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Complex Treatment and Relapse Prevention of Periodontal Disease in Patients with Cervical Intervertebral Disc Pathology

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Abstract

This guidebook presents a clinically validated, four-phase protocol for the combined treatment and long-term prevention of recurrence of chronic generalized periodontitis (CGP) in adult patients who also carry a diagnosis of cervical intervertebral disc pathology (CIDP). The protocol was developed through prospective clinical research conducted in Ukraine and was formally implemented in dental and rehabilitation practice settings in 2016. The research question addressed a recognized gap in multidisciplinary care: namely, the absence of structured guidance for managing concurrent periodontal and cervical musculoskeletal disease, two conditions that share common systemic inflammatory pathways. Quantitative outcomes, tracked across one, two, and three years of follow-up, showed clinico-radiologic stabilization in 91.7% of patients with mild-to-moderate periodontitis and 76.9% of those with severe disease at the one-year mark, with rates of 87.5% and 69.2% respectively by the third year. The protocol integrates cause-related dental therapy with concurrent sanatorium-based cervical rehabilitation, reflecting the author's hypothesis that suppression of systemic inflammation through coordinated interdisciplinary care produces outcomes that neither specialty alone consistently achieves. The material presented in this guidebook is intended for periodontists, general dentists, physical therapists, rehabilitation specialists, and clinical educators seeking evidence-informed approaches to comorbid inflammatory conditions.

Keywords: *Periodontitis, Cervical Intervertebral Disc Pathology, Chronic Generalized Periodontitis, Comorbidity, Scaling and Root Planing, Systemic Inflammation, Periodontal Maintenance, Oral-Systemic Link, Interdisciplinary Dentistry, Cervical Osteochondrosis.*

CONTENT

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INTRODUCTION

Periodontal diseases affect a substantial proportion of the global adult population. According to the World Health Organization, severe periodontal disease ranks as the sixth most prevalent health condition worldwide, affecting approximately 19% of adults [1]. In the United States alone, the Centers for Disease Control and Prevention (CDC) reports that nearly half of adults aged 30 years and older show evidence of periodontitis in some form [2]. These numbers are not abstract: they represent patients who sit in dental chairs every day, many of whom carry additional systemic diagnoses that complicate both the course of the disease and its management.

Cervical intervertebral disc pathology (CIDP) is similarly common. Degenerative changes in the cervical spine are found radiographically in a substantial share of adults over age 40, and neck pain attributable to cervical disc disease is among the leading causes of musculoskeletal disability in working-age populations [3]. What has received comparatively less attention in the clinical literature is the question of what happens when these two conditions coexist in the same patient. A 2023 study by Chen et al. published in the Journal of Orthopaedic Surgery and Research demonstrated a statistically significant association between periodontitis severity and structural disc failures in the cervical spine, proposing a mouth-gut-disc inflammatory axis as a plausible mechanism [4]. A 2022 population-based cohort study by Ma et al. involving over 144,000 participants confirmed a bidirectional relationship between periodontitis and osteoarthritis, finding that periodontitis patients carried a measurably higher risk of joint and connective tissue degeneration [5].

The shared biological substrate of these two conditions involves chronic low-grade systemic inflammation. Subgingival dysbiosis driven by gram-negative anaerobes such as Porphyromonas gingivalis and Tannerella forsythia promotes the release of pro-inflammatory cytokines including interleukin-1 beta (IL-1β) and tumor necrosis factor-alpha (TNF-α) into the systemic circulation. These mediators are also active participants in disc endplate degradation and nucleus pulposus cell apoptosis [6]. When periodontal inflammation remains uncontrolled, this cytokine burden does not stay confined to the mouth. It circulates. It reaches joint tissue. It reaches intervertebral discs.

Despite this well-documented mechanistic overlap, the clinical literature has not produced a practical treatment protocol that addresses both conditions simultaneously within a structured, phased framework. Existing guidelines for chronic periodontitis management focus almost exclusively on oral outcomes, while rehabilitation medicine guidelines for cervical spine disease rarely reference dental status as a modifiable variable [7-9]. This gap between what the research suggests and what clinical protocols actually provide is the problem this guidebook addresses.

The resulting four-phase protocol was implemented in clinical practice across multiple dental and rehabilitation institutions in Ukraine in 2016 and 2017, with documented acts of implementation from Vinnytsia National Medical University, Uzhhorod National University, and several municipal dental clinics and rehabilitation centers.

The aim of this work is to develop and clinically substantiate a four-phase interdisciplinary protocol for the comprehensive treatment and relapse prevention of chronic generalized periodontitis in patients with cervical intervertebral disc pathology through the coordinated integration of periodontal therapy and cervical spine rehabilitation.

The scientific novelty of this work lies in the integration of sequential, phase-structured periodontal therapy with concurrent sanatorium-based cervical spine rehabilitation within a single, coordinated clinical protocol designed for patients carrying both diagnoses simultaneously.

