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Challenges in the Differential Diagnosis of Orofacial Pain: Differentiating Neuropathic and Myofascial Components

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REVISÃO DE LITERATURA

ABSTRACT

Introduction: Orofacial pain poses a complex diagnostic challenge, particularly in distinguishing between neuropathic pain (NP) and myofascial pain (MP) associated with temporomandibular disorders (TMD). Although they may coexist, these conditions require divergent therapeutic approaches. **Objective:** To analyze, through an integrative literature review, the main clinical and diagnostic criteria used to differentiate neuropathic pain from myofascial pain in the orofacial region. **Methodology:** An integrative review was conducted in PubMed/MEDLINE, Scopus, and Web of Science databases. Articles published between 2020 and 2025 in English and Portuguese were included, using descriptors related to facial pain, neuralgia, and myofascial pain syndromes. **Results:** The literature indicates that NP presents a specific sensory signature characterized by burning, electric shock, and paresthesia, often accompanied by somatosensory changes (allodynia, hyperalgesia). In contrast, MP manifests as deep, oppressive pain strictly related to mandibular function and the presence of trigger points and taut bands. Therapeutic failure to conventional TMD treatments is a significant indicator of an underlying neuropathic component. **Conclusion:** Clinical differentiation between NP and MP is feasible and fundamental. The use of validated protocols, such as DC/TMD and ICOP, combined with a systematized physical examination distinguishing function-provoked pain (myofascial) from spontaneous or sensory pain (neuropathic), constitutes the gold standard strategy to avoid irreversible and ineffective interventions.

Keywords: Facial Pain; Neuralgia; Myofascial Pain Syndromes; Diagnosis, Differential;

Temporomandibular Joint Disorders.

Desafios no Diagnóstico Diferencial da Dor Orofacial: Distinguindo os Componentes Neuropático e Miofascial

RESUMO

Introdução: A dor orofacial representa um desafio diagnóstico complexo, especialmente na distinção entre a dor neuropática (DN) e a dor miofascial (DM) associada à disfunção temporomandibular (DTM). Embora possam coexistir, essas condições exigem abordagens terapêuticas divergentes. **Objetivo:** Analisar, por meio de uma revisão integrativa da literatura, os principais critérios clínicos e diagnósticos utilizados para diferenciar a dor neuropática da dor miofascial na região orofacial. **Metodologia:** Trata-se de uma revisão integrativa realizada nas bases de dados PubMed/MEDLINE, Scopus e Web of Science. Foram incluídos artigos publicados entre 2020 e 2025, nos idiomas inglês e português, utilizando descritores relacionados à dor facial, neuralgia e síndromes da dor miofascial. **Resultados:** A literatura indica que a DN apresenta uma assinatura sensorial específica, caracterizada por queimação, choque elétrico e parestesia, frequentemente acompanhada de alterações somatossensoriais (alodínia, hiperalgesia). Em contraste, a DM manifesta-se como dor profunda e opressiva, estritamente relacionada à função mandibular e à presença de pontos gatilho (*trigger points*) e bandas tensas. A falha terapêutica a tratamentos convencionais para DTM é um indicador importante de componente neuropático subjacente. **Conclusão:** A diferenciação clínica entre DN e DM é viável e fundamental. A utilização de protocolos validados, como o DC/TMD e o ICOP, aliada a um exame físico sistematizado que distinga dor provocada por função (miofascial) de dor espontânea ou sensorial (neuropática), constitui a estratégia padrão-ouro para evitar intervenções irreversíveis e ineficazes.

Palavras-chave: Dor Facial; Neuralgia; Síndromes da Dor Miofascial; Diagnóstico Diferencial; Disfunção Temporomandibular.

Instituição afiliada – UFSC[1], UFPI[2], UECE[3], FAVENI[4], UNIMONTES[5], Focus[6], UFF[7], UVA[8], UFMA[9], Uniavan[10], FPP[11], UNIFRANZ[12], Unifacs[13], Universo[14], UNIFSA[15], UFES[16], UFSC[17], SLMandic[18], UFPA[19]

INTRODUCTION

Neuropathic Pain (NP) is defined as pain caused by a lesion or disease affecting the somatosensory nervous system, potentially involving both central and peripheral components (1). This condition presents distinct clinical features—such as burning sensations, electric shocks, or paresthesia—which differentiate it from other orofacial pain etiologies (2).

