

Knowledge, Attitude and Practice about Relining of Complete Dentures in Clinical Practice: A Survey among Nepalese Prosthodontists

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ABSTRACT

INTRODUCTION: Relining refers to resurfacing the tissue side of a denture with new base material to improve adequate adaptation of the tissue surface of the denture base to the bearing foundation. It is a cost-effective means to prolong the service life of the denture. The objective of the study was to determine knowledge, attitude, and practice about relining of complete dentures in clinical practice among Nepalese Prosthodontists. **MATERIALS AND METHODS:** A questionnaire-based survey was conducted among Nepalese Prosthodontists practicing in Nepal from June, 2021 to August, 2021. A pre-tested questionnaire from a published study was used for the study. A comprehensive, self-administered questionnaire consisting of close-ended questions was mailed to the participants. Data was analyzed using SPSS Ver. 17. Descriptive statistics using frequency distribution and percentage was calculated. **RESULTS:** Majority 78% knew that relining is the process used to resurface the tissue side of the removable dental prosthesis with new base. 90.2% of respondents knew that relining is indicated when the residual ridges have resorbed and adaptation of the dentures to the ridges is poor. 70.7% of the participants preferred both direct and indirect technique for relining depending upon the cases. 90.2% of the respondents believed that the denture should be disinfected before relining, 9.7% disagreed that disinfection needs to be done before relining. 90.2% of the respondents felt that relining improves the stability and retention of the denture. All the prosthodontists agree that relining the denture improves the patient satisfaction. **CONCLUSIONS:** Nepalese Prosthodontists had adequate knowledge regarding indication, and techniques for relining of complete dentures. Regular clinical meets and continuing dental education programs may be helpful in apprising recent development in this field.

Keywords: Complete denture, relining, soft liner, prosthodontists.

INTRODUCTION

The major goal of Complete denture therapy is to develop close contact between the denture base and the denture supporting foundation [1,2]. Prolonging the functional life of dentures is a serious challenge in prosthodontics [3]. Dentures require periodic maintenance in order to provide the best possible service to the patient for many years [4]. Relining is the process of resurfacing the tissue side of a denture with new base material in order to improve fit [5-8]. The major goal of relining is to re-establish proper adaptation of the denture base to the bearing region as well as the initial jaw

relationships [9,10]. Use of resilient liners in the clinical management of prosthodontic patients is well documented and their adjunctive benefit recognized [15]. The soft lining material allows a uniform distribution of stress at the mucosa/lining interface [16]. The indications for this reduction include ridges with multiple osseous undercuts, ridges with thin, nonresilient mucosal coverage, persistent denture sore mouth, knife-edge mandibular ridges, relief for the median palatine suture or torus palatinus, and prosthodontic restorations for congenital or acquired oral defects

[17,18,19]. With the increased number of products available, the dentist must understand the differences in the materials to prescribe, select, and use the product best suited to meet the challenges a patient may present clinically [20-22]. Denture relining is a cost-effective approach to extend the life of a denture, and it should always be explored before a new one is made. This is especially true in a developing country like ours, where the added costs and appointments connected with new denture construction can discourage patients from seeking treatment at all [23]. Clinical success requires a grasp of the clinical indications and limitations of relining materials and methods [24]. However, due to a lack of understanding and technical expertise in the area of relining and rebasing, these operations have frequently been neglected where indicated. This has resulted in unneeded denture remakes that may have been avoided with relining [9]. Unfortunately, dentists could benefit from additional training in this area. Therefore, the purpose of this study was to explore knowledge, attitude, and practice about relining complete dentures among Nepalese Prosthodontists.

MATERIALS AND METHODS

Study design and setting

A descriptive cross-sectional study was conducted among Nepalese Prosthodontists practicing in private, public sectors and dental colleges in Nepal. A questionnaire-based survey was conducted among Nepalese Prosthodontists practicing in Nepal from June, 2021 to August, 2021.

Participants and procedure

All the Prosthodontists registered with Nepalese Prosthodontic Society (NPS) were included in the study. The list of Nepalese Prosthodontists was obtained from NPS member database available online in the official site of NPS. A pre-tested questionnaire from a published study was used for the study. A survey was conducted through a printed and online standard comprehensive, self-administered questionnaire consisting of close-ended questions was mailed to the participants. The questionnaires were distributed to prosthodontists practicing in Nepal. The participation in the study was voluntary and the researcher ensured that the information about the participants was strictly confidential.

Statistical analysis and data management

Collected data were entered in Microsoft Excel 2007 and it was transferred into Statistical Package for Social Sciences (SPSS) 17.0 version for statistical analysis. Descriptive statistics using frequency distribution and percentage was calculated. The data were tabulated and presented in bar diagrams whenever appropriate.