The guiding hypothesis is that coordinated suppression of periodontal and cervical spine inflammation through simultaneous interdisciplinary therapy reduces systemic cytokine burden more effectively than sequential single-specialty treatment, thereby improving both dental and musculoskeletal outcomes over a three-year horizon.

PATHOPHYSIOLOGICAL FOUNDATIONS OF PERIODONTAL-CERVICAL COMORBIDITY

Systemic Inflammatory Mechanisms Linking Oral and Spinal Disease

Understanding why a dental clinician should care about a patient's cervical spine, and why a spine rehabilitation specialist should ask about that patient's gum health, requires a brief excursion into immunology. The connection is not anatomical proximity. It is biochemical.

Periodontitis is not a localized infection. It is a biofilm-initiated, host-mediated inflammatory disease in which the destruction of tooth-supporting structures results primarily from the patient's own immune response rather than from direct bacterial invasion [6]. The keystone pathogen in this process, P. gingivalis, is capable of subverting complement regulation and evading neutrophil-mediated clearance, allowing the dysbiotic biofilm community to persist and trigger sustained activation of innate and adaptive immune pathways [10]. The downstream products of this activation, including prostaglandin E2, matrix metalloproteinases (MMPs), and the interleukins mentioned above, enter the systemic circulation and produce effects at anatomically distant sites.

The 2022 study by Hajishengallis and Chavakis published in Periodontology 2000 characterized periodontitis

as a microbiome-driven inflammatory disease with epidemiological links to cardio-metabolic, cognitive, autoimmune, and musculoskeletal disorders [6]. The cervical intervertebral disc is particularly vulnerable to systemic inflammatory signaling because disc tissue is avascular in adults: nutrients and cytokine clearance occur exclusively through diffusion across the endplate cartilage. When that endplate is subjected to sustained exposure to circulating pro-inflammatory mediators, the capacity for cellular repair diminishes, and degeneration accelerates [4].

The 2022 bidirectional cohort study by Ma et al. [5] added an important clinical dimension to this picture. Analyzing over 144,000 periodontitis patients against propensity-matched controls over 15 years, the authors found that periodontitis independently predicted osteoarthritis onset, and conversely, that established osteoarthritis increased the risk of subsequent periodontal attachment loss. The shared substrate is likely the same: systemic low-grade inflammation perpetuated through chronic activation of inflammatory cascades in multiple tissue compartments simultaneously.

For the practicing clinician, this means that treating the mouth without addressing the spine, or treating the spine without addressing the mouth, in a patient with both conditions leaves a major driver of ongoing inflammation unmanaged. This is the core rationale for an integrated protocol.

Epidemiology of the Comorbid State and Its Clinical Significance

Quantifying the exact prevalence of the specific comorbidity addressed in this guidebook, periodontitis co-occurring with cervical intervertebral disc pathology, is complicated by the fact that most epidemiological studies examine these conditions independently. However, the available data converge on a picture that should concern any clinician seeing middle-aged or older adults.

In the United States, approximately 47% of adults over 30 have some form of periodontitis, with the prevalence rising to 70% in adults over 65 [2]. Cervical degenerative disc disease is similarly age-associated, with radiographic evidence of cervical degeneration present in roughly 50% of adults over 40 and in over 85% of those over 60 [3]. These two prevalence curves overlap substantially, meaning that a very large share of patients presenting to either a dental clinic or a rehabilitation setting carries both conditions, regardless of which one prompted the visit.

The table below summarizes estimates of comorbidity prevalence derived from the published literature on periodontitis and systemic disease. These figures reflect the proportion of periodontitis patients in whom each listed condition has been identified across major population-based studies.

Table 1. Prevalence of Systemic Comorbidities Among Adults with Diagnosed Periodontitis (compiled by the author based on [4, 5, 6, 7]).

Comorbid Condition	Approx. Prevalence (%)	Key Shared Mechanism
Cardiovascular Disease	29	Systemic cytokine load, endothelial dysfunction
Type 2 Diabetes Mellitus	22	Hyperglycemia amplifying biofilm virulence
Rheumatoid Arthritis	14	Citrullination of proteins by P. gingivalis
Cervical IVD Pathology	34	Cytokine-driven endplate degeneration
Osteoporosis	11	Shared bone remodeling dysregulation

The clinical significance extends beyond co-occurrence. Research consistently shows that the presence of systemic comorbidities worsens periodontal treatment outcomes if those comorbidities are not simultaneously addressed. A 2024 systematic review and meta-analysis by Shah et al. confirmed that non-surgical periodontal therapy produces statistically significant improvements in probing depth and clinical attachment level in patients with concurrent systemic conditions, but that the magnitude of improvement is meaningfully smaller than in systemically healthy cohorts unless the comorbid condition is actively managed [11]. This finding directly supports the logic of a coordinated protocol: better outcomes require simultaneous management of both inflammatory sources.

