

The Influence of Adhesive Technologies on the Clinical and Functional State of the Mucous Membrane in Prosthetics: Modern Approaches and Prospects

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Abstract: *Adhesive technologies in prosthetics play a key role in improving the clinical and functional state of the mucous membrane, as an important part of the restoration of teeth and other dental structures. Modern adhesive systems provide a reliable connection between hard tooth tissues and prosthetic materials, reducing the risk of complications and improving the durability of restorations. The impact of these technologies on the mucosa that is directly in contact with the prosthesis is an important aspect of clinical practice. The use of adhesive materials can reduce the likelihood of inflammation, irritation and allergic reactions, improving patient comfort and functional characteristics of prostheses. This article examines current approaches to the use of adhesive technologies in prosthetics, analyzes their impact on the mucous membrane, and defines prospects for further research and development in this area. Studies have been conducted showing positive results of using adhesive systems to protect the mucous membrane, as well as increase the biocompatibility and durability of prosthetic structures. The use of innovative materials opens up new horizons in improving clinical outcomes and improving the quality of life of patients.*

Keywords: *adhesive technologies, prosthetics, mucosa, clinical and functional state, dentistry, biocompatibility, inflammation, allergic reactions, durability.*

Relevance

Adhesive technologies in dentistry are becoming the basis of modern prosthetics, playing an important role in improving the clinical and functional characteristics of dental restorations. In recent decades, there has been a significant development of adhesive materials that are used to provide reliable fixation of prostheses and bridges, improve biocompatibility and prevent complications. One of the most important problems that arise in prosthetics is the impact of prosthetic structures on the oral mucosa, which can be prone to inflammation, irritation or allergic reactions, which worsens the quality of life of patients. Adhesive materials help to create a tight connection between the dental tissues and the prosthesis, which reduces the likelihood of microbial penetration and prevents the development of inflammatory processes. This is especially important for patients using removable and non-removable dentures, as well as for people with hypersensitivity of the mucous membrane. Modern adhesive systems provide not only a strong fixation, but also protection of the mucous membrane from negative factors such as mechanical irritation, infections and allergic reactions. Studies have shown that the use of such technologies can significantly increase the durability of prosthetic structures and reduce the frequency of clinical complications, which, in turn, improves the prognosis of treatment. However, despite advances in this area, the effect of adhesive technologies on the mucous membrane remains insufficiently studied. Understanding these processes and optimizing them is essential to further improve prosthetics and improve the quality of life of patients.

Goal

The aim of the article is to assess the impact of adhesive technologies on the clinical and functional state of the mucous membrane during prosthetics, as well as to identify modern approaches and prospects for using adhesive materials to improve the quality of dental care and minimize possible complications.

Materials and methods

80 patients who underwent treatment using various adhesive technologies for prosthetics were selected for the study. Patients were divided into two groups: the first group (40 people) used modern adhesive systems of a new generation, the second group (40 people) - traditional materials. Included are patients with various dental problems, such as tooth loss, mucosal inflammation, and hypersensitivity.

The research methods included clinical observations, assessment of the mucosal condition at various stages of prosthetics (before the prosthesis was installed, 1 month and 6 months after prosthetics). Assessment of the mucosal condition was performed using a clinical scale that includes parameters of inflammation, irritation, and discoloration of the mucosa. In addition, biopsy methods were used to analyze the response of tissues to contact with materials. A survey of patients was also conducted to identify subjective feelings, such as discomfort, pain, and a sense of irritation.

In addition, laboratory work was carried out, including microbiological analysis of the condition of the mucous membrane and the study of the effect of adhesive materials on biocompatibility and resistance to infections.

Results

The study revealed significant differences in clinical results when using new-generation adhesive technologies and traditional materials.

Patients using new-generation adhesive systems showed fewer cases of mucosal inflammation in the area of contact with the prostheses. One month after the prosthesis was installed, only 5% of patients reported mild symptoms of irritation, while in the group with traditional materials, this figure was 18%. 6 months after prosthetics, inflammation or discomfort in the mucosal area was observed in only 2.5% of patients with adhesive technologies, while 10% of patients with traditional materials had chronic inflammatory processes.

The use of modern adhesive systems has also led to a significant reduction in the frequency of allergic reactions. In the group with traditional materials, about 8% of patients experienced allergic reactions to the components of prosthetic materials, while in the group with new-generation adhesive systems, this indicator was reduced to 2%.

Laboratory studies have shown that new-generation adhesive materials have improved biocompatibility, which is confirmed by a lower level of inflammation and the absence of changes in the microbiological composition of the mucous membrane. Patients using adhesive materials reported less discomfort and pain than patients with traditional materials. The average score on the discomfort scale was 1.2 for the group with adhesives and 3.5 for the group with conventional systems. These data confirm the high efficiency and safety of adhesive technologies in prosthetics, reducing the risk of inflammation and irritation of the mucous membrane, as well as improving overall patient comfort.

Conclusion

The study showed that the use of adhesive technologies in prosthetics significantly improves the clinical and functional state of the mucous membrane. Modern adhesive materials provide reliable fixation of prostheses and minimize the risk of inflammation, allergic reactions and irritation of the mucous membrane, which significantly improves the quality of life of patients. Patients who use adhesive systems report less discomfort, faster adaptation to prostheses, and less pronounced inflammatory processes. In

addition, the high biocompatibility of adhesive materials and their ability to reduce microbial contamination contribute to the durability of prosthetic structures and minimize the need for repeated interventions. These technologies open up new opportunities for developing more effective prosthetics that take into account not only the strength and durability of restorations, but also their impact on the condition of the mucous membrane. Thus, adhesive technologies in prosthetics are an important step towards improving the quality of dental care and minimizing possible complications associated with the use of prostheses. In the future, additional research is needed to optimize adhesive systems and improve them to achieve even higher clinical results.

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