Conversely, Myofascial Pain (MP) is associated with functional and/or structural alterations of the masticatory muscles. It is characterized by regional pain, the presence of trigger points, and potential radiation to adjacent areas (3). It represents the most prevalent manifestation of Temporomandibular Disorders (TMD) and is the primary etiology of TMD-related chronic orofacial pain (3).

Orofacial pain poses a complex diagnostic challenge requiring precise differentiation among its various etiologies. Specifically, the distinction between neuropathic pain and TMD-related myofascial pain is of fundamental clinical importance (4). In patients presenting with orofacial pain, both pain-related TMD and neuropathic pain can coexist (5). The rising prevalence of orofacial neuropathic pain, combined with its diagnostic complexity, underscores the urgent need for well-established clinical criteria to guide medical and dental practice (5).

The present study aims to analyze, through an integrative literature review, the primary clinical criteria used to differentiate neuropathic pain from TMD-associated myofascial pain. This research seeks to synthesize and discuss current evidence that facilitates the recognition of specific clinical characteristics for each condition, thereby contributing to the refinement of differential diagnosis and the implementation of more targeted and effective therapeutic approaches for patients with orofacial pain.

METHODS

The present study consists of an integrative literature review. To ensure a systematic approach, the following six stages were performed: 1) identification of the theme and selection of the guiding research question; 2) establishment of inclusion and exclusion criteria; 3) identification of studies in electronic databases; 4) evaluation of

the included studies; 5) interpretation of the results; and 6) presentation of the review.

The guiding research question was defined as: *"What are the primary clinical and diagnostic criteria used to differentiate orofacial neuropathic pain from myofascial pain associated with temporomandibular disorders?"*

Search Strategy A bibliographic search was conducted across the PubMed/MEDLINE, Scopus, and Web of Science electronic databases. The following Medical Subject Headings (MeSH) and their corresponding terms in Portuguese (DeCS) were utilized: "Facial Pain," "Neuralgia," "Temporomandibular Joint Disorders," "Myofascial Pain Syndromes," and "Diagnosis, Differential." These terms were combined using the Boolean operators "AND" and "OR."

Eligibility Criteria Articles published within the last five years (2020–2025) in English, Spanish, and Portuguese, available in full text, were included. The inclusion criteria encompassed systematic reviews, literature reviews, observational studies, and clinical trials specifically addressing the signs, symptoms, and differentiation methods between neuropathic and myofascial pain in the orofacial region.

Exclusion criteria consisted of animal model studies, letters to the editor, conference abstracts, duplicate articles, and studies that did not provide a clear distinction between the two pain etiologies.

Data Extraction and Analysis After screening titles and abstracts, the selected articles were read in full. Relevant information was extracted and organized into a synthesis table (Table 1), categorized by: author/year, clinical criteria for neuropathic pain, clinical criteria for myofascial pain, and the diagnostic protocols utilized. Data analysis was performed descriptively, categorizing the findings into symptomatologic patterns and diagnostic tools to facilitate the differential diagnosis.

RESULTS AND DISCUSSION

For this integrative review, the selected studies were systematized and organized to facilitate the identification of key findings regarding differential diagnostic criteria (Table 1). Data analysis revealed that clinical differentiation between Neuropathic Pain (NP) and Myofascial Pain (MP) associated with Temporomandibular Disorders (TMD) represents a significant challenge, requiring a profound understanding of their distinct

pathophysiological mechanisms.

The recent literature converges on a consensus: although both conditions may coexist, their fundamental clinical profiles—referred to as the "pain signature"—are divergent and can be identified through a meticulous medical history (anamnesis) and a systematic physical examination (5, 11).

Table 1: Comparative criteria and protocols for differential diagnosis between Neuropathic Pain (NP) and Myofascial Pain (MP).

