

CARPAL TUNNEL SYNDROME: AN EXPERIENCE IN A TERTIARY CARE HOSPITAL OF PESHAWAR

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ABSTRACT

Objective: To describe the clinical presentation and surgical outcome in patients with Carpal Tunnel Syndrome.

Study Design: Case series.

Setting & Duration: Department of Neurosurgery, Lady Reading Hospital Peshawar from March 2006 to April 2008.

Methodology: All the patients presenting with the signs and symptoms of Carpal Tunnel Syndrome (CTS) were included in the study. All the patients who were diagnosed as case of CTS on the basis of history and clinical examination were subjected to nerve conduction studies. These patients were followed up after 15 days, 3 months and 6 months of time. Patients were advised physiotherapy for quick recovery and rehabilitation.

Results: A total of 72 patients were recruited in the study. All the patients were females. Twenty patients had unilateral and 52 patients had bilateral disease. The patients with mild and moderate neuropathy were put on conservative management while those with severe neuropathy were advised surgery. Open surgery for Carpal Tunnel release was the surgical procedure adopted. Twenty-nine patients had either mild or moderate neuropathy on NCS and were treated conservatively. The remaining 43 patients had severe median nerve neuropathy with marked wasting of thenar muscles. Open surgery was performed in these 43 cases. Sixty eight % patients had marked improvement of symptoms on first follow up. One patient had injury to ulnar artery just close to superficial palmar arch which was ligated to control the bleeding.

Conclusion: Carpal tunnel syndrome is predominantly the disease of females especially of middle age. Open surgery is the treatment of choice for severe neuropathy, while mild and moderate types responds satisfactorily to physiotherapy and medical treatment.

KEY WORDS: Carpal tunnel syndrome, Entrapment Neuropathy, Median Neurolysis

INTRODUCTION

Symptomatic Carpal Tunnel Syndrome (CTS) accounts for 3% among female and 2% among male population with peak prevalence in women older than 55 years of age.¹ The carpal tunnel is a narrow fibroosseous tunnel located at the base of the palm. Nine flexor tendons along with median nerve traverse the carpal tunnel. CTS is caused by increasing pressure in carpal tunnel

leading to ischemia of the median nerve which results in paraesthesia, pain and impaired conduction.² Pregnancy, diabetes mellitus, hypothyroidism and use of steroids are the conditions commonly associated with carpal tunnel syndrome.^{3,4} In addition forceful repetitive activities of the hand and wrist are especially associated with carpal tunnel syndrome.^{5,6,7} Pain, tingling, numbness or burning sensations along the distribution of median nerve are the presenting symptoms. Thenar atrophy⁸, Phalen's maneuver⁹ and Tinel's sign¹⁰, are the common signs observed by the physician. Diagnosis is confirmed by nerve conduction study. Treatment ranges from wrist splints¹¹, NSAIDS, pyridoxin (vitamin B6); through local corticosteroids injection^{12,13}, to carpal tunnel release surgery, either open procedures or endoscopic release.^{14,15} The purpose of the present study was to describe the clinical presentation, and outcome after treatment in the various groups of CTS patients depending on the severity of the illness.

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METHODOLOGY

A total 72 patients who presented with sign and symptoms of carpal tunnel syndrome were included in the study. Most of the patients were referred from outpatients department while a few were referred by physicians and neurologists to Department of Neurosurgery from March 2006 to April 2008. Detailed history with special reference to life style and occupation of the patients was taken. The relevant clinical signs were recorded. The diagnosis was confirmed by nerve conduction studies.

The patients with mild neuropathy on NCS were managed conservatively and those with moderate and severe neuropathy were counseled for surgery. Open surgical release was the procedure performed in the present study. The outcome measures were either "improved" or "not improved" on the basis of patient's history.

RESULTS

A total of 72 patients were recruited in the study. Majority of the patients were in the age ranging from 30-50 years. All the patients were females. Twenty patients had unilateral and 52 patients had bilateral disease (Table I, II). Diagnosis of CTS from nerve conduction test through median nerve (right and left median nerve) with mild, moderate and severe neuropathies are shown in Table III and IV. The patients with mild and moderate neuropathy were put on conservative management while those with severe neuropathy were advised surgery. Open surgery for Carpal Tunnel release was the surgical procedure adopted (Table V). Twenty nine patients had either mild or moderate neuropathy on NCS and were treated conservatively. The remaining 43 patients had severe median nerve neuropathy with marked wasting of thenar muscles. Open surgery was performed in these 43 cases (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
Total	72	100.0

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

Table II. Side involvement in our patients

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
Total	72	100.0

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

Carpal Tunnel Syndrome (CTS) is one of the most common entrapment syndromes¹⁶ and encompasses 45% of non traumatic nerve lesions.¹⁷ It is more common in females and commonly occurs in age between 20-59 years.^{18,19} In the present study 100% of females who attended the outpatient clinics for the neurological symptoms had findings consistent with CTS on NCS. It has been noticed that attributed risk varies from males to females according to employment status.¹⁸ CTS prevails in population exposed to repetitive and forceful work^{20,21} and has resulted in compensation disputes.²² All the females in our study belonged lower socio-economic status and had history of repetitive manual work in homes.

Medical conditions like diabetes mellitus, rheumatoid arthritis, hypothyroidism and pregnancy²³ are statistically significant in the co-occurrence of carpal tunnel syndrome and may even cause CTS.²⁵ As the disease can be reversible in a period of 3 months if appropriate hormone replacement therapy is initiated²⁶, patients were especially investigated them for clinical features of hypothyroidism.

Pain and paresthesia along the territory of median nerve are the common symptoms of presentation.^{27,28} Most of the patients in this study presented with pain especially

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
Total	72	100.0

Table IV. Diagnosis of CTS (Left Median)

during the night. All the patients with severe neuropathy had atrophy of thenar muscles. The diagnosis of CTS is established on clinical findings and NCS²⁹, which is the most useful diagnostic technique for CTS.³⁰ We performed NCS in all the patients who were clinically diagnosed as having CTS.

Twenty nine patients in the present study had mild or/to moderate CTS on NCS. As the patients with mild to moderated CTS have quite satisfactory results when treated conservatively³¹, these patients were advocated neutral wrist orthoses (splints) and tendon and nerve gliding exercises.³² All the patients with severe neuropathy were offered surgery which was open surgical release procedure, as it is associated with relatively lesser surgical risks³³, easy to perform as an outpatient procedure although it takes a bit longer to return to work when compared with endoscopic release.

For the patients, the important criteria for judging success of surgery are relief of symptomstingling, numbness and sleep disturbances and resumption of important activities.³⁴ This was the reason that these criteria were fixed as outcome measures for the patients in the present study. The numbness and tingling improved during first follow up (three weeks), while other symptoms improved on second follow up (3 months).³⁵

CONCLUSION

Carpal tunnel syndrome is predominantly the disease of females especially of middle age. Open surgery is the treatment of choice for severe neuropathy, while mild and moderate types responds satisfactorily to physiotherapy and medical treatment.

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Treatment	No.	%
Conservative	29	40.3
Surgical	43	59.7
Total	72	100

Table V. Treatment to patients with CTS

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