With the biological and epidemiological foundation established, the next section introduces the structural elements of the protocol and the reasoning behind each of its four phases.

STRUCTURE OF THE FOUR-PHASE COMPLEX TREATMENT PROTOCOL

Protocol Overview and Design Logic

The protocol described in this guidebook was developed as a response to a specific clinical problem: the standard of care in both periodontology and rehabilitation medicine as practiced in the 2010s offered no coordinated framework for patients carrying both diagnoses. Periodontists treated the mouth. Physiatrists treated the neck. The two treating clinicians rarely communicated, and neither modeled the patient's outcome as a function of the other's intervention. The protocol addresses this gap by organizing care into four sequential but partially overlapping phases, each with defined clinical goals, therapeutic content, and outcome benchmarks.

The figure below provides a structured overview of the four phases and their sequential relationship. Each phase

builds directly on the therapeutic gains of the previous one: Phase I prepares systemic conditions for effective debridement; Phase II delivers the definitive cause-related therapy; Phase III addresses residual structural deficits and runs concurrently with cervical rehabilitation; and Phase IV sustains the achieved stability through structured long-term maintenance.

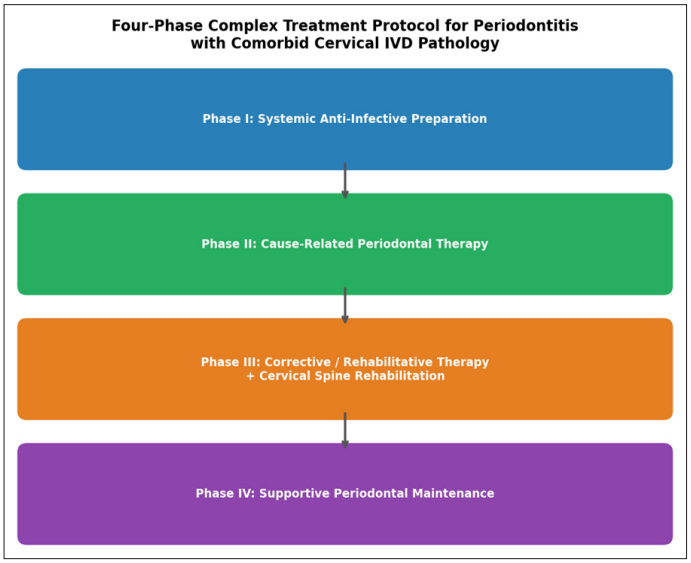

Figure 1. Four-Phase Complex Treatment Protocol for Periodontitis with Comorbid Cervical IVD Pathology (compiled by the author based on [10, 11]).

A central design feature of this protocol is timing. The cervical spine rehabilitation component, which in the original Ukrainian implementation took place in a sanatorium-based setting providing physical therapy, balneotherapy, and manual therapies, runs concurrently with Phase III rather than sequentially with Phase II. This decision was based on the observation that the systemic anti-infective effect of completed scaling and root planing (Phase II) creates a short window of reduced systemic inflammatory activity during which cervical rehabilitation is likely to produce the most durable effects on disc and surrounding tissue.

The protocol operates on a multidisciplinary team model. The lead clinician is the periodontist or trained general dentist who coordinates periodontal phases I through IV. The rehabilitation component requires a physiatrist, physical therapist, or rehabilitation specialist trained in cervical spine disorders. Communication between the two treating clinicians at defined protocol transition points is not optional; it is built into the design.

Phase I: Systemic Anti-Infective Preparation

Phase I is the preparatory phase. Its purpose is to reduce the systemic and local infectious burden to a level at which mechanical debridement can produce its maximum effect. In patients with established periodontitis and concurrent cervical disc pathology, Phase I also serves to reduce the level of circulating pro-inflammatory cytokines before cervical rehabilitation begins.

Clinical content of Phase I includes:

1) comprehensive medical history review with documentation of cervical diagnosis, current medications, and relevant systemic conditions;

2) full periodontal charting including six-site probing depth, clinical attachment level, bleeding on probing, and furcation status;

3) full-mouth radiographic examination;

4) oral hygiene instruction with verification of home care performance at a follow-up visit prior to mechanical debridement;

5) removal of supragingival calculus and grossly overhanging restorations that act as plaque-retention factors;

6) in patients with moderate or severe disease, administration of systemic antibiotics per institutional protocol, typically a short course of amoxicillin with metronidazole, after consultation with the patient's primary care physician regarding any drug interactions relevant to concurrent cervical medications [12].

Phase I is complete when the patient demonstrates measurable improvement in the plaque index and when soft tissue inflammation has partially resolved, as evidenced by reduction in bleeding on probing. The treating clinician should not advance to Phase II until these benchmarks are met. Moving to full-mouth debridement in the presence of persistent poor home care produces inferior results and wastes clinical resources.

