How to Cite:
Saini, R. S., & Kaur, K. (2022). Assessment of impact of relief at the median palatal plate on denture-supporting ability. *International Journal of Health Sciences*, *6*(S8), 908–911. https://doi.org/10.53730/ijhs.v6nS8.9943

Assessment of impact of relief at the median palatal plate on denture-supporting ability

Dr Ravinder Singh Saini
Associate Professor, COAMS, King Khalid University, Abha, Saudi Arabia
Corresponding author email: dr_ravi_saini@yahoo.com

Dr. Kanwalpreet Kaur
MDS, Pediatric and Preventive Dentistry, Consultant Pediatric Dentist, Ludhiana, Punjab

***Abstract*---**Background: The present study was conducted for assessing the impact of relief at the Median Palatal Plate on Denture-supporting Ability. Materials & methods: The present study was conducted for assessing the impact of relief at the Median Palatal Plate on Denture-supporting Ability. In 20 dentulous subjects, pseudopalatal plates were affixed to the palatal mucosa. The relief at the median palatal plate was categorized as: No-relief, 0.25 mm relief, and 0.50 mm relief. All the results were recorded and analysed by SPSS software. Results: During the pain onset, both clenching force and subsidence of the palatal mucosa in the 0.25 and 0.50-mm relief conditions were greater than those under the no-relief condition. The results were found to be statistically significant. However, while comparing in between the 0.25 and 0.50 mm relief conditions, there was no significant difference. Conclusion: The relief area of maxillary full dentures suitable for individual patients was determined in an objective and convenient manner with improved accuracy using this technique.

***Abstract*---**relief, median, palatal plate.

Introduction

With the aging population, the demand for removable denture prosthetics is increasing. High-quality plate-denture treatment is linked to an increased quality of life for patients. For plate-denture treatment, an objective evaluation of the properties of the denture-supporting mucosa is important.[1- 3] Recently, plate dentures with frameworks of cobalt–chromium alloy and zirconia have been widely used for their increased durability and comfort while in use. However, after the fabrication of these dentures, it is difficult to modify them by adjusting;

therefore, it is essential to sufficiently assess the sites and magnitude of relief at the time of fabrication. In practice, in connection with complete denture treatment in the past, as a part of denture design, relief is provided in the mid-palatal area. This relief is an important means of preventing pain due to the denture plate in the region of mucosal thinning, ensuring denture stability, and preventing denture damage, as well as preventing compression injury to the nerves and blood vessels. However, a considerable variation exists in the magnitude of optimal relief and relief range, and no guidelines are available that present these clearly, leading the dentists to decide subjectively.[4- 6] Hence; the present study was conducted for assessing the impact of relief at the Median Palatal Plate on Denture-supporting Ability.

Materials & Methods

The present study was conducted for assessing the impact of relief at the Median Palatal Plate on Denture-supporting Ability. In 20 dentulous subjects, pseudopalatal plates were affixed to the palatal mucosa; anterior splints were affixed as maxillary references for measuring subsidence upon transmission of the clenching force through a pressurizing splint affixed to the mandible. The relief at the median palatal plate was categorized as: No-relief, 0.25 mm relief, and 0.50 mm relief. Subjects clenched their jaws until they experienced pain. The clenching force and subsidence of the palatal mucosa were simultaneously measured and compared across relief categories, and their relationship to the extent of relief at the onset of pain was evaluated. All the results were recorded and analysed by SPSS software.

Results

During the pain onset, both clenching force and subsidence of the palatal mucosa in the 0.25 and 0.50-mm relief conditions were greater than those under the no-relief condition. The results were found to be statistically significant. However, while comparing in between the 0.25 and 0.50 mm relief conditions, there was no significant difference. The clenching force and subsidence of the palatal mucosa at the onset of pain varied with the extent of relief. Overall, an increase in relief resulted in significant increases in the mean values of the clenching force and subsidence of the palatal mucosa at the onset of pain.

Table 1: Intergroup comparison

Variable	p- value for Clenching force	p- value for Subsidence of the palatal mucosa
Relief condition	0.001 (Significant)	0.002 (Significant)
No-relief condition		

Table 2: Comparison in between 0.25 mm relief condition and 0.50 mm relief condition

Variable	p- value for Clenching force	p- value for Subsidence of the palatal mucosa

0.25 relief condition	0.822	0.415
0.50 relief condition		

Discussion

By far the most critical factors are the patient adaptional factors. Many patients with positive stereotypes may overcome errors of prescription. Some patients, however, are unable to adapt physically and/or psychologically to dentures that satisfy clinical and technical prosthodontic norms. Clearly it would be in the best interests of the clinician and the patient to determine this at the assessment stage. The prescribing clinician is responsible for planning complete dentures after diagnosing potential problems; be they anatomical, physiological, pathological or emotional. Once a denture-wearing problem becomes apparent, it is important that it is addressed in a logical and systematic way. That is to say, an adequate history of the problem must be obtained and a careful examination of the mouth carried out so that an accurate diagnosis can be made, and an appropriate treatment plan devised.[7- 9] Hence; the present study was conducted for assessing the impact of relief at the Median Palatal Plate on Denture-supporting Ability.

During the pain onset, both clenching force and subsidence of the palatal mucosa in the 0.25 and 0.50-mm relief conditions were greater than those under the no-relief condition. The results were found to be statistically significant. However, while comparing in between the 0.25 and 0.50 mm relief conditions, there was no significant difference. Tanaka S et al evaluated the effect of Relief at the Median Palatal Plate on Denture-supporting Ability. The clenching force and subsidence of the palatal mucosa were simultaneously measured and compared across relief categories, and their relationship to the extent of relief at the onset of pain was evaluated. At the onset of pain, both clenching force and subsidence of the palatal mucosa in the relief conditions were significantly greater than those in the no-relief condition ($p < 0.05$). In some patients, both clenching force and subsidence of the palatal mucosa decreased with increase in relief.[10]

The clenching force and subsidence of the palatal mucosa at the onset of pain varied with the extent of relief. Overall, an increase in relief resulted in significant increases in the mean values of the clenching force and subsidence of the palatal mucosa at the onset of pain. Yoo SY et al performed clinical and radiographic evaluations of implants in implant-crown-retained removable partial dentures (IC-RPD) compared to implant overdentures (IOD) in maxillary edentulous patients. Twenty IC-RPDs with 74 splinted implant crowns and 18 IODs with 71 implants retained with magnet attachments were observed in 38 patients. We statistically analyzed survival rates and marginal bone loss (MBL) of implants based on multiple variables including first year pathologic condition, location of placed implant, age, and sex in both treatments. Patient reported oral measurements (PROMs) regarding functional/esthetic improvement after IC-RPD or IOD treatments and prosthetic complications were also statistically analyzed. After a median observation period of 47.1 months (up to 147 months), they observed 97.3% implant survival rates for IC-RPD and 70.4% for IOD ($p < 0.001$). Among variables, first year pathologic condition ($p < 0.001$) and sex ($p = 0.027$) influenced implant survival rates. The MBL of implants for IC-RPD and IOD groups at the

final check-up were 1.12 ± 1.19 mm and 3.31 ± 1.71 mm, respectively ($p < 0.001$). In both groups, patients with peri-implantitis ($p < 0.001$) and patients older than 65 years ($p = 0.029$) showed significantly higher implant MBL regardless of treatment modality.[11]

Conclusion

The relief area of maxillary full dentures suitable for individual patients was determined in an objective and convenient manner with improved accuracy using this technique.

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