0.01 (0.09), which is not statistically significant (p = 0.914 i.e. >0. 05) showing strong correlation.

Conclusion: Complete coverage of the depth of the lateral throat form is essential for proper retention of mandibular dentures thus, this clinical study aims for assessment of the depth accurately prior to determine proper extensions of custom tray and also the accuracy of the tool is due to consistency of the result obtained above, helping us to judge the expected retention property of the lower denture from the existing Lateral throat form and help in doing the treatment planning in order to improve the retention of mandibular denture.

Keywords: *Lateral Throat Form; Customised Gauge; Denture Flanges; Retromolar Pad*

Abbreviation

LTF: Lateral Throat Form

Introduction

The maxillary and mandibular arches are distinct, have distinguished landmarks and areas. Lateral throat form (retromylohyoid fossa /LTF) is the area situated at the distal end of the alveololingual sulcus. synonyms include distolingual vestibule and retromylohyoid fossa. This anatomical area is bounded anteriorly by the mylohyoid muscle, laterally by the pear-shaped pad, posterolaterally by the superior constrictor muscle, posteromedially by the palatoglossus muscle, and medially by the tongue [1]. The extension of the denture into this area can resist horizontal forces, increases border seal, prevents tongue from returning to denture's polished surface, act as a displacing lever on the denture border and contribute in the neuromuscular control mechanism [2].

Aim of the Study:

1. To check accuracy of customised gauge in measuring lateral throat form for completely edentulous patients (diagnosis).
2. To relate the length obtained dentures to the diagnostic value intra orally (post insertion).

Objectives of the Study:

1. To measure the actual depth of lateral throat form when compared to conventional arbitrary method.
2. To check the accuracy of obtained value in relation to final denture fabrication.
3. To check the reliability of the instrument during diagnosis and treatment planning in fabrication of completely edentulous patients.

Methodology

The instrument is designed with hollow 'L' shaped stainless steel with flexible wire with in it. One side of extension of tube consists of measuring scale which helps in measuring the accurate depth of lateral throat form. On the other side a horizontal stopper which is attached to vertical arm and a ball is soldered to the wire, suspended through hollow tube (Figure 1).

Figure 1: *Customised gauge.*

Patient is instructed to open the mouth and protrude the tongue so that it was 1/4th inch ahead of lower lip then polyvinyl siloxane material is manipulated and adapted around the metal ball suspended from the tube. Before the setting of putty material the instrument is placed inside the patients mouth so that the stopper of instrument rested on the middle third of retromolar pad .the flexible wire is pushed from outside till it touches the floor of the mouth .the length pushed in is indicated on the scale attached to it which is obtained value + 5 mm (length of ball) gives the actual length of the lateral throat form .the process is repeated for both left and right sides of lateral throat form intra orally (Figure 2 and 3).

Figure 2 and 3: *Measuring lateral throat form.*

In dentures the metal ball is placed on the middle third of retro molar pad on intaglio surface, the horizontal stopper is placed on the flange (disto alveolingual sulcus) area of the fabricated denture (Figure 4).

Figure 4: *Measuring the lateral throat form in dentures.*

The obtained values are noted to check for accuracy of the instrument.

Statistical analysis

Statistical analysis was performed using SPSS (Statistical Package for Social Sciences) software. The confidence level was kept at 95% and p-value less than 0.05 was considered significant for all statistical data. The mean difference between measurements carried out using conventional method and after final denture fabrication (both right and left sides) were analysed. Independent t-test was used to compare all the data.

Results

Table 1 showed the mean difference (SD) between the measurements carried out using customised gauge intraorally and in dentures on right side. The difference was 0.05 (0.07), which is not statistically significant (p = 0.527 i.e. > 0.05) showing strong correlation.

Group Statistics						
	Method	N	Mean	Std. Deviation	Std. Error Mean	Correlation
Measurement	Intra orally	20	1.835	.2300	.0514	0.953**
	Final denture	20	1.785	.2641	.0591	
Independent Samples Test						
t-test for Equality of Means						
	T	Df	Sig. (2-tailed)	Mean Difference	Std. Error Difference	95% Confidence Interval of the Difference	
						Lower	Upper
Measurement	0.638	38	0.527†	0.0500	0.0783	-0.1086	0.2086

Table 1: *Comparison of measurements recorded using the customised gauge intraorally and in relation to final denture measurements on right side (Independent t-test).†Non-significant (p > 0.05).*

Table 2 showed the mean difference (SD) between the measurements carried out using conventional method and from final denture on left side. The difference was 0.01 (0.09), which is not statistically significant (p = 0.914 i.e. > 0.05) showing strong correlation.

Group Statistics						
	Method	N	Mean	Std. Deviation	Std. Error Mean	Correlation
Measurement	Conventional method	20	1.760	.2891	.0646	.995**
	Final denture fabrication	20	1.750	.2947	.0659	
	Independent Samples Test					
	t-test for Equality of Means					
	T	df	Sig. (2-tailed)	Mean Difference	Std. Error Difference	95% Confidence Interval of the Difference
						Lower / Upper
Measurement	0.108	38	0.914†	0.0100	0.0923	-0.1769 / 0.1969

Table 2: Comparison of measurements recorded using the customised gauge intraorally in relation to final denture measurements on left side (Independent t-test).†Non-significant (p > 0.05).

Discussion

Lateral throat form, area situated at the distal end of the alveolo-lingual sulcus, has profound influence on the retention and stability of mandibular dentures. Yet its importance is not appreciated by most clinicians. The length and thickness of the flange in the space are different depending on the tonicity, activity, and anatomic attachments of the adjacent structures. Neil described the difference of this important area and divided it into three classifications class 1, class 2 and class 3 [3].

A classification for lateral throat form using customised gauge was proposed as class a, class b, class c based on obtained length values which shows that measurement of lateral throat form using gauge showed consistent result [4].

In this current study the customised gauge is used to measure and assess length of the lateral throat form which shows that there is no significant difference between intra oral measurement and measurement of denture flange irrespective of both the sides was observed.

The lack of difference in values can be due to various reasons including proper extensions of flanges, proper hand skill, proper technique of measuring the depth intra orally. Thus, according to this study the tool can be used to check the reliability of the instrument during diagnosis and treatment planning.

In similar way a customized instrument to measure lateral throat form intraorally and compare its efficacy with the conventional method [5]. Another study observed the significant differences between the vertical dimension of lateral throat form measured in patients mouth and that of their diagnostic casts using a customized instrument [6].

In the present study, the customized tool described in this report gives us the exact value of LTF depth which will be helpful in classifying it to ensure that the denture is fabricated with proper extension helping us achieve better retention and stability in mandibular dentures.

Conclusion

Complete coverage of the depth of the lateral throat form is essential for proper retention of mandibular dentures thus, this clinical study aims for assessment of the depth accurately prior to determine proper extensions of custom tray and also the accuracy of the tool is due to consistency of the result obtained above, helping us to judge the expected retention property of the lower denture from the existing Lateral throat form and help in doing the treatment planning in order to improve the retention of mandibular denture.

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