Short Communication

The Proportion of 3 Classes of Lateral Throat Form

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The aim of this study was to investigate the proportion of 3 Neil's classifications of lateral throat forms and the difference in the length of the lateral throat form between the dentures and the patient's actual anatomy. The classification of lateral throat form was determined by the patient's functional movements, and an implant depth gauge was used to measure the length of the lateral throat form in the patient's mouth and compare it to that of the dentures. One hundred mandibular edentulous patients were measured. The proportion of Neil's Class I lateral throat form was 70%, the proportion of Class II was 25%, and the proportion of Class III was 5%. The mean difference between the actual lateral throat forms and the dentures was 6.7 ± 2.9 mm at the anterior point of measurement (from the anterior part of the retromolar pad to the mouth floor) and 10.0 ± 3.7 mm at the posterior point (from the middle of the retromolar pad to the mouth floor). The difference in length between the ridge height of the mouth and the denture was statistically significant ($P < .001$). *Int J Prosthodont 2007;20:640–642.*

The lateral throat is the area situated at the distal end of the alveololingual sulcus. This area has profound influence on the fabrication of complete dentures, yet its importance is not appreciated by most clinicians. The extension of the denture into this area can resist horizontal forces,[1] increase border sealing, prevent the tongue from returning to its polished surface, act as a displacing lever on the denture border,[2] and contribute to neuromuscular control.

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 3 classifications.[3] Most edentulous patients have Class I and II lateral throat forms; Class III is rare, but the actual proportion is unknown.

The purpose of this study was to investigate the proportion of the 3 throat form classifications and to compare the length of the lateral throat form in patients' mouths to that of their dentures.

Materials and Methods

Intraoral data were collected for 100 patients from dental clinics. The oral examination and classification of the lateral throat form were recorded according to Neil's classification. The patients were instructed to set the tongue into a relaxed position. Then the investigator put his relaxed finger, lightly adapted to the patient's lingual vestibule, toward the lateral throat form. The

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Fig 1 *(left)* Measurement of lateral throat form with an implant depth gauge and mouth mirror.

Fig 2 *(right)* Measurement of the corresponding area on the denture with an implant depth gauge.

patient was told to protrude the tongue one fourth of an inch beyond the edge of the lower lip. If the finger felt no appreciable movement, the throat form was classified as Class I. If the finger was entirely displaced, the throat form was classified as Class III. The throat form was classified as Class II when the finger felt intermediate functional movement of the tissue.[4]

In addition, an implant depth gauge was used to probe the depth of the lateral throat form.[5] Initially, a mouth mirror was used to hold the tongue away from the lateral throat form. The patient was instructed to protrude the tongue one fourth of an inch beyond the edge of the lower lip. At this time, the implant depth gauge was used to adapt to the mouth floor and measure the length from the anterior and middle of the retromolar pad to the mouth floor at both the left and right sides (Fig 1). After the oral examination, the corresponding areas of the patient's mandibular complete denture were measured (Fig 2).

To determine the reliability of the data, 2 dental clinicians performed the measurement in 20 patients in a pilot study. The relationship of the measuring data according to the 2 investigators showed good reproducibility and reliability (the correlation coefficients were approximately 0.83).

Results

The measuring data of 100 patients (41 men, 59 women; mean age: 74.77 years) were recorded in the study. The proportion of Neil's Class I lateral throat form was 70%, the proportion of Class II was 25%, and the proportion of Class III was 5% (Table 1). The mean length of the lateral throat form was 14.5 ± 1.7 mm at the anterior point in the mouth and 17.3 ± 1.7 mm at the posterior point. Statistically significant differences were present in the length of the lateral throat form between the anterior and posterior points ($P < .0001$) (Table 2). Statistically significant differences were also revealed in the length of the lateral throat form between the oral cavity and the denture at the anterior (6.7 ± 2.9 mm) and posterior points (10.0 ± 3.7 mm) ($P < .0001$ and $P < .0001$, respectively).

Table 1 Proportion of Neil's Classification

Classification	%
Class I	70
Class II	25
Class III	5

Table 2 Comparison of the Length (mm) of Lateral Throat Form at Anterior and Posterior Points Between the Patients' Mouths and Dentures (Means ± SDs)

	Mouth	Denture	*P**
Anterior	14.5 ± 1.7	7.8 ± 2.4	< .0001
Posterior	17.3 ± 1.7	7.4 ± 3.3	< .0001
*P**	< .0001	.0163	

*Paired *t* test.

