

THE EFFECT OF HYALURONIC ACID COMPOUNDS IN THE COMPLEX TREATMENT OF GENERALISED PERIODONTITIS: A SYSTEMATIC REVIEW OF SCIENTIFIC LITERATURE

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Significance. Gingivitis and periodontitis, together referred to as periodontal disorders, are chronic infections of the periodontal tissues linked to biofilms (1,3). Globally, 20 to 50 percent of individuals are afflicted by periodontal diseases, with severe periodontitis being a primary contributor to tooth loss. Surgical and conservative methods are used to treat gingivitis and periodontitis (5,6).

A considerable array of adjuvant drugs has been suggested to enhance the clinical trajectory after primary therapy, used alongside primary therapeutic strategies (7). These adjuvants include diverse anti-inflammatory, antibacterial, and antiseptic agents, including chlorhexidine and essential oils. Additional chemicals that facilitate tissue regeneration and healing include hyaluronic acid (HA) and enamel matrix proteins.

Hyaluronic acid is a disaccharide polymer that is part of the glycosaminoglycan family. Native hyaluronic acid, a major component of the extracellular matrix, is present in human connective and epithelial tissues in a high molecular weight form ($10^4 - 10^6$) (8). It is a structural element of both unmineralized (gingival tissue, periodontal ligament) and mineralised (cementum, alveolar bone) tissues inside the mouth cavity (9).

Hyaluronic acid has anti-inflammatory and antibacterial characteristics and is crucial

to the wound healing process. It participates in several biological processes, such as cell motility, adhesion, and phagocytosis (10). Commercial preparations including high molecular weight non-toxic hyaluronic acid (1.5×10^5) have been used as adjuncts to both non-surgical and surgical periodontal treatment (11). Due to its sticky nature, GK is presumed to persist in the tissues where it executes its biological tasks (11).

By 2024, five systematic evaluations had been published regarding the possible safety and effectiveness of local glucocorticoid administration in the periodontium (12–14). The literature search for these reviews was confined to six electronic databases, and many fresh original research publications have lately emerged in the literature. Consequently, we decided to do a research on gingivitis and periodontitis to enhance the analysis of pertinent data and include the most recent trials.

The consistency of the studies regarding treatment methodologies and GC formulation was assessed by analysing the secondary features of the studies and doing a new systematic review with searches across a broader range of electronic sources. This research sought to ascertain the efficacy of local glucocorticoid application as a supplementary therapy...

The issue of elevated prevalence of periodontal diseases remains significant in contemporary dentistry, affecting 90% of the adult population [16]. The contemporary management of periodontal disease complications employs integrated treatments that include surgical, pharmacological, and physiotherapeutic techniques. The significance of periodontal tissue regeneration during the maintenance phase is more emphasised annually. One therapeutic approach involves the administration of pharmacological agents in conjunction with alternative modalities [19]. These medications include hyaluronate substances, the outcomes of which several experts discuss in their publications. The primary criteria for assessing the outcomes in these trials were bleeding on probing (BOP), probing depth (PD), and gingival recession (GR).

The objective of the research is to ascertain the dose-dependent impact of hyaluronic

acid formulations in patients with generalised periodontitis, informed by a thorough evaluation of the scientific literature.

Materials and Methods. The investigation for articles utilised the keywords: "hyaluronic acid," "periodontitis," "periodontal treatment," across four databases: PubMed (n=85), Scopus (n=5), disserCat (n=7), and the Virtual Health Library (n=15), further augmented by a manual search in the journal Parodontologiya (n=5). One hundred six papers were identified, of which seven fulfilled all the design requirements of the present research.

Findings from research. The aggregate number of subjects examined in the included studies was 727, comprising 405 individuals in the case group—those with mild (n=105), moderate (n=187), and severe (n=113) chronic generalised periodontitis—and 322 individuals in the control group (patients who received periodontal treatment without hyaluronic acid). The amount of the medicine provided for illness treatment varied from 0.04 ml per injection to 0.5 ml for both jaws. The assessment of outcomes after the administration of hyaluronic acid in individuals with chronic generalised periodontitis revealed statistically significant improvements relative to the control group. Several investigations indicate a 32–39% improvement in functional diagnostic outcomes.

Conclusions. A thorough assessment of scientific literature indicates that the administration of hyaluronic acid preparations in patients with generalised periodontitis is recommended to enhance the effects of complete therapy. In the aforementioned investigations, hyaluronates were used with other therapies to get improved results.

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