

## MODERN APPROACHES IN THE DIAGNOSIS AND TREATMENT OF PERIODONTAL DISEASES. PHOTODYNAMIC THERAPY

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**Background.** Periodontal diseases are highly prevalent inflammatory conditions with a significant impact on oral health and quality of life. Early diagnosis and the use of modern adjunctive therapeutic methods are essential for improving clinical outcomes. The integration of HELBO photodynamic therapy into conventional periodontal treatment contributes to the reduction of clinical signs of inflammation and to the improvement of periodontal parameters, ensuring a more predictable therapeutic result.

**Objective of the study:** to evaluate modern diagnostic methods and the effectiveness of HELBO photodynamic therapy used as an adjunct in the complex treatment of periodontal diseases.

**Material and methods:** A total of 30 patients with periodontal diseases underwent clinical and paraclinical examination. Periodontal charting included the assessment of periodontal pocket depth, bleeding on probing, tooth mobility, gingival recession, dental plaque, and clinical attachment level. In 10 patients, HELBO photodynamic therapy was applied as an adjunct to conventional mechanical debridement. The procedure consisted of the application of a photosensitizer followed by laser light activation, providing selective action at the periodontal pocket level without affecting the surrounding healthy tissues.

**Results:** The adjunctive use of HELBO photodynamic therapy resulted in a significant reduction in periodontal pocket depth, with a mean decrease of 1–1.5 mm at 4 weeks post-treatment. A reduction in bleeding on probing and tooth mobility was also recorded. Clinical examination revealed an improvement in gingival appearance, with decreased edema and erythema and restoration of the physiological gingival contour. Overall, the therapy contributed to the improvement of clinical periodontal parameters.

**Conclusions:** A comprehensive therapeutic approach that combines conventional mechanical therapy with HELBO photodynamic therapy leads to significant improvement of clinical periodontal parameters and enhances treatment outcomes.

**Keywords:** periodontal diseases, photodynamic therapy, HELBO laser, tissue regeneration.

## REABILITAREA DENTARĂ ȘI REFLEXELE STOMATOGNATE: IMPLICAȚII NEUROFIZIOLOGICE ȘI CLINICE

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**Introducere:** Sistemul stomatognat reprezintă un ansamblu senzorio-motor complex, în care reflexele orofaciale, integrate la nivelul trunchiului cerebral și modulate cortical, asigură controlul masticației și al deglutiției. Reabilitarea dentară modifică inputul senzorial periferic, cu potențial impact asupra acestor reflexe.

**Scopul lucrării:** Evaluarea modului în care reabilitarea dentară influențează funcția masticației și deglutiției prin modificarea reflexelor stomatognate și a integrării senzorio-motorii.

**Metode:** Analiză narativă a literaturii privind rolul mecanoreceptorilor parodontali, reflexele trigeminale și adaptările funcționale după reabilitare dentară (proteze, implanturi), cu accent pe mecanismele de neuroplasticitate și implicațiile clinice.

**Rezultate:** Pierderea feedback-ului parodontal în edentație determină alterarea controlului reflex, iar reabilitarea dentară conduce la recalibrarea acestuia prin mecanisme de neuroplasticitate. Implanturile pot induce osseopercepția, sugerând adaptări senzoriale compensatorii. Funcțional, se observă potențiale beneficii asupra masticației și deglutiției, dar cu variabilitate individuală și posibilitatea unor fenomene maladaptative, precum bruxismul.

**Concluzii:** Reabilitarea dentară modifică echilibrul senzorio-motor al sistemului stomatognat prin procese de neuroplasticitate, cu efecte atât benefice, cât și potențial adverse. Înțelegerea acestor mecanisme este esențială pentru optimizarea rezultatelor funcționale și susține necesitatea unei abordări interdisciplinare între neurologie și stomatologie.

**Cuvinte-cheie:** reflexe stomatognate, neuroplasticitate, osseopercepție, reabilitare dentară, bruxism.

#### **DENTAL REHABILITATION AND STOMATOGNATHIC REFLEXES: NEUROPHYSIOLOGICAL AND CLINICAL IMPLICATIONS**

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**Background:** The stomatognathic system is a complex sensorimotor network in which orofacial reflexes, integrated at the brainstem level and modulated cortically, ensure the control of mastication and swallowing. Dental rehabilitation alters peripheral sensory input and may therefore influence reflex neuromuscular control.

**Objective of the study:** To evaluate how dental rehabilitation influences mastication and swallowing function through modulation of stomatognathic reflexes and sensorimotor integration.

**Methods:** A narrative review of the literature was conducted, focusing on the role of periodontal mechanoreceptors, trigeminal reflexes, and functional adaptations following dental rehabilitation (prostheses and implants), with emphasis on neuroplastic mechanisms and clinical implications.

**Results:** Loss of periodontal sensory input in edentulism leads to altered reflex control, while dental rehabilitation induces recalibration of these circuits through neuroplasticity. Dental implants may give rise to osseoperception, suggesting compensatory sensory integration. Functionally, rehabilitation may improve mastication and swallowing, particularly in elderly or neurologically impaired patients; however, adaptation is variable and may include maladaptive responses such as bruxism.

**Conclusions:** Dental rehabilitation modifies the sensorimotor balance of the stomatognathic system through neuroplastic processes, with both beneficial and potentially maladaptive outcomes. Understanding these mechanisms is essential for optimizing functional results and supports a multidisciplinary approach integrating neurology and dentistry.

**Keywords:** stomatognathic reflexes, neuroplasticity, osseoperception, dental rehabilitation, bruxism.

#### **ANALIZĂ COMPARATIVĂ A SOLUȚIILOR DE IRIGARE ȘI A TEHNICILOR DE ACTIVARE ÎN TERAPIA ENDODONTICĂ: PERSPECTIVE DIN LITERATURA DE SPECIALITATE**

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