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Cervical Spine Pain Intensity and Occurrence in Young Individuals with Temporomandibular Disorders

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Abstract

Temporomandibular disorders encompass a group of conditions affecting the temporomandibular joint, masticatory muscles, and associated structures. These disorders often manifest as pain, limited jaw movement, and audible clicking or popping sounds during jaw function. In recent years, there has been growing interest in the association between TMD and cervical spine pain, particularly among young individuals. This article explores the relationship between cervical spine pain intensity and occurrence in young individuals with TMD, delving into the underlying mechanisms, clinical implications, and potential treatment strategies. TMD is prevalent in the general population, with a higher incidence in young adults and females. Adolescents and young adults are particularly susceptible due to hormonal changes, stress, and lifestyle factors.

Keywords: Abnormal • Laminectomy • Spinal

Introduction

Adolescent idiopathic scoliosis is a prevalent spinal deformity, characterized by a lateral curvature of the spine with a Cobb angle of 10 degrees or more, typically manifesting during the growth spurt prior to puberty. Traditionally, open surgery has been the standard treatment for severe cases, involving extensive muscle dissection and significant recovery periods. However, advancements in surgical techniques have led to the development of minimally invasive surgery as a potential alternative. This systematic review aims to evaluate the efficacy, safety, and outcomes of MIS for AIS compared to traditional open surgery. A comprehensive literature search was conducted using databases such as PubMed, Embase, and Cochrane Library for studies published from 2000 to 2023. Keywords included "adolescent idiopathic scoliosis," "minimally invasive surgery," "thoracoscopic surgery," "endoscopic spine surgery," and "MIS." Studies were selected based on inclusion criteria: AIS patients, MIS techniques, and outcomes measured in terms of surgical efficacy, complications, and recovery. Exclusion criteria included non-AIS spinal deformities, non-surgical treatments, and studies not published in English [1,2].

Literature Review

Numerous studies have reported a high prevalence of cervical spine pain in individuals with TMD. The prevalence rates in young individuals range from 30% to 70%, indicating a significant overlap between these conditions. This high prevalence suggests a possible shared pathophysiological mechanism or secondary influence where TMD symptoms may lead to cervical spine discomfort and vice versa. Cross-sectional studies have consistently shown a higher prevalence of cervical spine pain in young individuals with TMD compared to those without TMD. These studies highlight the need for clinicians to consider cervical spine assessment in patients presenting with TMD. Longitudinal studies suggest that the development of TMD symptoms can precede the onset of cervical spine pain, indicating a potential causal relationship. Conversely, existing cervical spine pain may exacerbate or contribute to the development of TMD symptoms over time. The intensity of cervical spine pain in individuals with TMD varies, but it is generally reported as moderate to severe. Pain intensity is often measured using standardized tools such as the Visual Analog Scale or the Numeric Rating Scale. These tools provide a subjective measure of pain, allowing for the assessment of pain severity and its impact on daily activities. Studies utilizing the VAS report average pain scores ranging from 4 to 7 on a scale of 0 to 10, indicating moderate to severe pain intensity in young individuals with TMD. Similar findings are reported using the NRS, with average scores reflecting moderate to severe pain levels. These scores highlight the significant impact of cervical spine pain on the quality of life of young individuals with TMD [3,4].

Discussion

The exact mechanisms linking TMD and cervical spine pain are not fully understood, but several hypotheses have been proposed. These include shared neural pathways, muscle tension and spasm, postural imbalances, and central sensitization. The trigeminal and cervical nerves share common neural pathways, which may explain the concurrent occurrence of TMD and cervical spine pain. This overlap can lead to referred pain, where pain originating in the TMJ or masticatory muscles is perceived in the cervical region. TMD is often associated with increased muscle tension and spasm in the masticatory muscles, which can extend to the cervical musculature. This muscle tension can lead to pain and discomfort in the cervical spine. Poor posture, particularly forward head posture, is commonly observed in individuals with TMD. This postural imbalance places additional strain on the cervical spine, contributing to pain and discomfort. Chronic pain conditions, including TMD, can lead to central sensitization, where the central nervous system becomes hypersensitive to pain stimuli. This heightened sensitivity can result in the amplification of pain signals, affecting both the orofacial and cervical regions [5,6].

Conclusion

The association between TMD and cervical spine pain is well-documented, with a significant prevalence of cervical spine pain reported in young individuals with TMD. The intensity of this pain can range from moderate to severe, significantly impacting the quality of life. Understanding the pathophysiological mechanisms underlying this association is crucial for developing effective treatment strategies. A multidisciplinary approach to treatment, incorporating physical therapy, pharmacological interventions, behavioral therapy, and dental treatments, is essential for managing both TMD and cervical spine

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pain. Preventive measures, such as posture education, stress management, and regular physical activity, can also help reduce the risk of cervical spine pain in individuals with TMD. Future research should focus on longitudinal studies to better understand the causal relationship between TMD and cervical spine pain. Additionally, exploring the effectiveness of various treatment modalities and preventive measures in this population can help optimize clinical management and improve patient outcomes. Cervical spine pain is a common and significant issue in young individuals with TMD. The intensity and occurrence of this pain can have a profound impact on daily activities, academic performance, social interactions, and overall well-being. A comprehensive, multidisciplinary approach to treatment, along with preventive measures, is essential for effectively managing this condition and improving the quality of life for affected individuals.

Acknowledgement

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Conflict of Interest

None.

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