DIAGNOSTIC ASSESSMENT OF ESTHETIC DISORDERS AND COMPREHENSIVE REHABILITATION OF PATIENTS WITH DENTITION DEFECTS

Tursunaliev Zilaliddin Zaylobidin Ugli
Assistant at the Central Asian Medical University.
https://orcid.org/ 0009-0009-0181-0674
e-mail: tziloliddin@gmail.com
Fergana, Uzbekistan.
https://doi.org/10.5281/zenodo.19888756

Abstract. This article presents data on the assessment of clinical and laboratory predictors of aesthetic disorders in patients with dentition defects among the population of the Fergana region and the development of complex rehabilitation methods. 110 patients with partial adentia were involved in the research work. Clinical, morphological and functional indicators were assessed. It was found that the degree of aesthetic disorders is associated with the loss of frontal teeth, resorption of the alveolar ridge and occlusion disorders.

Keywords: dentistry, dentition defects, aesthetics, rehabilitation, adentia, implantation.

Introduction. Dental defects are disruptions in the integrity of the dental arch caused by tooth loss (edentia), absence, or abnormal positioning of teeth. Causes include caries, periodontitis, trauma, or congenital pathologies. They lead to chewing and speech impairments, bone atrophy, and malocclusion, requiring orthopedic treatment.

According to modern research, even the absence of a single tooth can cause significant morphofunctional changes and psychological discomfort. The aesthetic component is particularly important, as the appearance of teeth directly impacts a patient's self-esteem and social adaptation.

In the Fergana region, the high prevalence of caries, periodontitis and traumatic injuries leads to an increase in the number of patients with dental defects, which requires the development of effective diagnostic and rehabilitation approaches.

Purpose of the study. To evaluate diagnostic predictors of aesthetic disorders and substantiate methods of comprehensive rehabilitation of patients with dental defects.

Materials and methods. The study was conducted as a prospective clinical and statistical observation at dental institutions in the Fergana region. The study included 110 patients aged 18 to 60 years with dental defects of varying locations and extents.

The inclusion criteria were: partial edentia (Kennedy classes I–III); absence of acute inflammatory diseases of the oral cavity; informed consent of the patient to participate in the study; absence of contraindications to orthopedic and surgical treatment. Exclusion criteria: complete edentia; severe somatic diseases in the decompensation stage; oncological diseases; refusal to participate in the study.

Depending on the severity of aesthetic disorders, patients were divided into two groups: Group I (n=52) - with severe aesthetic defects; Group II (n=58) - with moderate disorders. The assessment of the aesthetic condition was carried out using the Smile Esthetic Index, as well as a photo protocol with subsequent morphometric analysis of the parameters of the face and dentition.

The clinical examination included determination of the Oral Hygiene Index (OHI-S), assessment of the mucosal condition, periodontal status, occlusal relationships, and the degree of alveolar bone resorption.

Instrumental methods included orthopantomography to assess bone condition, the level of alveolar bone resorption, and planning orthopedic and implant treatment.

Laboratory tests included determination of C-reactive protein levels as an inflammatory marker, as well as a microbiological analysis of oral contents to assess the composition of the microflora and identify dysbiotic changes.

Comprehensive patient rehabilitation included orthopedic treatment (removable and fixed prosthetics), implantation when indicated, as well as soft tissue correction and professional oral hygiene.

Statistical data processing was performed using variation statistics. The Student's t-test was used to assess the significance of differences; differences were considered statistically significant at $p < 0.05$. Multivariate logistic regression analysis was used to identify predictors of aesthetic disorders, calculating the odds ratio (OR) and 95% confidence interval (CI).

Thus, the selected set of methods allowed us to comprehensively evaluate the clinical, morphological and laboratory characteristics of patients with dental defects and determine the factors influencing the severity of aesthetic disorders.

Results and discussion. The study included 110 patients with dental defects, of which 52 patients (47.3%) had severe aesthetic disorders (Group I), while 58 patients (52.7%) had moderate disorders (Group II).

An analysis of clinical data revealed that the most significant aesthetic defects were observed in cases of edentulous areas in the anterior region of the dentition. In Group I, such defects occurred in 68% of cases, while in Group II, they occurred in only 34% ($p<0.01$). Furthermore, smile asymmetry, lip line changes, and visual shortening of the lower third of the face were significantly more common in patients with severe aesthetic defects.

The Smile Esthetic Index assessment showed a significant decrease in scores in Group I (4.2 ± 1.1 points) compared to Group II (7.8 ± 1.3 points; $p < 0.01$), indicating a significant deterioration in the aesthetic parameters of the dental system. The most common abnormalities were changes in the shape of the dentition, tooth color discrepancies, and disruption of the gingival line.

Bone tissue analysis revealed that alveolar bone resorption of varying degrees was detected in 79 patients (71.8%). Signs of severe atrophy were observed in 72% of patients in Group I, compared to 41% in Group II ($p<0.01$). This factor significantly influenced the development of aesthetic defects and limited the possibilities of orthopedic rehabilitation without preliminary preparation.

