

Original Research Article

Functional outcome of surgery done for carpal tunnel syndrome

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ABSTRACT

Background: Carpal tunnel syndrome is a common, chronic and disabling condition afflicting many people. The common age at onset is 40 to 50, although a person of any age may be affected. The diagnosis of carpal tunnel syndrome is often based on clinical findings alone. Electro-diagnostic studies of carpal tunnel syndrome were first established in 1956 by demonstrating focal slowing of median nerve conduction at wrist. This study is meant to evaluate the functional outcome of carpal tunnel release surgery done in Al Azhar Medical College from 2012-2014.

Methods: 50 cases (5 cases being bilateral) of carpal tunnel syndrome were operated between 2012 to 2014. All cases were done under local anesthesia. Patients were retrospectively evaluated and interviewed for 2 months follow up after the surgery.

Results: Out of the 50 patients who had undergone surgery, 44 patients (88%) had symptomatic relief in the first 10 days. Remaining patients had symptomatic relief in 2 months time.

Conclusions: Surgery is always the preferred treatment for carpal tunnel syndrome. In my study, 6 patients (12%) had long standing carpal tunnel syndrome, hence it took 2 months for symptomatic relief. Remaining patients had symptomatic relief in the first 10 days.

Keywords: Carpal tunnel, Median nerve, Surgery, Electro-diagnostic study, Boston Carpal Tunnel Questionnaire

INTRODUCTION

Carpal tunnel syndrome is a common, chronic and disabling condition afflicting many people.^{1,2} It occurs more often in women, in a ratio of 5:1.^{3,4} The common age at onset is 40 to 50, although a person of any age may be affected. When symptoms are bilateral, they generally occur first and are more severe in the dominant limb. When symptoms are unilateral, the dominant limb is usually involved. The diagnosis of carpal tunnel syndrome is often based on clinical findings alone. Electrodiagnostic studies are usually necessary for confirmation and exclusion of other conditions that may mimic carpal tunnel syndrome.

In our hospital, we give medicines for 2 weeks and if symptoms do not subside, then we perform nerve conduction velocity study to confirm the diagnosis of carpal tunnel syndrome, then the surgical management of decompressing the carpal tunnel by cutting the transverse carpal ligament.

The carpal tunnel is a non-expansile pathway between the flexor compartment of the forearm and the midpalmar space of the hand. Measuring 5 cm in length from the distal wrist crease to the midpalm, it contains nine flexor tendons including tendons of flexor pollicis longus, flexor digitorum superficialis and profundus as well as median nerve. The transverse carpal ligament is thickest in its

distal portion at the hook of the hamate, where the canal is also at its narrowest. The transverse carpal ligament also stabilizes the transverse carpal arch.⁴

The three stages of ischemic injury in the compression neuropathy include: (1) increased intrafunicular pressure; (2) capillary damage with leakage and edema and (3) obstruction of arterial flow. There are dramatic changes in fluid pressure in the carpal tunnel with wrist position; extension increases the pressure 9 fold and wrist flexion increases it 8 fold.⁵

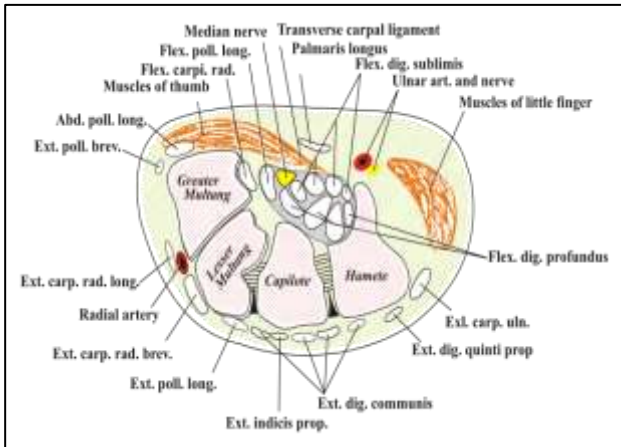


Figure 1: Cross-section view of the carpal tunnel at the base of the hand.

