ASSESSMENT OF MASTICATORY FUNCTION AND ORAL CAVITY METABOLISM AFTER URANOPLASTY

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ABSTRACT: *This study is devoted to the assessment of masticatory efficiency and oral cavity metabolic parameters in patients who have undergone uranoplasty. The aim of the study was to identify functional changes and evaluate the biochemical status of the oral environment in the postoperative period.*

Clinical, functional, and laboratory research methods were applied. Masticatory efficiency was assessed using specialized functional tests, while oral metabolism was evaluated based on biochemical indicators of saliva. The obtained results demonstrated that in some patients, masticatory function was not fully restored after uranoplasty, and metabolic alterations in the oral cavity persisted.

The findings indicate the importance of a comprehensive rehabilitation approach for patients after uranoplasty, including both functional recovery and monitoring of the biochemical status of the oral cavity. The results of this study contribute to improving treatment strategies and follow-up protocols in dental practice.

Keywords: *uranoplasty, masticatory efficiency, oral metabolism, saliva, chewing function, dental rehabilitation.*

RELEVANCE OF THE STUDY

In modern dentistry, it is essential to evaluate not only anatomical restoration but also functional status and metabolic parameters in patients after uranoplasty. Assessment of masticatory efficiency and oral metabolism enables more effective organization of rehabilitation processes.

Currently, insufficient monitoring of chewing function and oral metabolic indicators during orthodontic correction stages in post-uranoplasty patients remains a significant issue. Limitations in clinical practice are often associated with high costs of comprehensive diagnostics, inadequate technical resources, and underestimation of the importance of these parameters.

Masticatory function is closely related to dentoalveolar anomalies. Neuromuscular disorders in the maxillofacial region may contribute to the development and persistence of occlusal abnormalities. Therefore, understanding the functional condition of masticatory muscles is crucial in orthodontic treatment. Failure to address muscular dysfunction may lead to relapse despite successful correction of dental alignment.

AIM OF THE STUDY

To develop prognostic models for detecting muscle tone imbalance based on changes in masticatory function and oral metabolic parameters in patients who have undergone uranoplasty at different stages of orthodontic treatment.

OBJECTIVES

To study the effect of orthodontic treatment methods on masticatory function in patients with dentoalveolar anomalies after uranoplasty.

To evaluate changes in oral metabolic parameters during different stages of orthodontic correction.

To develop prognostic models for detecting muscle tone imbalance based on functional and metabolic indicators.

To develop diagnostic algorithms and software for early detection and prevention of masticatory dysfunction.

MATERIALS AND METHODS

The study was conducted using a prospective comparative design. A total of 187 patients aged 6–12 years who had undergone uranoplasty were examined. The study group included 55 children with distal occlusion, while the control group consisted of 42 children with physiological occlusion and no history of orthodontic treatment.

Clinical, laboratory, and instrumental methods were applied, including electromyography (EMG) to assess the bioelectrical activity of masticatory muscles. Salivary analysis was performed to determine immunological and biochemical parameters, including IgA, IgG, and IgM levels using ELISA methods.

CONCLUSION. The study demonstrated that orthodontic treatment methods significantly influence masticatory function and oral metabolic parameters at different stages of treatment. Prognostic models were developed to assess muscle tone imbalance based on functional and biochemical indicators.

A self-assessment diagnostic method and software were also developed to identify patients at risk of masticatory dysfunction. The findings highlight that different orthodontic appliances have varying effects on muscle balance and oral biochemical parameters.

The developed approaches allow early detection, prevention, and more effective management of functional disorders in patients after uranoplasty.

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