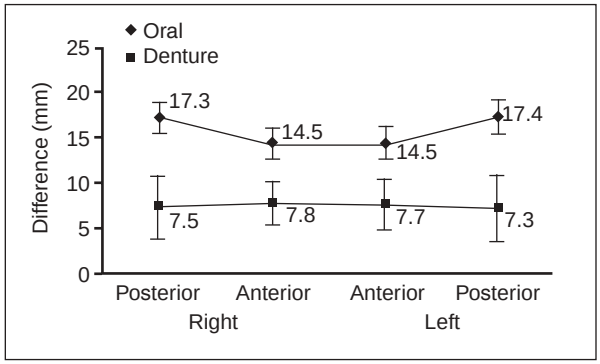

Fig 3 Difference at anterior and posterior areas between the oral cavity and denture.

Discussion

In this study, Class I lateral throat form (70%) was about 3 times more common than Class II (25%). Class III (5%) was rare. These results correspond to the authors' clinical experiences and Neil's description. These data could be a useful guideline for clinicians to fabricate a proper custom tray for the majority of patients.

According to the results of this study, the length of lateral throat form in patients' oral cavities was statistically significantly longer than in their dentures (Fig 3).

Most edentulous mandibular stock trays are short in length of the lateral throat form, and therefore when the clinician makes the primary impression procedure with a stock tray, the study cast is short for the fabrication of the custom tray. The key step to a successful final impression is the selection of a proper tray. If the clinician performs the border molding procedure with an improper custom tray, the border molding material will not be placed into the proper region, and the correct lateral throat form may not be obtained.

The findings of this study suggest that the clinician should use an implant depth gauge to measure the length of lateral throat form before fabricating the complete dentures. Then the measurement can be made with the corresponding portion of the custom tray to examine whether its extension is adequate.

Conclusions

The following conclusions were drawn from this clinical study:

1. The majority of lateral throat forms are Class I (70%).
2. Statistically significant differences were revealed between the length of the lateral throat form in patients' mouths and in their mandibular complete dentures.
3. With the use of the implant depth gauge, the lateral throat form of the custom tray could be adjusted properly.

Acknowledgments

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Literature Abstract

Factors affecting late implant bone loss: A retrospective analysis

The authors investigated factors affecting late implant bone loss. Sixty-nine patients were recruited from the Department of Periodontics and Oral Medicine at the University of Michigan School of Dentistry and the Misch International Implant Institute. Three hundred thirty-nine endosseous root-form implants that were in place for more than 3 years were examined. Clinical parameters included presence or absence of suppuration, modified Bleeding Index, modified Plaque Index, Gingival Index, probing depth, and width of keratinized mucosa. Average annual bone loss was calculated by evaluating digitized periapical and panoramic radiographs. Patient satisfaction was also judged by means of a questionnaire. The implants were categorized based on the following factors: *(1)* surface characteristics (smooth versus rough); *(2)* length (short [< 10 mm] versus long [≥ 10 mm]), width (narrow [< 3.75 mm], regular [3.75 to 4.0 mm], or wide [> 4.0 mm]); *(3)* amount of keratinized mucosa (<, >, or = 2 mm); *(4)* location (anterior versus posterior; maxilla versus mandible); *(5)* type of prosthesis (fixed versus removable); and *(6)* type of opposing dentition. The chi-square test was used to evaluate categorical clinical parameters, while the Student *t* test was performed to analyze differences for the continuous clinical parameters within groups. Analysis of variance was used to analyze differences among the 4 groups. Further, panoramic annual bone loss (ABL) was modeled using the random intercept mixed effects model. The study found shorter implants, wider implants, implants supporting fixed prostheses, and implants in smokers to be associated with greater ABL ($P < .05$). The random intercept mixed effects model showed that implant length was the most critical factor for the maintenance of ABL. Considering the limitations of this retrospective study, the authors recommend randomized controlled clinical trials be conducted to verify the results.

Chung DM, Oh TJ, Lee J, Misch CE, Wang HL. *Int J Oral Maxillofac Implants* 2007;22:117–126. **References:** 80. **Reprints:** Dr Hom-Lay Wang, Department of Periodontics and Oral Medicine, University of Michigan School of Dentistry, 1011 North University Avenue, Ann Arbor, MI 48109-1078. E-mail: homlay@umich.edu—*Tapan N. Koticha, National University of Singapore Faculty of Dentistry, Singapore*