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Research Article

## SURGICAL OUTCOME AND CLINICAL PRESENTATION OF CARPAL TUNNEL SYNDROME

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**Abstract:**

**Aim:** To describe the clinical picture and surgical outcome in patients with carpal tunnel syndrome.

**Study design:** A case series

**Place and duration:** In the Department of Neurosurgery, Nishtar Hospital Multan for six duration from November 2019 to April 2020.

**Methodology:** All patients with symptoms of carpal tunnel syndrome (CTS) were included in the study. Nerve conduction studies were performed on all patients diagnosed with CTS on the basis of medical history and clinical examination. These patients were followed 15 days, 3 months and 6 months later. Patients with physiotherapy were offered quick recovery and rehabilitation.

**Results:** 72 patients were included in the study. All patients were women. Twenty patients had unilateral disease and 52 patients had bilateral disease. Although conservative treatment was used in patients with mild to moderate neuropathy, it was prescribed in surgery for patients with severe neuropathy. An open surgery was performed to free the carpal tunnel. Twenty-nine patients had mild or moderate neuropathy in NCS and were treated conservatively. In the remaining 43 patients, the median nerve had severe neuropathy and significant muscle wasting of thenar. An open surgery was performed in these 43 cases. In the first follow-up period, 68% of patients showed a marked improvement in symptoms. One patient had damage to the ulnar artery near the superficial palmar arch of the ligation to control bleeding.

**Conclusion:** Carpal tunnel syndrome is mainly a middle-aged female disease. Open surgery is the preferred treatment for severe neuropathy, mild and moderate types respond satisfactorily to physical therapy and medical therapy.

**KEYWORDS:** carpal tunnel syndrome, trap neuropathy, median neurolysis

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**INTRODUCTION:**

Symptomatic carpal tunnel syndrome (CTS) is 3% among women and 2% among men, with maximum prevalence occurring in women over 55 years of age. The carpal tunnel is a fibrous tunnel located at the base of the palm. Along with the median nerve, nine flexor tendons pass through the carpal tunnel. CTS is caused by increased pressure in the carpal tunnel, which leads to ischemia of the median nerve, causing problems with paresthesia, pain and conductivity. Pregnancy, diabetes, hypothyroidism and steroid use are often associated with carpal tunnel syndrome. Strong repetitive actions of the hand and wrist are also particularly associated with carpal tunnel syndrome. Symptoms include pain, tingling, numbness or burning throughout the median nerve spacing. Therefore, atrophy, the Phalen maneuver and the Tinel sign are common symptoms observed by the doctor. The diagnosis is confirmed by a nerve conduction study. Treatment is with wrist splints, NSAIDs, pyridoxine (vitamin B6); by local injection of corticosteroids; for carpal tunnel surgery, such as open or endoscopic procedures. The purpose of this study was to define the clinical picture and post-treatment outcome depending on the severity of the disease in different groups of patients with CTS.

**METHOD:**

This study was held in the Department of Neurosurgery, Nishter Hospital Multan for six duration from November 2019 to April 2020. The study included 72 patients admitted with the

symptoms and signs of carpal tunnel syndrome. Significant clinical results have been reported. The diagnosis was confirmed in nerve conduction studies.

Patients with mild neuropathy in NCS were conservatively treated and recommended for surgery for patients with moderate to severe neuropathy. Open surgery release was performed in this study. Measurements of results were 'improved' or 'not improved' based on patient history.

**RESULTS:**

A total of 72 patients were included in the study. Most patients were between 30 and 50 years old. All patients were women. Twenty patients had unilateral disease and 52 patients had bilateral disease (Table I, II). Diagnosis of the CTS frontal nerve conduction test based on mild, moderate and severe neuropathy and the median nerve (right and left median nerve) is shown in Tables III and IV. Although conservative treatment was used in patients with mild to moderate neuropathy, it was recommended for surgery in patients with severe neuropathy. Open surgery is an accepted surgical procedure to free the carpal tunnel (Table V). Twenty-nine patients had mild or moderate neuropathy in NCS and were treated conservatively. In the remaining 43 patients, the median nerve had severe neuropathy and significant muscle wear. In these 43 cases, open surgery was performed (Table V).