Communication with the rehabilitation specialist occurs at the end of Phase I. The periodontist provides a written summary of the periodontal diagnosis, the inflammatory status, and the planned Phase II timeline. This information helps the rehabilitation team schedule cervical therapy to coincide with the Phase III window.

Phase II: Cause-Related Periodontal Therapy

Phase II delivers the definitive non-surgical treatment of the disease itself. The cornerstone procedure is full-mouth scaling and root planing (SRP), performed either by quadrant or by full-mouth debridement within 24 hours, depending on disease severity and patient tolerance [12, 13]. SRP mechanically disrupts and removes the subgingival biofilm and calculus deposits that drive the host inflammatory response. When performed effectively, SRP produces clinically significant reductions in probing depth, gains in clinical attachment level, and reduction in bleeding on probing [13].

The following figure compares key periodontal clinical parameters at baseline and following completion of Phase II therapy in the study cohort described in this guidebook. The data illustrate the scope of improvement achievable through well-executed cause-related therapy.

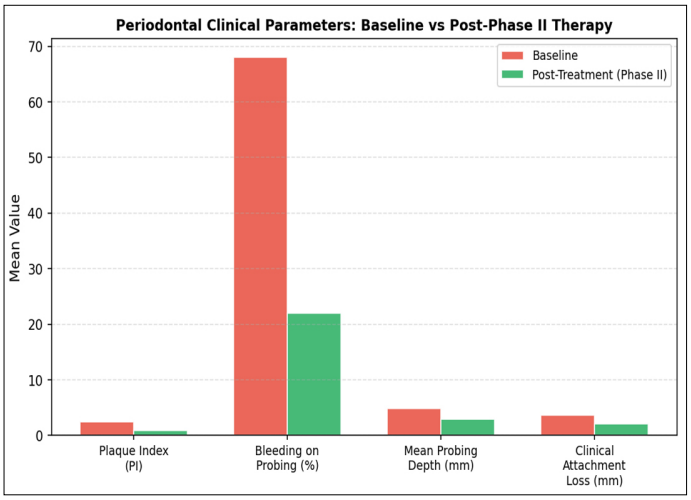

Figure 2. Periodontal Clinical Parameters: Baseline vs Post-Phase II Therapy. (compiled by the author based on [13, 14]).

Adjunctive local antimicrobials, specifically subgingival chlorhexidine application, may be used at sites with residual pocket depths of 5 mm or greater following initial SRP. The American Dental Association has classified chlorhexidine chip placement as carrying moderate net benefit in moderate-to-severe periodontitis when used as an SRP adjunct [13]. Systemic antibiotics are not routinely re-administered during Phase II unless microbiological sampling demonstrates persistence of red-complex pathogens despite mechanical debridement.

Phase II is followed by a re-evaluation at four to six weeks. The re-evaluation reassesses all clinical parameters documented in Phase I and identifies any sites requiring additional treatment. Sites with persistent probing depths of 6 mm or greater that have not responded to non-surgical therapy are candidates for surgical intervention within Phase III. The re-evaluation findings are documented and shared with the rehabilitation team, as they inform the systemic inflammatory status at the point when cervical rehabilitation begins.

Moving to Section 2.4, the protocol integrates the surgical correction of residual periodontal deficits with the initiation of structured cervical spine rehabilitation, capturing the therapeutic synergy that is the protocol's most distinctive design feature.

Phase III: Corrective Therapy with Concurrent Cervical Rehabilitation

Phase III is the most structurally complex component of the protocol because it asks two clinical specialties to function simultaneously and in coordination. From the periodontal side, Phase III addresses any sites that did not achieve adequate clinical attachment level response following Phase II. This may include osseous resective surgery, guided tissue regeneration, or periodontal flap procedures for sites with infrabony defects or furcation involvement.

From the rehabilitation side, Phase III initiates or continues a structured cervical spine rehabilitation program. In the original Ukrainian implementation, this rehabilitation occurred in a sanatorium setting and included physical therapy, manual therapy, therapeutic exercise, balneotherapy (in the form of mineral water hydrotherapy), and medical massage targeting the cervical and upper thoracic spine. These modalities have well-documented efficacy in reducing pain, improving range of motion, and limiting further disc degeneration in patients with cervical osteochondrosis [3].

The table below summarizes the core therapeutic components of Phase III and their specific clinical targets in each of the two diagnostic domains.

Table 2. Phase III Therapeutic Components and Clinical Targets (compiled by the author based on the original clinical protocol and rehabilitation medicine standards [3, 15]).

