



ISSN: 1813-1638

**The Medical Journal of Tikrit University**

Available online at: [www.mjotu.com](http://www.mjotu.com)

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The Medical Journal of  
Tikrit University

## Carpal Tunnel Syndrome Surgical Outcomes in Mosul Teaching Hospital

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### Keywords:

surgical carpal tunnel release.  
carpal tunnel syndrome.

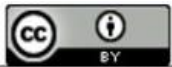
### ARTICLE INFO

#### Article history:

Received 15 Aug 2020  
Accepted 20 Sep 2020  
Available online 31 Sep 2022

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Citation: Mohammed Z. Shaker;  
Nashwan Y. Sallama. Carpal Tunnel  
Syndrome Surgical Outcomes in  
Mosul Teaching Hospital. The Medical  
Journal of Tikrit University (2022) 28  
(2): 55-62

DOI: <http://dx.doi.org/10.25130/mjotu.28.2.5>

### ABSTRACT

**Objectives:** To evaluate the surgical outcomes in term of clinical improvement and complications.

**Type of study:** Prospective study in Mosul teaching hospital department of neurosurgery from 1-6-2017 to 1-1-2019.

**Patients and methods:** include 160 patients treated by open surgical release. Inclusion criteria: patient with clinical features of Carpal Tunnel Syndrome (CTS), pre-operative Electromyography (EMG) evidence of CTS, failure of medical treatment and open surgical decompression was the adopted operation. Follow up period for 6 months, visual analogue pain scale, relieve of parasthesia and improvement of motor activity of hand had adopted as Satisfactory result.

**Results:** There were 142 female, 18 male, mean age 41.6 years. 103 patient were right sided, 47 left sided and 10 patient were bilateral. EMG results were 118 severe, 35 moderate while 7 were mild.

All patients had satisfactory results except 10 patients post-operatively.

**Conclusions:** The open surgical treatment is safe, effective and produces excellent results in the surgical treatment of carpal tunnel syndrome.

## **Introduction:**

Carpal tunnel syndrome considered as one of the most common peripheral nerve entrapment affect the young and middle age population. Consequently, carpal tunnel release is one of the most common procedures performed on the hand.

Carpel tunnel is the fibro-osseous pathway on the palmar aspect of the wrist which connects the anterior compartment of the distal forearm with the mid-palmar space of the hand.<sup>1,2</sup>

The incidence rate of CTS is 276:100000 per year<sup>3</sup> and

happens more frequently in women than in men, with a

prevalence rate of 9.2% in women and 6% in men.<sup>1,4</sup>

The prevalence is 2.7% based on symptoms, clinical signs, and neurophysiology.<sup>5</sup>

CTS described for the first time in 1854 by James Paget.<sup>6</sup>

CTS develops as a result of median nerve compression within the carpal

tunnel and is the most common neuropathy of the upper extremity.<sup>7</sup>

The American Academy of Orthopedic Surgeons defines CTS as “A symptomatic compression neuropathy of the median nerve at the level of wrist”.<sup>8</sup>

CTS is characterized by the classical symptoms of numbness and paraesthesia along the distribution of the median nerve and typically aggravate at night. Detection of thenar muscle weakness is a late manifestation of this pathology<sup>9</sup>.

Electromyography (EMG) used to confirm the diagnosis.

The treatment of CTS starts from conservative treatment to carpal tunnel release. The conservative treatment includes splinting, vitamin B6, nonsteroidal anti-inflammatory agents, and local corticosteroid injections. The need for CTS release includes standard open carpal ligament release or endoscopic open release.

## **Patients and Methods :**

This is a prospective study includes 160 patients with CTS treated by open surgical release over an 18 months period from 1-6-2017 to 1-1-2019.

Inclusion criteria:

1- Idiopathic Carpal Tunnel Syndrome.

2-All patient withs clinical features of CTS.

3-Pre operative EMG evidence of CTS for all patients.

4-Failure of preoperative medical treatment ( drugs, splinting and local steroid injection) .

5- All patients had treated by open surgical decompression (Open Transverse Carpal Ligament Release).

6- Follow up period for 6 months as minimal period for all patients.

7- Satisfactory results for clinical improvement based on visual analogue pain scale, relieve of parasthesia and improvement of motor activity of hand.

## Results:

Sex distribution: There were 142 female and 18 male patients.