Ethical considerations

The ethical approval for conducting the study was obtained from the Institutional Review Committee (IRC), Institute of Medicine, Tribhuvan University, Maharajgunj, Kathmandu, Nepal [IRC Ref: 197(6-11)E2 078/79].

RESULTS

Out of 90 questionnaires sent to Nepalese prosthodontists, 82 responded ensuing total response rate of 91.11%. All the respondents treated complete or partially edentulous patients with removable dental prosthesis. Among all the respondents, 78% knew that relining is the process used to resurface the tissue side of the removable dental prosthesis with new base. However, 2.4% of respondents thought that relining is the process of replacing the entire denture base material on an existing prosthesis with new base. Regarding the response to the query regarding the conditions that required relining, 53.7% responded that some of conventional complete denture patients and removable partial denture patients required relining, 7.3% of respondents thought that only immediate denture cases required relining. 90.2% of respondents knew that relining is indicated when the residual ridges have resorbed and adaptation of the dentures to the ridges is poor. 70.7% of the participants preferred both direct and indirect technique for relining depending upon the cases. 36.6% of respondents opined that 0.5 mm from the tissue surface and 1 mm from denture border area before relining 90.2% of the respondents believed that the denture should be disinfected before relining, 9.7% disagreed that disinfection needs to be done before relining. Regarding the response to the preparation performed before relining, 64.3% of respondents removed all calculus and slimy layer with ultrasonic cleaner, and scraped the tissue surface before relining, 24.4% examined and assessed the denture surface and soft tissues before proceeding for relining, and 12.2% wiped the

denture with cotton roll dipped in antiseptic solution before relining (Table 1). Majority 90.2% of the respondents felt that relining improves the stability and retention of the denture. All the

prosthodontists agree that relining the denture improves the patient satisfaction. More than half (51.2%) felt that relining increases the vertical dimension (Table 2).

Table 1 | Response on Knowledge related questions regarding relining among prosthodontists (n=82)

Questions	Response (%)
According to you the concept of relining is?	
a. Process of replacing the entire denture base material on an existing prosthesis	2.5
b. Process used to resurface the tissue side of the removable dental prosthesis with new base	78
c. Both are partially correct	19.5
How many of your patients require relining?	
a. Some of the conventional complete denture patients	36.6
b. Some of removable partial denture patients	2.4
c. Both	53.7
d. Only immediate denture patients	7.3
In your practice, what are the conditions for relining?	
a. When centric occlusion of teeth is irretrievably out of harmony with centric relation	2.5
b. When severe osseous undercuts exist	0.0
c. When denture base doesn't cover the denture foundation for adequate support	7.3
d. When residual ridges have resorbed and adaptation of the dentures to the ridges is poor	90.2
What kind of preparation you would perform before relining?	
a. Wipe the denture with cotton roll dipped in antiseptic solution and proceed for relining	12.2
b. Examine the denture surface and proceed for relining	0.0
c. Examine and assess the denture surface and soft tissues, then only proceed for relining	24.4
d. Remove all calculus and slimy layer with ultrasonic cleaner, scrape the tissue surface and proceed	63.4
According to you, how much thickness of denture base should be scraped out?	
a. 2 mm from tissue surface and 2mm from denture border area	7.3
b. 1-1.5 mm from tissue surface and 2 mm from the denture border area	36.6
c. 0.5 mm from the tissue surface and 1 mm from denture border area	36.6
d. 0.5 mm from tissue surface and 0.5 mm from denture border area	19.5

Table 2 | Response on attitude related questions regarding relining among of prosthodontists (n=82)

Questions	Strongly disagree	Disagree	Don't know	Agree	Strongly agree
Relining improves the stability and retention of denture	0	9.8	0	43.9	46.3
Relining the denture base increases the vertical dimension	7.3	24.4	17.1	36.6	14.6
Soft reliner is harmful to the oral mucosa	2.4	39	7.3	46.3	5
Disinfection should be done before relining the denture	0	9.8	0	34.1	56.1
Reliner with antimicrobial property should be used in every patient	17	9.8	17.1	46.3	9.8
Relining the denture improves patient satisfaction	0	0	0	68.3	31.7
Reliner with antimicrobial property should be used in every patient	17	9.8	17.1	46.3	9.8

Regarding different brand of soft liners used for denture relining, most of the participants preferred either Permasoft, Dentsply or Soft reline, GC. (Figure 1). Regarding the duration of use of relining

materials, 43.9% of practitioners think that relining materials can be both used for short term or long term, and 39% feels that relining should be used for short term (Figure 2).

About frequently of replacing the relining materials, 46.3% of respondents thought that replacement of relining material should be done after 6 months, 31.7% thought that it should be done after 1 month. More than half (51.2%) of participants agreed that a soft reliner can be harmful to the mucosa. Similarly, 56.1% of respondents think that reliner with antimicrobial property should be used in every patient.