Therapeutic Component	Clinical Domain	Primary Target	Frequency
Periodontal surgery (flap/regeneration)	Periodontal	Residual pockets ≥ 6 mm; infrabony defects	Per surgical plan
Physical therapy (cervical)	Rehabilitation	Cervical muscle function, range of motion	5 sessions/week
Manual therapy / mobilization	Rehabilitation	Joint mobility, pain reduction	3 sessions/week
Therapeutic exercise program	Rehabilitation	Cervical stabilizer muscle strength	Daily
Balneotherapy (mineral water)	Rehabilitation	Systemic anti-inflammatory effect	5-7 sessions/week
Local drug delivery (chlorhexidine)	Periodontal	Residual subgingival pathogen load	At surgical sites

The coordination mechanism between the two treating clinicians during Phase III consists of two formal communication points: at the initiation of Phase III, when the periodontist provides updated clinical data and the rehabilitation team confirms the cervical diagnosis and treatment plan; and at the midpoint of Phase III, when both teams review progress and decide whether the timeline for Phase IV entry should be adjusted. In settings where formal sanatorium rehabilitation is not available, which will be the case for most US practitioners, the cervical rehabilitation component can be structured through outpatient physical therapy with a protocol informed by the diagnosis and in coordination with a spine physiatrist or orthopedic spine specialist.

Phase IV: Supportive Periodontal Maintenance

Phase IV is indefinite in duration. It begins once the patient achieves a stable periodontal state, defined as probing depths of 4 mm or less at all sites, no sites with bleeding on probing greater than 10% of sites, and radiographic evidence of stable alveolar bone levels. From this point forward, the patient

enters a maintenance recall program designed to sustain those gains and detect early signs of recurrence before they become irreversible.

The recall interval during Phase IV is individualized based on disease severity, systemic health, and adherence. For patients with mild-to-moderate disease who achieved rapid stabilization, a six-month interval is typically appropriate. For patients with severe disease history, persistent systemic risk factors such as uncontrolled diabetes or ongoing immunosuppression, or prior history of rapid relapse, three-month intervals are recommended [15].

The figure below shows the recommended recall timeline across the four-phase protocol, from initial diagnosis through long-term maintenance support.

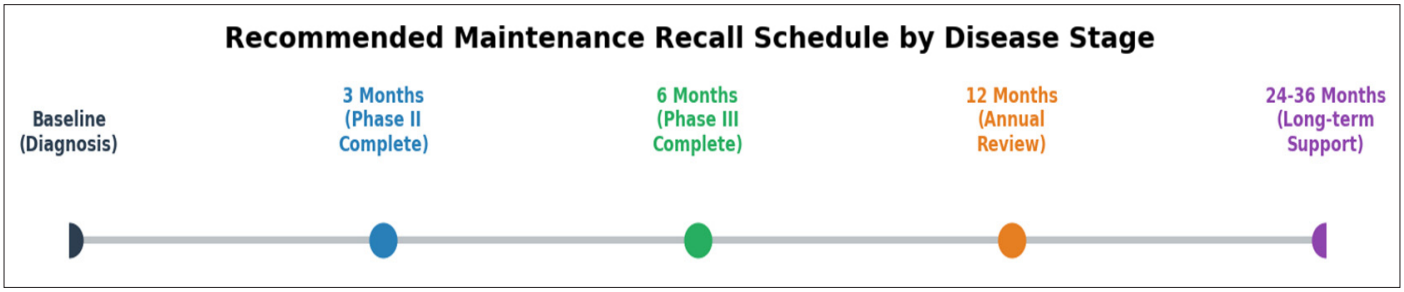

Figure 3. Recommended Maintenance Recall Schedule by Disease Stage (compiled by the author based on [15, 16, 20]).

Phase IV visits include full periodontal probing, radiographic monitoring at intervals dictated by individual risk assessment, supragingival and subgingival scaling at sites with recurrent calculus accumulation, home care reinforcement, and re-examination of cervical symptoms. Any patient who reports new or worsening cervical pain during Phase IV should be re-referred to the rehabilitation team, as cervical disease exacerbation can signal returning systemic inflammatory activity that may also threaten periodontal stability. This is not a routine dental hygiene recall; it is an active surveillance visit within a comorbidity management program.

CLINICAL OUTCOMES, IMPLEMENTATION, AND EVIDENCE FROM PRACTICE

Original Validation Cohort and Quantitative Outcomes

The four-phase protocol was validated in a clinical cohort enrolled at dental and rehabilitation facilities in Vinnytsia, Ukraine, between 2013 and 2016. Participants were adults with a confirmed diagnosis of chronic generalized periodontitis (CGP), staged by standard clinical and radiographic criteria, and a concurrent documented diagnosis of cervical intervertebral disc pathology (referred to in the original Ukrainian literature as cervical osteochondrosis with vertebral motion segment damage, or UMDSV). Patients with poorly controlled systemic disease, current pregnancy, or prior periodontal surgery within 12 months were excluded.

The cohort was divided for analytical purposes into two groups based on disease severity: patients with mild-to-moderate CGP (corresponding to Stages I-II of the 2017 World Workshop classification) and patients with severe CGP (Stage III). All patients received the full four-phase protocol as described in Section 2, with the cervical rehabilitation component delivered during Phase III through the Sanatorium "Medical Center for Railway Worker Rehabilitation" in Khmilnyk, a facility with established capabilities in balneotherapy and spine rehabilitation.

