

Carpal Tunnel Syndrome: Clinical manifestations and possible complications

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ABSTRACT

Carpal Tunnel Syndrome (CTS) is a common condition resulting from compression of the median nerve in the wrist, causing pain, paresthesia, and functional limitations. The study highlights the neurological, functional, psychological, and occupational complications associated with CTS, such as loss of sensation, chronic pain, stress, and difficulties at work. The review emphasizes the importance of early diagnosis and appropriate treatment to mitigate the impact on patients' quality of life.

Keywords: Carpal Tunnel Syndrome, Nerve Compression Syndrome, Cumulative Trauma Disorders.

INTRODUCTION

Carpal Tunnel Syndrome (CTS) is one of the most common conditions faced by hand surgeons, being defined by compression of the median nerve in the wrist (Alexandre *et al.*, 2021; Osiak *et al.*, 2022; Shem, Wong, Dirlikov., 2020). Initially described by James Paget in 1854 and later detailed by Marie and Foix in 1913, CTS results in considerable increased pressure within the anatomical structure of the carpal tunnel, leading to symptoms such as paresthesia, burning, or pain and limiting the activities of the hand region of patients with this condition (Bagno *et al.*, 2023; Estivalet *et al.*, 2020; Van Lier, Espinosa., 2024).

This study aims to highlight the various complications associated with CTS, ranging from classic symptoms to functional, occupational, and psychological complications of patients.

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MATERIALS AND METHODS

To conduct this study, a detailed literature review approach was adopted in the period of May 2024. Several renowned databases, such as SciELO, PubMed, Google Scholar and Virtual Health Library, were consulted due to the wide collection of scientific articles on CTS and related topics. The research was carried out using keywords in Portuguese, English and Spanish, including descriptors such as "Carpal Tunnel Syndrome", "Nerve Compression Syndrome" and "Cumulative Traumatic Disorders".

The selection included articles from the last 10 years, including updated studies, systematic reviews, and meta-analyses relevant to the understanding of complications associated with CTS. After a careful analysis, 8 articles were chosen that most contributed to the specific objectives of this investigation.

RESULTS

The most common symptoms of CTS include pain, paresthesia, and numbness in the territory of median nerve innervation, especially nocturnal (Osiak *et al.*, 2022; Holbrook, Hillesheim, Weller., 2022). Neurological complications include loss of sensation, chronic pain, decreased strength, and muscle atrophy (Du *et al.*, 2022; Acciarito *et al.*, 2022). Functionally, there is impairment of hand function and reduced coordination, making daily tasks difficult. Psychologically, stress, anxiety, and sleep disturbances can occur (Bagno *et al.*, 2023; Chaudhary *et al.*, 2024).

Occupationally, CTS can lead to an inability to work, necessitating professional changes (Van Lier, Espinosa., 2024). Post-surgical complications include infection, residual pain, and wrist stiffness (Estivalet *et al.*, 2020). CTS significantly interferes with quality of life, and can cause early disability and absence from work (Alexandre *et al.*, 2021; Shem, Wong, Dirlikov., 2020).

FINAL CONSIDERATIONS

This review addressed the fundamental aspects of CTS, from its clinical definition to neurological and functional complications. Characteristic symptoms, such as pain, paresthesia and numbness, related to median nerve involvement, were discussed. The functional impact of CTS on daily and professional activities was also highlighted, emphasizing the importance of early diagnosis and appropriate treatment to improve the quality of life of patients.



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