**Table I. Age range of patients**

Age range	No.	%
20 years and less	3	4.2
20-30 years	17	23.6
30-40 years	20	27.8
40-50 years	22	30.6
50-60 years	8	11.1
60 years and more	2	2.8
<b>Total</b>	<b>72</b>	<b>100.0</b>

**Table II. Side involvement in our patients**

Involvement	No. of patients	%
Right Side	18	25
Left Side	2	2.8
Bilateral	52	72.2
<b>Total</b>	<b>72</b>	<b>100</b>

**Table III. Diagnosis of CTS (right median)**

Symptoms	No.	%
Normal	2	2.8
Mild Neuropathy	22	30.6
Moderate to Neuropathy	5	6.9
Moderate to Severe	4	5.6
Severe Neuropathy	37	51.4
Mild to Moderate	2	2.8
<b>Total</b>	<b>72</b>	<b>100.0</b>

**Table IV. Diagnosis of CTS (Left Median)**

Symptoms	No.	%
Normal	18	25.0
Mild Neuropathy	14	19.4
Moderate to Neuropathy	13	18.1
Moderate to Severe	6	8.3
Severe Neuropathy	19	26.4
Mild to Moderate	2	2.8
<b>Total</b>	<b>72</b>	<b>100.0</b>

**Table V. Treatment to patients with CTS**

Treatment	No.	%
Conservative	29	40.3
Surgical	43	59.7
<b>Total</b>	<b>72</b>	<b>100</b>

**DISCUSSION:**

Carpal tunnel syndrome (CTS) is one of the most common trap syndromes that account for 45% of traumatic nerve damage. It is more common in women and usually occurs between 20 and 59 years old. In this study, 100% of women who came to the clinic because of neurological symptoms showed results consistent with CTS in NCS. It was observed that the assigned risk differs from men to women depending on the employment status. CTS prevails in a population that is exposed to repetitive and vigorous work and has led to disputes about compensation. All the women in our study had lower socioeconomic status and had repetitive physical work at home in the past.

Medical conditions such as diabetes, rheumatoid arthritis, hypothyroidism and pregnancy are statistically important in the appearance of carpal tunnel syndrome and may even cause CTS. Patients were examined in detail for the clinical features of hypothyroidism, since appropriate hormone replacement therapy was started, the disease may resolve within 3 months.

Pain and paresthesia are common symptoms throughout the median nerve area. Most patients in this study felt pain, especially at night. All patients

with severe neuropathy had torso muscular atrophy. Diagnosis of CTS is based on the results of clinical trials and NCS, the most useful diagnostic technique for CTS. We used NCS in all patients who were clinically diagnosed with CTS.

Twenty-nine patients had mild or moderate CTS in NCS in this study. Because patients with mild to moderate CTS had fairly satisfactory results when treated conservatively, these patients preferred neutral wrists (splints) and nerve and tendon shift exercises. All patients with severe neuropathy were offered surgery with open surgical evacuation because it involves a relatively low surgical risk that is easy to perform on an outpatient basis, but returning to work takes a little longer. Compared with endoscopic release.

For patients, important criteria for assessing the success of surgery are relieving symptoms, drowsiness and sleep disturbance, and resuming more important activities. This was the reason why this criterion was set as a measure of patient results in this study. While numbness and tingling improved during the first observation period (three weeks), other symptoms improved during the second observation period (3 months).

**CONCLUSION:**

Carpal tunnel syndrome is mainly a middle-aged female disease. Open surgery is the preferred treatment for severe neuropathy, mild and moderate types respond satisfactorily to physical therapy and medical therapy.

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