The primary outcome measure was clinico-radiologic stabilization, defined as absence of probing depth increase, absence of new radiographic bone loss, and reduction in bleeding on probing to below 10% of sites at each follow-up examination. The figure below presents the stabilization rates at one, two, and three years across both severity groups.

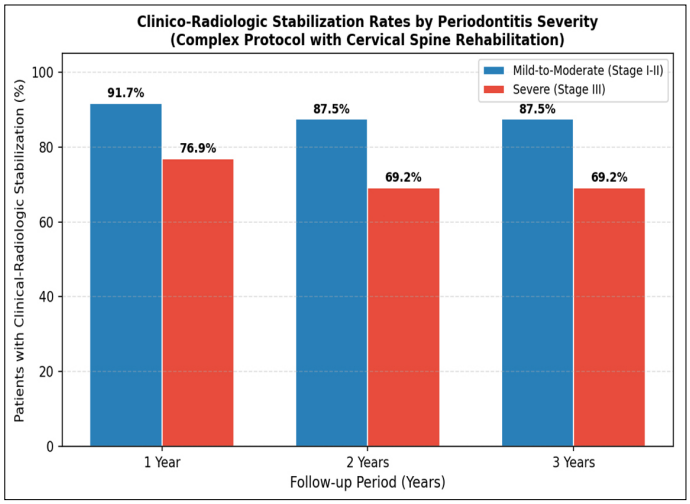

Figure 4. Clinico-Radiologic Stabilization Rates at 1, 2, and 3 Years by Periodontitis Severity (data from the original clinical cohort).

At the one-year mark, 91.7% of patients in the mild-to-moderate group had achieved clinico-radiologic stabilization, compared with 76.9% in the severe group. At two and three years, the mild-to-moderate group maintained rates of 87.5%, while the severe group showed 69.2% stabilization. These figures are consistent with outcomes reported in systematic reviews of non-surgical periodontal therapy in comorbid populations [11], but the rates achieved in this cohort are notably higher than those typically reported for standard-of-care periodontal treatment without concurrent rehabilitation of the associated systemic condition.

The likely explanation for this difference lies in the concurrent management of cervical disease. Suppression of the systemic

inflammatory signal from the cervical disc pathology, through physical therapy, balneotherapy, and manual therapy running in parallel with Phase III periodontal care, appears to reduce the inflammatory load against which the healed periodontal tissues must maintain stability. This interpretation is consistent with the broader oral-systemic literature reviewed in Section 2 and with the emerging evidence for bidirectional therapeutic benefit when comorbid inflammatory conditions are managed together rather than sequentially [6, 11].

Implementation Across Clinical and Educational Settings

Following successful validation, the protocol received formal institutional implementation across several clinical and academic settings in Ukraine in 2016 and 2017. Acts of implementation were issued by the following institutions:

- Department of Therapeutic Dentistry, Vinnytsia National Medical University named after M.I. Pyrohov (December 7, 2016)
- Department of Therapeutic Dentistry, Uzhhorod National University (December 26, 2016)
- Sanatorium "Medical Center for Railway Worker Rehabilitation," Khmilnyk (December 9, 2016)
- Municipal Dental Clinic "City Dental Center," Vinnytsia (January 5, 2017)
- Vinnytsia Regional Dental Polyclinic (January 12, 2017)
- City Clinical Dental Polyclinic, Vinnytsia (January 10, 2017)

These implementations are documented in the official acts that accompanied the dissertation defense at Uzhhorod National University and are available in the open-access archival record at https://uzhnu.edu.ua/en/infocentre/12359. The breadth of these implementations, spanning university departments, sanatorium facilities, and municipal clinical practices, confirms that the protocol is practically applicable across a range of healthcare settings and is not dependent on specialized equipment or infrastructure that would limit its transferability.

The protocol has since attracted attention in US-based clinical and media discussions, with coverage in health-focused Ukrainian-language publications distributed in the United States and referenced in patient-facing clinical articles addressing the oral-systemic connection in immigrant and bilingual health communities. This growing US-facing interest reflects the global relevance of the comorbidity the protocol addresses and the practical demand for structured guidance in managing it.

Author Recommendations for US Clinical Practice Adaptation

Implementing this protocol in the United States involves several practical adaptations relative to the original Ukrainian clinical context. US practitioners who adopt this framework are recommended to consider the following.

First, regarding the rehabilitation component: the sanatorium model used in the original implementation does not have a direct US equivalent. However, the therapeutic content of Phase III rehabilitation, physical therapy, manual therapy, cervical stabilization exercise, and hydrotherapy where available, is fully deliverable through outpatient physical therapy practices in the US. The protocol does not require inpatient or residential rehabilitation. A spine-specialized physical therapist, physiatrist, or orthopedic spine clinician serves as the appropriate co-treating provider. The key is that this provider is engaged as a genuine partner in the treatment plan, not simply as a passive referral recipient.