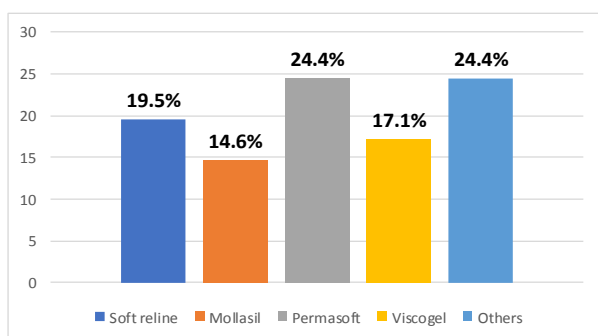


Figure-1 | Brands of Soft liner used in clinical practice (n=82)

DISCUSSION

The study was conducted to determine the knowledge, attitude, and awareness about relining of complete dentures among Nepalese Prosthodontists. It was noted that 90.2% of respondents knew that relining is indicated when the residual ridges have resorbed and adaptation of the dentures to the ridges is poor. Residual ridge resorption causes removable dental prostheses to lose support, impairing their function, retention, and stability [26]. In order to improve the fit of the dentures to the alveolar ridges and soft tissues, as well as to harmonize occlusion, improve function, they must be relined with a new resin layer [13, 25]. All the prosthodontists agree that relining the denture improves the patient satisfaction. Majority of the participants knew that relining is the process used to resurface the tissue side of the denture. However, in a similar study it was revealed that about 26% were not sure about the exact procedure of relining [24]. Majority 90.2% of the respondents felt that relining improves stability and retention of the denture. A study done by Hristov I et. al revealed that that relining denture bases resin improved their adaptation to the ridges. However, there was no statistically significant change in stability after relining [25].

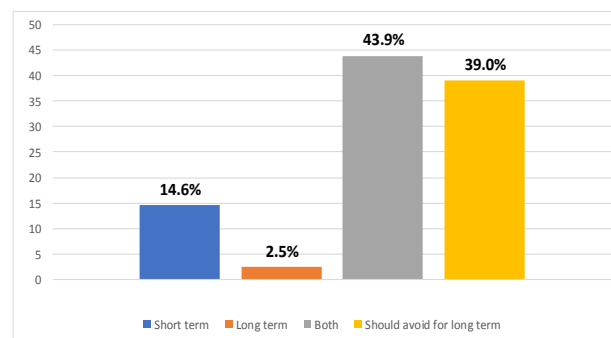


Figure-2 | Duration of use of soft liners (n=82)

Regarding the response to the preparation performed before relining, majority of respondents removed all calculus and slimy layer with ultrasonic cleaner, and disinfected the denture before relining. Similar results were obtained in a study conducted by Rathi A et al [24]. About frequently of replacing the relining materials, 46.3% of respondents thought that replacement of relining material should be done after 6 months. Liners used for less than 30 days are classified as short-term, while those used for more than 30 days are classified as long-term [20]. Tissue conditioners used shortly after surgery or for short-term treatments are known as short-term liners. Poly (ethyl methacrylate) powder, aromatic esters, and alcohol are commonly used in tissue conditioners. Long-term soft liners are commonly made of silicone or plasticized acrylic. [26,27].

Long-term silicone soft liners are typically worn for a year [26]. As a result, the liner must be checked on a regular basis and replaced if necessary. About half (51.3%) of participants agreed that a soft reliner can be harmful to the mucosa. 56.1% of respondents think that reliner with antimicrobial property should be used in every patient. Fungi and dental plaque rapidly colonize soft liner materials in oral cavity and may cause mucosal infections. *Candida albicans* is the most common organism to invade soft liner materials [28]. Antimicrobial integration to lining materials has been studied before, however there are few instances of extremely effective combinations. Different antimicrobials, such as silver nanoparticles, antifungal medicines, organum oil, silver zeolite, and seed oils, were incorporated [29]. 51.2% felt that relining the denture increased the vertical dimension. When the procedure is not performed precisely, problems such as incorrect vertical dimension of occlusion and errors in centric occlusion can occur [30].

To facilitate the seating of the denture during impression, some physicians recommend drilling holes in the palatal area or removing part of the palatal component of the denture, particularly on the maxillary denture [30,31]. Even if the above techniques are used to minimize displacement during the relining impression, the relined denture may still be displaced [31]. The major limitation of the study was conducted among prosthodontists only. So, drawing firm conclusions, and generalization of the study outcomes to entire dental fraternity in Nepal is not possible.

CONCLUSIONS

Relining is a viable alternate to extend the useful life of the denture, especially among patients in an economic restrained country like Nepal, who may

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