Author (Year)	Clinical Criteria (NP)	Clinical Criteria (MP)	Diagnostic Protocol
Raciti (2025)	Altered somatosensory processing and neuroimaging changes.	Muscle tenderness and local pain upon palpation.	Blink reflex, EMG, and functional MRI.
Steen (2025)	Exclusion based on clinical history and absence of muscle signs.	Trigger points, taut bands, and referred pain.	Clinical assessment and therapeutic response.
Baggen (2024)	Burning, electric shock, paresthesia, and high scores on pain scales.	Pain localized to palpation of masticatory muscles.	DC/TMD and DN4 questionnaire.
Barjandi (2024)	Unusual pain patterns or positive sensory symptoms.	Palpation hypersensitivity and functional limitation.	Physical examination and musculoskeletal classification.
Garstka (2023)	Persistent neurogenic symptoms and refractory to analgesics.	Improvement with occlusal adjustments and physical therapies.	Clinical evaluation and longitudinal follow-up.
Fernández (2023)	Dysesthesias and evidence of neural injury mechanisms.	Nociceptive/nociplastic mechanisms and trigger points.	IASP criteria and mechanistic models.
Peng (2022)	Demonstrable lesion or disease of the somatosensory system.	Regional muscle pain without significant sensory alteration.	ICOP (1st Edition).
Shinoda (2021)	Central sensitization and trigeminal nerve injury.	Activation of muscle nociceptors without structural nerve lesion.	Neurophysiological and experimental models.

Pain Characterization and Symptomatology

The first crucial step for the clinician is the characterization of pain quality. Studies indicate that orofacial Neuropathic Pain (NP) manifests predominantly through specific verbal descriptors such as burning, electric shocks, tingling, and paresthesia, often following the distribution of a peripheral nerve or presenting somatosensory alterations such as allodynia and hyperalgesia (2, 4). In general, research indicates that these objective alterations (hypoesthesia or hyperalgesia) serve as key markers of neuropathy.

In contrast, Myofascial Pain (MP) is consistently described as a deep, dull, and oppressive ache. It is regional in location and exacerbated by mandibular function or direct palpation, lacking the cutaneous sensory alterations typically seen in neuropathy (7, 8).

Physical Examination and Diagnostic

Testing Muscle palpation and the evaluation of mandibular function constitute the second fundamental discriminatory axis. The presence of trigger points that reproduce the patient's chief complaint, associated with palpable taut bands and potential referred pain to adjacent areas, strongly confirms a myofascial component (9, 10).

Conversely, in neuropathic pain, the physical examination of the muscles may be unremarkable or show sensitivity that does not justify the intensity of the reported complaint. In such cases, it is mandatory to perform neurophysiological tests or apply specific validated screening tools, such as the Douleur Neuropathique 4 (DN4), to detect sensory function deficits or gains that do not occur in pure myalgia (5, 11). Neuroimaging has also been cited as a useful resource in complex clinical presentations (6).

Symptom Overlap and Chronicity

A critical aspect for clinical practice is recognizing the overlap of symptoms. The literature warns that patients with chronic TMD may develop characteristics of nociplastic pain or secondary neuropathic traits, rendering the clinical profile mixed and more complex (2, 9).

In these scenarios, therapeutic failure to conventional TMD treatments—such as occlusal splints, physical therapy, and non-steroidal anti-inflammatory drugs (NSAIDs)—

should be interpreted as a "red flag" for the investigation of an underlying neuropathic component, requiring immediate diagnostic reassessment (8, 10).

Standardization and Protocols

Finally, the use of internationally validated diagnostic protocols, such as the Diagnostic Criteria for Temporomandibular Disorders (DC/TMD) and the International Classification of Orofacial Pain (ICOP), is strongly recommended to standardize assessment and reduce clinical subjectivity (4, 7). Integrating these instruments into clinical routine, combined with the understanding that MP responds mechanically to function while NP responds to sensory stimuli or occurs spontaneously, provides the practitioner with a reliable framework for therapeutic decision-making (5, 11).

CONCLUSION

Based on the analysis of the evidence, it is concluded that the clinical differentiation between orofacial Neuropathic Pain (NP) and Myofascial Pain (MP) associated with Temporomandibular Disorders (TMD) is not only feasible but fundamental for therapeutic success. Although both conditions may coexist, they present distinct symptomatic signatures: neuropathic pain is predominantly characterized by sensory descriptors—such as burning, electric shocks, and paresthesia—and independence from mechanical stimuli; conversely, myofascial pain is strictly related to mandibular function, presenting as deep pain and the presence of trigger points.

Evidence suggests that failure to distinguish between these etiologies often results in irreversible and ineffective dental treatments. Therefore, the routine incorporation of validated diagnostic protocols, such as the DC/TMD and the ICOP, combined with the use of neurophysiological screening tools in refractory cases, constitutes the gold-standard strategy to ensure an accurate diagnosis and a safe, effective clinical approach.

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