METHODS

50 patients (5 patients being operated bilaterally) were operated for carpal tunnel syndrome (nerve conduction velocity study showing severe compression in all the cases) after a course of medicines for 2 weeks during the period of 2012 to 2014. All surgeries were done under local anaesthesia. None of the surgeries had any recorded complication.

All patients were admitted on the day of surgery, all surgeries lasted for not more than 30 minutes. A 5 cm long incision was put in line with the 3rd web space with the distal limit of the incision not crossing the Kaplan’s line and the proximal limit of the incision being the wrist crease. Skin, superficial fascia separated, palmar fascia was cut and finally the transverse carpal ligament was cut to expose and free the compressed median nerve. Wound was closed in layers and all patients were discharged on the same day. Suture removal was done on day 14. All patients were followed up and evaluated using Boston Carpal Tunnel Questionnaire (BCTQ) on day 14, day 30 (1 month) and on day 60 (2 months).

In the questionnaire each response is given a score from one to five points. No response is given zero points. Each score of the patient is calculated as the mean of the responses of the individual questions.

Patients with bilateral symptoms were evaluated by two questionnaires one for each hand separately.



Figure 2: Carpel tunnel surgical procedure.

Patients are divided into five groups according to their mean score.

- Extreme: 4.1 – 5.0 points
- Severe: 3.1 – 4.0 points
- Moderate: 2.1 – 3.0 points
- Mild: 1.1 – 2.0 points
- Minimal: 1.0 point



Figure 3: Procedure for assessing carpel tunnel syndrome.

RESULTS

Common age group affected is between 40-49 (35.5%). Majority were females (43 out of 50 which is 86%). 81.81% of our patients shows a right handed involvement, or right side getting affected first in a bilateral case showing an increased prevalence in dominant hand. All patients who had severe or extreme grades as per BCTQ before surgery (90% had severe and 10% had extreme) and on follow up all patients got symptomatically better. Functional outcome of the surgeries were evaluated on 14th day, 30th day and 60th day using BCTQ. Out of the 50 patients who had undergone surgery, 44 patients (88%) had symptomatic relief in the first 10 days. Remaining patients had symptomatic relief in 2 months time. 2 (4%) patients had score showing moderate symptoms at 2nd month follow up; all other patients (98%) had minimal or mild symptoms.

Table 1: Distribution of age in study population.

Age (in years)	Percentage
20-29	6.5
30-39	19.4
40-49	35.5
50-59	25.8
≥60 years	12.9

Table 2: Sex distribution in the study population.

Sex	Percentage
Male	14%
Female	86%

DISCUSSION

The diagnosis of carpal tunnel syndrome is based mainly on the patient’s history and clinical findings. The value of provocative physical tests such as Tinel sign or Phalen’s test is under debate and results are often of doubtful clinical significance. This study has concentrated on symptom severity score of BCTQ since improvement in symptoms is what really is of concern to the patient; though objective findings are important.

Carpal tunnel syndrome can be readily identified by most clinicians and the clinical findings alone may be sufficient for diagnosis.⁶ Kushner et al found the validity of 2 most widely used provocative tests, Phalen’s test and Tinel’s sign, to have sensitivities of 60% and 49% respectively and specificities of 80% and 55%.⁷

In this study, surgical management of carpal tunnel syndrome has been found to be the best treatment. All the patients had good functional outcome following carpal tunnel release. This is in agreement with previous studies. Approximately 70-90% of patients have good to excellent long-term outcomes following carpal tunnel release.⁸

CONCLUSION

Carpal tunnel syndrome is a common condition among the working population, hence apt treatment is inevitable for the return of function. In my study, it has been proved that surgical release of the transverse carpal ligament is the sine qua non for a symptomatic carpal tunnel. All patients became symptomatically better at the end of 2 months.

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Conflict of interest: None declared

Ethical approval: The study was approved by the institutional ethics committee

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