

The Surgical Treatment of Carpal Tunnel Syndrome

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ABSTRACT

Objective: To evaluate the clinical outcome of surgical treatment of carpal tunnel syndrome. This study was conducted in Neurosurgery unit LRH from March 2006 to May 2008. Fifty patients including 45 female and 5 male with 19 female to male ratio were included in the study. The age range was 35-60 years. In 75% cases, right hand was affected while 25%, left hand was affected. Bilateral involvement was only in 3 (6%) cases. Pain and paraesthesia was there in all cases in the distribution of median nerve. Phallen test was positive in 85% cases and tenel's sign was positive in 64% cases. Thenar wasting was found in 12 cases (24%). Nerve conduction studies were positive in 45 patients (90%) carpal tunnel stenosis and the entrapment of transverse carpal ligament was found in all cases. All underwent surgical release of median nerve under local Anesthesia. The patients were followed for 4 months. The surgical outcome was excellent in 90%, good in 6% and fair in 4%.

Key words: Carpal tunnel syndrome, Median nerve decompression.

INTRODUCTION

Carpal tunnel syndrome occurs most often at the age of 30 - 60 years. It results from the compression of the median nerve within the carpal tunnel. It occurs more commonly in female than males manual labourer suffer more where there is an activities of the hand and wrist. Other causes are pregnancy, obesity, diabetes, myxoedema, gout, trauma, and ganglion lipoma. It is bilateral in over 50% cases, but is usually worse in the dominant hand.

The patients usually present with dysesthesia in the distribution of median nerve. Patients are awakened at night by a painful numbness in the hand. They often sure rely by shaking or swinging the hand, or closing or rubbing the fingers. Weakness or clumsiness of the hand. Phallens test is positive in 80% cases and tassel's sign is positive in 60% cases.

The diagnosis is usually made clinically but it is confirmed by nerve conduction studies and electromyogram. NCS can be normal in 15 - 25% and EMG can be normal in upto 31% MRI of carpal tunnel also confirm the diameter of carpal tunnel any mass in carpal tunnel, as well as the degree of compression of the median nerve. Surgical decompression of the median nerve is indicated when signs and symptoms are persistent and progressive, esp. Thenar atrophy. Decompression can be done by open surgery or endoscopic

method. But the results of open surgery through small incision are better than endoscopic method.

RESEARCH METHODOLOGY

Fifty patients with confirmed carpal tunnel syndrome were included in this study, in whom the conservative methods of treatment were failed. The surgical procedure was performed under local anaesthesia. Curved incision was made medial to thenor crease, not reaching the distal wrist crease. The transverse carpal ligament was divided along the ulnar border. Skin stiches were given dressing removed after two days. Oral antibiotics and analgesics were given for 5 days. Finger movements were encouraged. Patients were followed for 4 months to assess the results of surgical decompression and any complication we worked for phalen tinel's sing, thenar wasting and punch power. We did NCS in all patients.

RESULTS

Sex Incidence

The number of total patients was 50. Male to female ratio was 1:9.

Age Range

Age range was 35 -60 years as shown in table 1.

Table 1: Age Distribution of Patients.

Age	Number of Patients	%
35 – 40	20	40
40 – 50	24	48
50 – 60	6	12
Total	50	100

Clinical Features

Most of the females were house wives performing different domestic women’s. In 75% cases, right hand was affected while 25%, left hand was affected. Bilateral involvement was only in 3 (6%) cases. Pain and paraesthesia was there in all cases in the distribution of median nerve. Phallen test was positive in 85% cases and tenil’s sign was positive in 64% cases. Thenar wasting was found in 12 cases (24%). Nerve conduction studies were positive in 45 patients (90%) carpal tunnel stenosis and the entrapment of transverse carpal ligament was found in all cases. Main important signs and symptoms are shown in table 2.

Table 2: Important Positive Symptoms and Signs and Tests.

