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## Selection of Treatment Method for Repeated Removable Denture Prosthetics

▷ **Abstract.** The majority of patients do not adhere to the recommended use periods for removable prosthetic appliances and seek repeated prosthetic treatment only when the condition of their existing dentures becomes critical, leading to compromised aesthetics and impaired chewing function. A key feature of repeated prosthetics is that the longer a patient has used a removable denture, the more ingrained their habits become with the old prosthesis, making adaptation to a new one more difficult. Breaking these habits and the established perception of the ideal comfortable denture is a challenging task. Therefore, when planning the design of a new prosthesis, it is essential to examine the previous removable denture thoroughly. When fabricating a new dental prosthesis, the characteristics of the previous one should be considered, while also restoring all lost functions. During repeated prosthetic treatment, patients adapt to new removable dentures with much more difficulty and at a slower pace.

**Keywords:** *prosthesis usage period, repeated prosthetics, denture design.*

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Among the challenges of prosthetic dentistry, the features and timing of repeated prosthetic treatment with dental prostheses play a significant role [1]. After completing prosthetic treatment, patients who are satisfied with the initial results often avoid visiting the dentist for extended periods. In the absence of apparent changes in the oral tissues or the prosthesis itself, patients usually remain content [3]. Even when dentures show signs of wear, many patients continue using these imperfect devices, which leads to significant dysfunctions in the dentoalveolar system and complicates future prosthetic procedures [4, 5].

When performing repeated prosthetic treatment for edentulous patients, dentists must select the most appropriate treatment method and materials. The issue of effective and lasting repeated prosthetic care has its specific challenges [2]. These include the irreversible nature of the condition, its potential progression, and the inevitability of prosthesis replacement.

This study *aimed* to optimize the algorithm for repeated dental prosthetics, considering changes in the condition of abutment teeth and the periodontium.

Any structure placed in the oral cavity (such as fillings, crowns, inlays, and prostheses) is subject to significant stress during chewing, which is also accompanied by sharp temperature fluctuations (e.g., from ice cream to hot tea). Over time, this leads to wear and necessitates retreatment. Any removable prosthetic device requires replacement after 3–5 years of use. This is due to atrophy of the jawbone that supports the denture, causing it to become loose or irritate the gums. The plastic teeth used in these dentures are also prone to wear and gradually lose their chewing efficiency. Instead of properly grinding food, the person tends to mash it.

Repeated dental prosthetics refers to prosthetic treatment provided after prolonged use of a removable or fixed denture [6, 7]. It has specific features that, if not considered, may result in unsuccessful outcomes. These features include the patient's habits developed while using the prosthesis. Breaking such ingrained patterns can be especially difficult in elderly patients. That is why, when designing a new prosthesis, prosthodontists typically conduct a detailed examination of the old denture.

*Research Objectives:*

1. To survey patients in need of repeated dental prosthetics;
2. To identify the reasons for repeated dental prosthetic treatment based on patient examination results;
3. To examine the specific features of repeated prosthetic treatment.

## Results and Discussion

According to our research, the majority of patients using removable dental prostheses were between the ages of 60 and 69. The number of patients aged 50–59 was half that of the other age groups. There were significantly fewer patients under the age of 49 and over 70, which corresponds to the general demographic trends and data on premature tooth loss [8].

Literature sources suggest that the recommended average lifespan of removable dental prostheses is 3–4 years [6]. In our study, the most common reason cited for seeking repeated removable prosthetics was aesthetic dissatisfaction with existing dentures—this was reported by 35.7% of patients. The second most common reason (30.8%) was poor retention and stability, followed by fracture of the denture (including clasps) at 14.2%, and poor fixation due to tooth extractions at 11.9%.

Interestingly, 7.1% of patients who sought repeated prosthetic treatment had not used their previously fabricated removable dentures at all, as they were unable to adapt to them. According to these patients, they had visited for adjustments several times, but ultimately could not get used to the removable appliances for various reasons.

Most patients do not adhere to the recommended periods of denture use and only seek repeat prosthetics when the condition of the existing denture becomes critical, leading to compromised aesthetics and chewing function. Many patients cite other reasons for delaying treatment, such as fear of adapting to a new prosthesis or financial concerns.

It is often necessary to explain to patients that prolonged use of unsuitable, worn-out dentures can exacerbate oral conditions, including increased atrophy of the prosthetic bed, chronic trauma to the oral mucosa, and changes in the temporomandibular joint. All of this ultimately complicates repeated prosthetic treatment, making impression taking more difficult, reducing denture retention, and prolonging the adaptation period to new prostheses.

A key feature of repeated prosthetic treatment is that the longer a patient has used a removable

denture, the more ingrained their habits become with the old prosthesis, and the harder it is to adapt to a new one. Breaking established habits and the patient's perception of a perfect, comfortable denture is difficult. That's why the design of a new prosthesis should be based on a detailed study of the previous one, considering aspects such as the base borders, dental arch width, palatal shape, and relief, etc. A new prosthesis must consider these characteristics while fully restoring all lost functions.

Therefore, when treating patients repeatedly with removable prostheses, it is advisable to use a fabrication process that includes gradual, step-by-step correction of denture elements. This approach is necessary because patients adapt to new removable dentures more slowly and with greater difficulty during repeated treatment.

In cases of pathological mobility of abutment teeth (grades II and III according to Entin) and short clinical crowns (less than 5 mm in length), overdentures with a telescopic fixation system are recommended. During repeated prosthetic treatment, it is crucial to evaluate the quality of root canal fillings and monitor for apical changes in abutment teeth using CT scans.

When using rigid fixation systems, not only should clinical anatomy be considered, but also the patient's ability and willingness to precisely follow the dentist's recommendations. After repeated prosthetic treatment with rigid attachment systems, regular follow-ups are essential to ensure timely matrix replacement and rebasing. Failure to do so may lead to lock deformation, periodontal overload, gum recession, increased tooth mobility, microcirculatory issues in the periodontal vessels, widening of the periodontal ligament space, atrophy of the alveolar bone wall, and formation of bone pockets.

It is recommended that removable dentures with cast bases and rigid attachments be used for up to 4 years in patients with a small number of remaining teeth. After this period, there is a high risk of attachment and matrix deformation, resulting in a semi-mobile connection. Mobile attachments are used in less favorable conditions, such as uneven or severe atrophy of the alveolar ridge or grade III mobility of abutment teeth. The recommended lifespan of such prostheses is about 2,5 years.

In cases where abutment teeth are likely to be extracted, overdentures are recommended, as they can take on the function of a complete removable prosthesis once the teeth are removed.

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### Вибір методу лікування при повторному протезуванні знімними зубними протезами

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**Анотація.** Більшість пацієнтів не дотримуються рекомендованих термінів використання знімних протезів і звертаються за повторним протезуванням лише тоді, коли стан наявних протезів стає критичним, що призводить до порушення естетики та жувальної функції. Ключовою особливістю повторного протезування є те, що чим довше пацієнт використовує знімний протез, тим глибше вкорінюється його звичка зі «старим» протезом, що ускладнює адаптацію до нового. Порушення цих звичок та усталеного сприйняття «ідеального» комфортного протеза є складним завданням. Тому під час планування конструкції нового протеза важливо ретельно дослідити попередній знімний протез. Під час виготовлення нового зубного протеза слід враховувати характеристики попереднього, а також відновлювати всі втрачені функції. Під час повторного протезування пацієнти адаптуються до нових знімних протезів набагато складніше та повільніше.

**Ключові слова:** термін використання протеза, повторне протезування, конструкція протеза.

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