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**A COMPARATIVE ASSESSMENT OF THE EFFECTIVENESS OF ORTHODONTIC TREATMENT  
OF PARTIAL DENTITION DEFECTS USING DIGITAL TECHNOLOGIES****Anvarova Mukhtasar Anvarovna***Assistant Department of orthopedic dentistry, Uzbekistan***Akhmedov Alisher Astanovich***Head of the Department of Orthopedic Dentistry Samarkand State Medical University Samarkand,  
Uzbekistan***ABOUT ARTICLE****Key words:** Electromyographic, infrared thermometry, PMA, orthopaedic treatment, loss of occlusal contacts.**Received:** 03.05.2024**Accepted:** 08.05.2024**Published:** 13.05.2024**Abstract:** A number of studies that electronic axiography and digital kinesiography were employed to ascertain the efficacy of various orthopedic manipulations prior to and following treatment. These studies were conducted by V. D. et al. (2014), Persin L. S. et al. (2019), Arutyunov S. D. et al. (2019), and Mamedov Hell (2019). A. et al. (2019), Dubova L.V. et al. (2020), and Lebedenko I. Yu. et al. (2022). There is a paucity of evidence-based approaches to the assessment of prosthetic planning and treatment for partially edentulous patients. This is an area of clinical practice that is of paramount importance. The most crucial of these include the assessment of the efficacy of orthodontic treatment, the evaluation of the occlusal relationship and the degree of its correction, the assessment of the impact of installed orthodontic appliances on the masticatory muscles and the microbiocenosis of the oral cavity, the determination of indications for orthodontic treatment of patients with partial tooth loss, and the formulation of treatment strategies.**INTRODUCTION**

The relevance of research. has been demonstrated by determining indications for the use of various types of locking fastenings of arch prostheses in prosthetics for patients with terminal defects of the

dentition and various forms of alveolar process atrophy. Furthermore, the possibility of using adhesive technologies for fixing attachments on abutment teeth has been shown, and the maximum loads that an adhesive connection can withstand have been identified. A promising area of modern dentistry is the development and utilisation of robotic systems that permit automated manipulations within the oral cavity.

In certain instances, it is deemed appropriate to prepare hard dental tissues and perform endodontic treatment, install dental implants, and perform restorative operations in the maxillofacial system [Ivashchenko A. V. et al., 2020; Trunin D. A. et al., 2022; Mshayo R. et al., 2021]. Consequently, despite the pervasive integration of digital technologies into clinical practice, there remains a paucity of scientific publications that undertake a comparative assessment of the efficacy of orthopedic structures manufactured through traditional techniques, 3D printers, and milling tools. The data on the comparative accuracy of measurements of prostheses obtained using digital and traditional technologies is characterised by considerable inconsistency. In order to provide a more comprehensive understanding of the subject, it is necessary to clarify the data on the marginal and internal fit of fixed dentures made using both technologies, the degree of restoration of occlusal relationships, the effect on the gingival margin and pocket microflora.

**Aim of the study.** To study the advantages of digital technologies in the treatment of partial dentition defects and to compare the effectiveness of orthodontic treatment.

**Research objectives:**

1. To carry out a comparative analysis of the internal and final compatibility of artificial bridge decks produced using traditional and digital technologies.
2. Clinical evaluation of the rate of loss of occlusal contacts and the effectiveness of correction and use of dental occlusion in artificial bridges made using traditional and digital technologies;
3. Analysis of the results of the electromyographic and microbiological examination of the oral cavity of the patients in the research groups and study of the condition of the subprosthetic mucosa using infrared thermometry;
4. Economic justification for the use of orthopaedic structures made with traditional and digital technologies.

5. To carry out a comparative analysis of the effectiveness of digital technologies in the manufacture of fixed prostheses.

**Materials and Methods.** The work is based on the results of a study of 51 people aged between 30 and 69 years with bilateral terminal defects of the lower dentition who sought orthodontic treatment, of whom there were 5 men and 46 women.

All the patients studied were divided into two groups according to the type of removable prosthesis used. The first group consisted of 12 patients whose orthodontic treatment was carried out with removable partial dentures (plates) made using the Valplast thermal injection system technology based on nylon. The second group consisted of 39 patients who received arched dentures with clasps using the classic method.

Laser Doppler flowmetry (LDF) was performed using a home device "LAKK-01" (laser analyser of capillary blood flow) equipped with a helium-neon laser (LGN-207B) with a laser radiation power at the output of the fibre cable of at least 0.3 mW.

In order to obtain the most complete microcirculation characteristics, LDF values were recorded from the vestibular surface in the area of the marginal gingiva, the attached gingiva and the transitional fold on the supporting teeth, and in the area of the attached gingiva and the transitional fold in the prosthetic bed.

## **RESEARCH RESULTS AND DISCUSSION**

A comparative evaluation of the internal and marginal compatibility of artificial bridge surfaces prepared by different methods was carried out;

Clinical and functional studies were used to evaluate the relationship and effectiveness of the use of occlusal contact points during treatment with artificial bridge restorations prepared by different methods. For the first time, an analysis of the dysfunctional conditions of the masticatory muscles caused by contact surfaces that have changed under the influence of artificial bridge coverings prepared in different ways has been carried out, as well as the influence of coatings on microbiological parameters. on the condition of teeth and gums, and on the condition of the subprosthetic mucous membrane using infrared thermometry;

Based on the results of the above studies, the economic efficiency of using orthopaedic structures manufactured using digital technologies has been demonstrated;

## CONCLUSIONS

The deterioration of microcirculation in the periodontal ligament of the maxillary anterior teeth was observed in patients with non-uniform atrophy of the edentulous alveolar process.

2. A deterioration in the microcirculation of the alveolar ridge was observed in patients with uniform atrophy of the alveolar ridge undergoing prosthetic treatment with elastomeric prostheses.

3. The results of clinical and radiological studies indicate that there is no evidence of functional overload of the supporting teeth in patients undergoing orthodontic treatment for symmetrical atrophy of the alveolar ridges. This is irrespective of the design of the prostheses and the supporting components.

4. The study of the long-term prosthetic results in patients with irregularly shaped edentulous alveolus revealed the greatest clinical manifestations of functional overload of the supporting teeth.

5. Prosthetic treatment of patients with terminal defects of dentition with nylon-based removable prostheses can be carried out under the condition of high, intact dentition.

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