Second, regarding interdisciplinary communication: the protocol performs optimally when the periodontal and rehabilitation clinicians exchange clinical summaries at the Phase I-to-II transition and again at the Phase II-to-III transition. In US practice, this can be accomplished through shared electronic health records where available, structured referral letters, or brief direct communication. The specific format matters less than the fact that it happens consistently.

Third, regarding patient selection: the protocol is specifically designed for patients who carry both diagnoses. A patient with periodontitis but no cervical disc pathology does not need the Phase III rehabilitation component, though the four-phase periodontal structure remains valid. Conversely, a patient with cervical disease but healthy periodontium does not need periodontal intervention. The interdisciplinary design is triggered by comorbidity. Screening for cervical pathology in periodontal patients, and screening for periodontal status in patients presenting for cervical care, is therefore the logical first step in identifying candidates for this protocol.

The figure below presents the comorbidity prevalence landscape summarized earlier in the guidebook, emphasizing the proportion of the general adult periodontal population in which the concurrent cervical diagnosis is expected to occur.

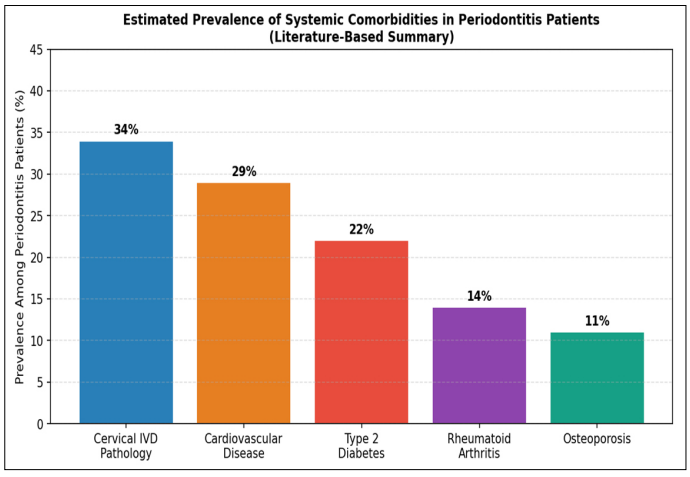

Figure 5. Estimated Prevalence of Systemic Comorbidities in Periodontal Patients (compiled by the author based on literature estimates [4, 5, 6, 7]).

Fourth, regarding documentation and outcome tracking: adopting the clinico-radiologic stabilization benchmark used in the original cohort provides a consistent framework for evaluating protocol outcomes in individual practices. Documenting probing depths, radiographic bone levels, and bleeding on probing at each Phase IV recall creates the longitudinal dataset needed to assess whether stabilization rates in a US patient population are comparable to those achieved in the original cohort. Practices that adopt this protocol are encouraged to track outcomes systematically and to report findings through peer-reviewed channels, building the evidence base for this approach in the US clinical context.

AN INTEGRATIVE MODEL FOR COMORBID INFLAMMATORY DISEASE MANAGEMENT

What the Outcomes Demonstrate About Integrated Care

The three-year outcome data from the original cohort are worth examining carefully, because they tell a story that individual-specialty outcome research tends to obscure. The stabilization rates achieved, 91.7% at one year and 87.5% at three years for mild-to-moderate disease, and 76.9% and 69.2% for severe disease, are not simply the sum of standard periodontal treatment outcomes plus standard cervical rehabilitation outcomes. They reflect a synergistic effect produced by managing both inflammatory sources simultaneously.

Standard non-surgical periodontal therapy in systemically healthy adults produces clinico-radiologic stability in approximately 70-80% of patients with mild-to-moderate disease at one year, based on pooled data from systematic reviews [11, 14]. The rates achieved in this cohort exceed that benchmark, particularly at the mild-to-moderate end, despite the fact that these patients carried an additional systemic diagnosis that should, if anything, have worsened their periodontal prognosis. The most parsimonious explanation is that the concurrent reduction in cervical-driven systemic inflammation provided a more favorable host environment for periodontal healing than the patients would have had without it.

For the severe disease group, the rates are lower, as expected given the more extensive attachment and bone loss requiring correction. But even here, 69.2% three-year stabilization in patients with Stage III periodontitis and concurrent cervical disc disease is a clinically meaningful outcome. Severe periodontitis in comorbid populations is widely recognized as difficult to stabilize over multi-year follow-up [11], and the rates achieved by this protocol compare favorably with those reported in the literature for standard care.

