

SURGICAL TREATMENT OF CARPAL TUNNEL SYNDROME

Muhammad Shabir

*Khyber Teaching Hospital,
Peshawar.*

ABSTRACT

Objective: The purpose of this study was to evaluate the clinical outcome of surgical treatment of carpal tunnel syndrome.

Material and Methods: The study was conducted in Khyber Teaching Hospital from December 2001 to December 2002. Forty patients with carpal tunnel syndrome who did not respond to conservative treatment with analgesics, a splintage and local steroid injection were operated under local anaesthesia and median nerve was decompressed with transverse carpal ligament release. The patients were followed for a minimum of 3 months to assess the clinical outcome of procedure.

Results: Female to male ratio was 7 : 1. All females were house wives exposed to manual work. Four of them had rheumatoid arthritis. The age range was from 30-50 years with mean age of 38 years. The results of surgical treatment were excellent with 90% patients being completely relieved of symptoms.

Conclusion: Surgical release of carpal tunnel has excellent results in patients who do not respond to conservative treatment.

Key words: Carpal tunnel syndrome, Median nerve entrapment, Carpal ligament release.

INTRODUCTION

Carpal tunnel syndrome results from compression of the median nerve within the carpal tunnel. It occurs most often in patients between the age of 30 to 60 years.⁽¹⁾ It is more common in female than in male^(1,2,3). Carpal tunnel syndrome may be classified as repetitive motion disorder, which is common

in patients involved in daily manual work and repetitive activities of the hand and wrist^(4,5,6,7). Among other causes are pregnancy, obesity, diabetes, myxoedema, gout⁽⁵⁾, trauma, tumours like xanthoma, ganglion lipoma, and aberrant tendons.

The patient usually present with the complaints of pain and paraesthesia in the distribution of the median nerve in the hand

and frequently causes the patient to awaken several hours after going to sleep with burning, tingling and numbness of the hand that is relieved by hanging or shaking the arm, Tinel's sign may be demonstrated in most patients by percussion of the nerve at wrist. Phalen test is demonstrated by acute flexion of the wrist for 60 seconds, which results in paraesthesia. Both the Phalen and Tinel's tests are considered to be the classic test for carpal tunnel syndrome⁽⁸⁾. Clinical diagnosis of carpal tunnel syndrome is usually easy⁽⁹⁾, but the most reliable confirmatory tests is nerve conduction studies⁽¹⁰⁾. Other neurophysiologic technique used to document carpal tunnel syndrome include vibratory threshold testing, current perception testing, monofilament test and two point discrimination, but these techniques are not as sensitive as traditional nerve conduction studies⁽¹¹⁾.

MATERIAL AND METHODS

Forty patients of carpal tunnel syndrome were included in the study. The inclusion criteria for surgery were confirmed cases of carpal tunnel syndrome, in whom conservative treatment was not effective. All patients were followed for approximately 3 months to assess the results of surgery. Pre-operative and post-operative we looked for Phalen test, Tinel's sign, thenar wasting and pinch power, we did nerve conduction studies in all patients.

AGE DISTRIBUTION OF PATIENTS.

Age Years	No. of Patients (%)
< 30	6 (15%)
30 - 35	16 (40%)
36 - 40	10 (25%)
41 - 50	8 (20%)

TABLE - 1

PERCENTAGE OF POSITIVE IMPORTANT SYMPTOMS AND SIGNS.

Symptoms and Signs	No. of Patients (%)
Pain and paraesthesia	40 (100%)
Positive phalen test	36 (90%)
Positive tinel's sign	34 (85%)
Positive nerve conduction studies	38 (95%)
Thenar wasting	10 (25%)

TABLE - 2

The surgical procedure was performed under local anaesthesia with tournique control. Curved incision made parallel and ulnar to the thenar crease without crossing the flexor crease at right angle. Transverse carpal ligament was divided along the ulnar border. Only skin was closed and dressing removed after 48 hours and early movement was encouraged. Oral antibiotics and analgesic were prescribed for 5 days.

RESULTS

The male to female ratio was 1 : 7. Most of the patients were young adults between 30-50 years (85%) as shown in Table No. 1. Majority of females were house wives exposed to repeated household work. Four of the patients were having rheumatoid arthritis. In 70% cases right side was affected in 30% cases left side was involved. Only two patients were having bilateral involvement. Pain and paraesthesia in the distribution of median nerve was found in all patients. Phalen test and Tinel's percussion tests were positive in 90% and 85% cases

CLINICAL RESULTS OF SURGERY.

Results	No. of Patients (%)
No pain	36 (90%)
Persistent pain	02 (5%)
Superficial sepsis	02 (5%)

TABLE - 3

SEX DISTRIBUTION OF PATIENTS.

Sex	No. of Patients (%)
Female	35 (82.5%)
Male	05 (17.5%)

TABLE - 4

respectively. Thenar wasting was found only in 25% cases. Nerve conduction studies were found positive in 95% cases. Carpal tunnel stenosis and thickening of the transverse carpal ligament was found in all cases.

The result of surgery showed that there was complete relief of symptoms in 90% patients. Only two patients had persistent pain in scar and superficial wound infection in two patients. The mean time of return to complete function was 25 days. Excellent or good results (relief of pain, normal grip power, negative Phalen and Tinel's sign) were achieved in 90% cases.

DISCUSSION

Carpal tunnel syndrome is compression of the median nerve within the carpal tunnel. It is a work related musculoskeletal disorder of the upper limb. In those patients who did not respond to conservative regimen, surgical decompression of the carpal tunnel was done.

Most of the patients in our study were female, with a female to male ratio of 7 : 1, which is same as reported by other workers^(2,13). All females were routinely involved in extensive manual work and the 5 males were also manual labourers. Similar results were reported by Akelman et al and Lee et al^(4,13). The age range of the majority patients was 30 to 50 years. Same was the results of Karaeminoguller et al⁽¹⁾.

Phalen test, Tinel's sign and nerve conduction studies were positive in 90%, 85% and 95% cases respectively, which was similar to studies of Bruskei et al and Wee et al^(6,10).

The significant intra-operative finding in all patients was thickening of the transverse carpal ligament and narrowing of the canal. These intra-operative findings were observed by Lee et al and Karaeminoguller et al too^(13,1).

In follow up period 90% patients had complete relief of pain, negative Phalen and Tinel's sign and complete recovery of grip power. Two patients had superficial sepsis of wound, which required prolonged antibiotics. Two patients had persistent pain in scar. These excellent results of surgery of carpal tunnel syndrome are comparable with studies of Karaeminoguller et al, Scholten et al and Klein et al^(1,14,16), which show 90 to 95% relief of pain and patients satisfaction.

The main prognostic factors are short duration of symptoms, Phalen test positive in less than 30 seconds, stenosing flexor tenosynovitis and constant paraesthesia⁽¹²⁾. When signs and symptoms are persistent and progressive, especially if they include thenar atrophy division of the deep carpal ligament is indicated.

Surgery can be done by open or by endoscopic method. But the results of open method particularly through small incision are better than endoscopic method^(13,14,15,16,17).

CONCLUSION

Carpal tunnel syndrome is common in female and manual workers. The results of surgical release of carpal tunnel are excellent and surgery should be considered in those patients, who do not respond to conservative treatment.

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Address for Correspondence:

Dr. Mohammad Shabir,
Orthopaedic Surgeon,
Khyber Teaching Hospital,
Peshawar.