Disease	Number of Patients
Pain and Paraesthesia	50 (100%)
Positive Phalen’s Test	43 (86%)
Positive tunel’s sign	32 (64%)
Positive NCS	45 (90%)
Thenar wasting	12 (24%)

Table 3: Outcome.

Outcome	Number	Percentage
Excellent	45	90
Good	3	6
Fair	2	4
Total	50	100

Surgical Procedure

After open surgery, decompression of the median (1) excellent nerve was performed in all cases, the clinical outcome was excellent in 45 patients (90% cases there was no pain and numbers, negative phalen’s and tinels signs and there was normal grip power (2) good. In 6%

pain disappeared but still there was numbness. (3) Fair only 4% patients and the feelings of dysasthesia and moderate Numbness postoperatively (Table 3).

DISCUSSION

Carpal tunnel is considered the most common of the chronic compressive neuropatheis⁴. It results from entrapment of the median nerve in the wrist and its common symptoms are tingling, numbness, and pain in the hand that may radiatie to the forearm or shoulder¹. The etiology of carpal tunnel syndrome is largely structural, genetic and biological with environmental and occupational factors such as repetition of hand use during playing, computer work and making handicrafts and max dibelebt role⁵.

Carpal tunnel syndrome (CT Scan) occurring during pregnancy is considered to have a shunt and benign cause and very few cases require surgery⁸. Carpal tunnel syndrome (CT Scan) affects mainly middle aged women. The diagnosis is based upon history physical examination and results of electro-physiological studies⁷.

The interpretation of **electrodiagnosis** require care particularly in light of the risks of false positive testing results and possible technical errors⁶. **Sonography** affirms the median name lesion at the wrist in 55% cases, while **electrodiagnosis** gives accumulate diagnosis in more than 90% cases.¹¹

The treatment methods range from observation and splinting to cortisone injection and splinting, to surgical intervention¹⁰. Vitamin B₆ is used as a conservative and adjunct therapy in the treatment of Carpal tunnel syndrome (CT Scan) although its effectiveness is controversial.⁹ The patient with mild symptoms of Carpal tunnel syndrome (CT Scan) be managed with conservative treatment, particularly local injection of steroids. However in moderate to severe cases, surgery is the early treatment that provides cure⁷. In contrast to the more common chronic idiopathic form, the acute form of carpal tunnel syndrome require urgent surgical intervention to avoid or diminish serious sequelae⁴.

Surgical treatment of carpal tunnel syndrome relieves symptoms significantly better than splinting¹.

There are discripancies regarding the efficacy and several gliding exercises for the management and carpal tunnel syndrome³.

A systemic review of conservative treatment of carpal tunnel syndrome shows that:

1. Locally injected steroids produce a significant but temporary improvement.
2. Vitamin B6 is ineffective.
3. Steroids are better than non - steroidal anti inflammatory drugs (NSAIDS) and diuretics, but they can produce side effects.
4. Ultrasound is effective white laser therapy shows variable results.
5. Exercise therapy is not effective.
6. Splints are effective especially if used full time¹².

Surgical decompression, often considered the definitive solution, gives excellent results in only 75% of cases in ordinary practice and leaves 8% of patients worse than previously. The only other interventions that are clearly of benefit are neutral angle wrist splinting with a success rate of 37%, and steroids, which are better given by local injection than as over treatment. The initial response rate to injection is 70% but there are frequent relapses. Nevertheless, these conservative treatments have a negligible incidence of serious complications and should be used more widely until surgical failure can be reduced to similar levels.¹³

Surgical decompression of the median nerve is indicated when signs and symptoms are persistent and progressive, especially **thenar atrophy**.

In three studies with total of 294 participants endoscopy carpal tunnel release resulted in earlier return to work vs open surgery with a mean difference of 6 days¹⁴.

CONCLUSION

Carpal tunnel syndrome is most common chronic compressive neuropathy. The etiology of this condition is multifactorial; anatomic, systemic and occupational factors are all been implicated. The patients suffers from pain, weakness and paraesthesia in hands and digits. The mild cases can be managed conservatively but in moderate to severe cases surgery is the only treatment that provides cure.

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