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Mini-Review

Use of Cannabinoids in the Treatment of Orofacial Pain and Temporomandibular Disorders: A Narrative Review

Igor Leitão Marques[1]*, Fernanda Quaresma[1]

[1]Department of Oral and Maxillofacial Surgery – HCor Hospital, São Paulo, Brazil.

***Corresponding Author**: Igor Leitão Marques, Department of Oral and Maxillofacial Surgery – HCor Hospital, São Paulo, Brazil.

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Abstract

The use of cannabinoids represents a promising therapeutic approach for the management of orofacial pain and temporomandibular disorders (TMD). This narrative review aimed to explore the potential mechanisms of action, clinical applications, and current scientific evidence regarding the use of cannabinoids in dentistry. A search of the recent literature was conducted, highlighting studies that demonstrate the anti-inflammatory, analgesic, and neuromodulatory properties of cannabinoids, especially cannabidiol (CBD), in the control of chronic and neuropathic pain conditions. Although clinical data remain limited, emerging evidence suggests that cannabinoids may serve as an adjunctive therapy in the treatment of TMD and orofacial pain, contributing to improved patient outcomes and quality of life. Further clinical trials are necessary to establish standardized protocols and determine the long-term safety and efficacy of these substances in dental practice.

Keywords: *Cannabinoids; Cannabidiol; Orofacial Pain; Temporomandibular Disorders; Dentistry; CBD Therapy.*

Introduction

Orofacial pain — encompassing myofascial, articular, and neuropathic disorders involving the face, jaw, and head represents a significant clinical challenge in both diagnosis and management. Temporomandibular disorders (TMD) are among the most prevalent manifestations, with substantial functional and quality-of-life impacts. Recently, there has been growing attention to the endocannabinoid system (ECS) as a modulator of pain and inflammation. The ECS consists of cannabinoid receptors (CB1 and CB2), endogenous ligands, and enzymes responsible for synthesis and degradation. The present work aims to narratively review the literature on the use of cannabinoids and the ECS in orofacial pain and TMD, highlighting experimental and clinical evidence, perspectives, and implications for dental practice.

Pathophysiology of TMD and the Rationale for Cannabinoids

TMD comprise a heterogeneous group of conditions affecting the temporomandibular joint, masticatory muscles, and associated structures. Pathological aspects include myofascial pain, muscle hypersensitivity, joint dysfunction, limited mouth opening, and referred pain. The rationale for cannabinoid use lies in the presence of CB1 and CB2 receptors in structures involved in pain and inflammation modulation, both centrally and peripherally. Experimental data show that in chronic pain states or central sensitization, there are alterations in the endocannabinoid tone, supporting the potential therapeutic effect of cannabinoid modulation.

Evidence from the Literature: Review of Recent Publications

Experimental studies have shown that non-psychoactive components of cannabis, such as cannabidiol (CBD) and beta-caryophyllene (BCP), can reduce orofacial sensitivity in animal models of pulpitis and trigeminal pain. In humans, although clinical studies are still limited, systematic reviews indicate potential benefits of CBD in TMD, including analgesic, anti-inflammatory, and muscle relaxant effects when applied topically or orally. One clinical trial reported improvement in pain and jaw function with full-spectrum CBD in chronic TMD and oromyofascial pain. However, the heterogeneity of formulations, dosages, and outcome measures limits the strength of evidence.

Main Findings, Limitations, and Future Perspectives

The ECS plays a central role in chronic pain modulation and nociceptive sensitization, including trigeminal and masticatory structures. In preclinical models, CBD and BCP reduce orofacial pain and inflammation. In TMD, there is initial evidence of benefits from topical cannabinoid formulations. However, most clinical trials remain small-scale, methodologically heterogeneous, and lack standardized protocols. Long-term safety, drug interactions, and regulatory aspects are still challenges. Future studies should investigate different administration routes, biomarker-based patient stratification, and the integration of cannabinoids into multimodal treatment strategies for TMD.

Conclusion

The use of cannabinoids in the treatment of orofacial pain and temporomandibular disorders represents an emerging therapeutic field supported by strong physiological rationale and promising experimental evidence. Although robust clinical trials are still scarce, initial findings suggest that CBD may offer adjunctive benefits such as pain relief, muscle relaxation, and improved function. To safely integrate cannabinoids into dental practice, further well-designed clinical research is needed. Cannabinoids should be viewed as potential complementary tools within a multimodal pain management approach for TMD and orofacial pain.

Conflict of Interest

The authors declare that there is no conflict of interest.

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