Laboratory tests demonstrated the presence of inflammatory changes in patients with severe aesthetic disorders. C-reactive protein levels in Group I were 6.5 ± 2.2 mg/L, which was significantly higher than in Group II (3.1 ± 1.4 mg/L; $p < 0.05$). This indicates the presence of a chronic inflammatory process in the periodontal tissues and oral mucosa.

Microbiological testing revealed dysbiotic changes in 66% of patients in Group I and 38% of patients in Group II ($p<0.05$). Opportunistic pathogens associated with inflammatory periodontal diseases were the most frequently detected, aggravating the clinical picture and affecting the aesthetic outcome.

Functional analysis revealed that occlusion disorders were observed in 61% of patients in Group I and 29% of patients in Group II (p<0.01). These changes were accompanied by uneven distribution of chewing load, which contributed to further bone resorption and deterioration of aesthetics.

A psychoemotional assessment of patients' condition revealed that decreased self-esteem was observed in 64% of patients with severe aesthetic disturbances, compared to 31% in Group II. Signs of social maladjustment were detected in 38% of patients in Group I.

Following comprehensive rehabilitation, including orthopedic treatment, implantation, and soft tissue correction, significant positive dynamics were noted. Improvement in aesthetic outcomes (as measured by the Smile Aesthetics Index) was recorded in 78% of patients, with the average index value increasing to 8.6 ± 1.2 points (p < 0.01 compared to baseline).

The average reduction in inflammatory markers was 35%, and normalization of the oral microbiome was observed in 70% of patients. Restoration of occlusal relationships was achieved in 74% of those examined.The satisfaction rate with treatment results was 85%, which confirms the high effectiveness of the integrated approach to the rehabilitation of patients with dental defects.

The conducted correlation analysis revealed statistically significant relationships between the severity of aesthetic disorders and a number of clinical and laboratory indicators (Table 1).

Table 1

Correlation of clinical and laboratory parameters with the severity of aesthetic disorders

Indicator	r (correlation coefficient)	p (significance)	Interpretation
Smile Aesthetics Index	-0,72	<0,001	Strong feedback
Defect localization (front)	0,68	<0,001	Strong direct connection
Alveolar bone resorption	0,64	<0,001	Strong direct connection
Occlusion disorder	0,59	<0,01	Moderate direct connection
CRP level	0,52	<0,01	Moderate direct connection
Oral dysbiosis	0,49	<0,05	Moderate connection
Hygiene Index (OHI-S)	0,45	<0,05	Moderate connection
Patient's age	0,28	>0,05	The connection is insignificant

As can be seen from Table 1, the strongest inverse correlation was established with the smile aesthetics index (r = -0.72; p < 0.001), confirming its high diagnostic significance. Among the risk factors, the strongest direct correlation was demonstrated by the localization of the defect in the frontal region (r = 0.68; p < 0.001) and the degree of alveolar bone resorption (r = 0.64; p < 0.001).

Moderate correlations were found for occlusion disorders (r = 0.59; p < 0.01), C-reactive protein levels (r = 0.52; p < 0.01), and dysbiotic changes in the oral microflora (r = 0.49; p < 0.05).

The obtained data indicate the multifactorial nature of aesthetic disorders and confirm the importance of both morphological and inflammatory factors in their formation. Thus, the obtained results indicate that the severity of aesthetic disorders directly depends on the location of the defect, the condition of the bone tissue, inflammatory changes and functional disorders, and that comprehensive rehabilitation can significantly improve the clinical and aesthetic outcomes of treatment.

Comprehensive rehabilitation, including orthopedic treatment, implantation, and soft tissue correction, allows for sustainable results and improved quality of life for patients.

Conclusions:

1. Dental defects lead to significant aesthetic and functional impairment;
2. The main predictors are defect location, bone resorption, and inflammatory changes;
3. Comprehensive rehabilitation improves aesthetic outcomes by 65-80%;
4. Improving aesthetics contributes to improved quality of life and social adaptation for patients.

References:

1.Bahar A.D., Sagi M.S., Zuhairi F.A. Dental aesthetics and self-esteem // Healthcare. – 2024. – Vol. 12, №16. – P. 1576.

2.Özişçi Ö., Gökoğlu S.S., Ay B. Predictors of dental esthetic satisfaction // BMC Medical Education. – 2025. – Vol. 26. – P. 80.

3.Ахмед Н., Халид Ш., Вохра Ф. Анализ эстетических пропорций зубов // Journal of Prosthetic Dentistry. – 2024. – Vol. 131, №2. – P. 187–196.

4.Боймурадов Ш.А., Куранбаева Д.Г. Эстетический анализ пациентов после полной стоматологической реабилитации // International Journal of Medical Science and Public Health Research. – 2025. – №1. – С. 9–12.

5.Турсуналиев З. Диагностика эстетических нарушений при дефектах зубного ряда // International Journal of Medical Sciences. – 2026. – №1. – С. 7–14..