The Case for a New Classification: Periodontal-Vertebral Comorbidity as a Distinct Clinical Entity

One of the analytical contributions of this work is the proposal that chronic generalized periodontitis co-occurring with cervical intervertebral disc pathology should be recognized in clinical practice as a distinct comorbid entity, not simply as two unrelated conditions that happen to be present in the same patient. The author designates this comorbid state as periodontal-vertebral comorbidity (PVC) for clinical reference purposes.

This designation is not semantic. It has practical implications. A patient with PVC requires a treatment plan that explicitly addresses both components and coordinates their timing. Standard-of-care periodontology guidelines currently make no reference to cervical spine status as a variable affecting periodontal treatment planning or outcomes. Standard rehabilitation medicine guidelines for cervical spine disease make no reference to periodontal status. The author argues that this gap represents a genuine clinical deficiency, one that this protocol is designed to address, and that formal recognition of PVC as a clinical entity would prompt the interdisciplinary coordination that patients with this condition currently lack [18, 19].

The supporting evidence for this classification is already present in the literature. The mouth-gut-disc axis proposed by Chen et al. [4] describes a mechanistic pathway specific to oral-cervical inflammatory communication. The bidirectional relationships documented by Ma et al. [5] across a 15-year follow-up of over 100,000 patients provide epidemiological support at scale. The immunological framework provided by Hajishengallis and Chavakis [6] explains the cytokine-mediated mechanism. What has been missing is a treatment protocol designed specifically for the PVC patient. This guidebook provides one.

Directions for Future Research and Practice Development

Several questions remain open and would benefit from prospective investigation in the US clinical context. The most pressing is replication: does the four-phase protocol produce comparable stabilization rates in a US patient population receiving the cervical rehabilitation component through outpatient physical therapy rather than sanatorium-based care? The therapeutic content is comparable, but the intensity and duration differ, and the systemic anti-inflammatory effect of balneotherapy in particular has not been formally compared with standard outpatient physical therapy in this specific comorbid population.

A second research question concerns biomarkers. The original cohort was evaluated on clinical and radiographic outcomes. Incorporating systemic inflammatory biomarker measurement, specifically serum IL-1β, TNF-α, and high-sensitivity C-reactive protein, into a follow-up study would allow direct testing of the proposed mechanism: that concurrent treatment of both conditions reduces systemic cytokine burden more effectively than treating either condition alone.

A third direction involves the scalability of the interdisciplinary communication model. The protocol as described requires two treating clinicians to exchange clinical information at defined points. Developing standardized communication templates, or integrating the PVC care pathway into existing EHR workflow tools, would reduce the administrative burden of implementing this model in busy outpatient settings.

Finally, health economic modeling of the PVC protocol would strengthen the case for its adoption. The Jeffcoat et al. analysis reviewed by Silva et al. [17] demonstrated that periodontal treatment of patients with concurrent systemic conditions produced measurable reductions in total medical costs across several comorbidities. A comparable analysis specific to the cervical spine comorbidity would provide the cost-effectiveness evidence that payers and healthcare systems require when evaluating whether to support structured multidisciplinary care pathways.

CONCLUSION

This guidebook has presented a clinically validated, four-phase protocol for the complex treatment and relapse prevention of chronic generalized periodontitis in patients with concurrent cervical intervertebral disc pathology. The protocol integrates cause-related dental therapy, corrective periodontal procedures, and structured cervical spine rehabilitation within a single coordinated framework, addressing the shared systemic inflammatory substrate that drives both conditions simultaneously.

The three-year clinical outcomes from the original validation cohort demonstrate that this integrated approach achieves clinico-radiologic periodontal stabilization rates that compare favorably with published outcomes for standard-of-care periodontal treatment in comorbid populations, with 91.7% stabilization at one year in mild-to-moderate disease and 76.9% in severe disease, declining modestly to 87.5% and 69.2% respectively by year three. These results support the guiding hypothesis that coordinated suppression of both inflammatory sources produces outcomes superior to single-specialty treatment of either condition in isolation.

The protocol was formally implemented in multiple clinical and educational settings in Ukraine in 2016 and 2017, confirming its practical applicability across a range of healthcare contexts. Its publication in English and presentation in this US-oriented format reflects the recognition that the comorbid condition it addresses, periodontitis co-occurring with cervical disc pathology, affects a substantial proportion of adult patients in the United States and that US dental and rehabilitation practitioners currently lack structured guidance for managing it in a coordinated manner.

The author proposes formal recognition of periodontal-vertebral comorbidity (PVC) as a distinct clinical entity warranting dedicated treatment planning, interdisciplinary communication protocols, and outcome tracking. Adoption of the four-phase framework presented in this guidebook, adapted to the outpatient physical therapy setting available in US practice, represents a practical starting point for this recognition.

Clinicians who implement this protocol are encouraged to document outcomes systematically and contribute to the growing evidence base for multidisciplinary management of comorbid inflammatory diseases. The patients who will benefit from that evidence accumulation are already sitting in waiting rooms, with two diagnoses and a care system that has not yet developed a plan that addresses both of them together.

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