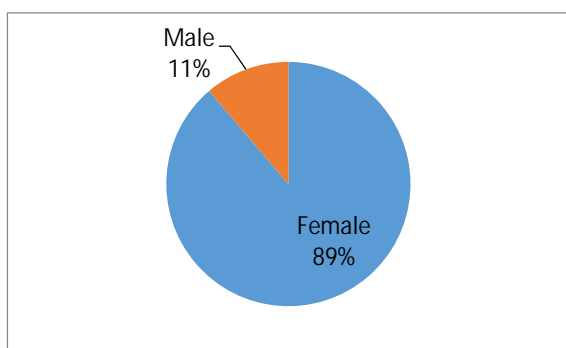


Figure (1): Sex distribution

Age incidence: The age ranged from 20 to 70 years and as shown in the fig. 2

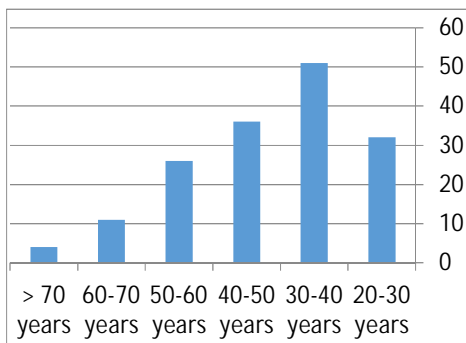


Figure (2): Age incidence

Pre-operative Clinical parameters: The distribution of presenting symptoms and signs in patients shown in the following table.

Table (1): Clinical parameters

Clinical evidence	Clinical Symptoms			Clinical Signs		
	Pain	parasthesia	Weakness of grip	Thinner atrophy	Phalen test	Tinnel test
Number	All	All	125	80	all	all

Side Distribution: There were 103 right sided, 47 left sided and 10 bilateral CTS cases according to laterality distribution.

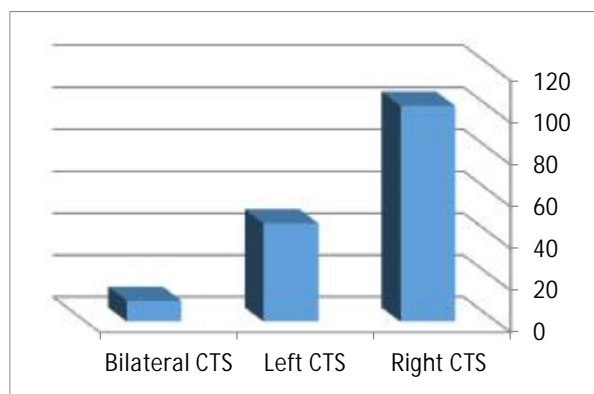


Figure (3): Side Distribution

Severity according to EMG: According to EMG study the distribution of our patients was: 118 patients had severe CTS, 35 patients had moderate CTS while mild CTS founded in 7 patients.

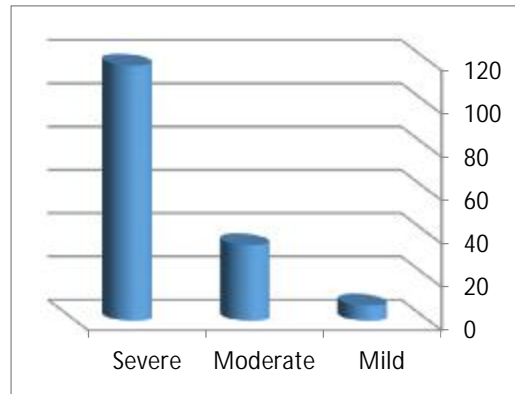


Figure (4): Severity according to EMG

Surgical results: Satisfactory results obtained in 150 patients and 10 patients got non-satisfactory results.



Figure (5): Surgical results

### Discussion:

Patients now a day have good awareness of their natural history and surgical effectiveness in the management of their disease , beside that our early diagnosis and

management of these cases and good categorization of them to mild , moderate and severe types depending on clinical and neurophysiological features contribute to more

satisfaction after surgical management.

With this fact the early diagnosis and appropriate treatment may improve the outcome of carpal tunnel management.

The open release of flexor retinaculum, published by Phalen et al (a pub) in 1950, has been the standard treatment for the CTS for decades<sup>10</sup>.

Failure to respond within 6 months of conservative therapy or worsening of symptoms make Surgical decompression necessary in spite of normal electromyography<sup>11</sup>.

We analyse 160 patients diagnosed clinically and proved by EMG study as CTS patients.

The median age in this study was 41.6 years that includes 18 males and 142 females.

This predominance of female patients in our study goes with the well accepted concept for female predominance in other studies as in Cozen et al who shown a similar results<sup>12</sup>.

Carpal tunnel release surgery successfully relieves symptoms in most patients of this study; 94% of this series' patients observed to had satisfying results as they had no longer their previous pain and parasthesia. Our ongoing series` satisfactory results of surgery for CTS comes in harmony with the many studies` satisfactory ratio as in Burke et al who had 70%-90% relieve nocturnal pain<sup>13</sup>.

There were Rt. Sided CTS in 87% of all patients in the current series which may be explained by the dexterity of most people.

Similar results had proved by Thomas Zambelis et al who observed right sided laterality dominance in 63%.<sup>14</sup>

The same proved by Carlos H. Fernandes et al where 95.6 % was right sided in this series.<sup>15</sup>

There were 74% of patient in severe group at presentation in EMG record and all of them had thinner atrophy which explained the long duration of disease (mean 1 year ) and this carry

high specificity for diagnosis of carpal tunnel syndrome, this] fact had also highlighted by other studies as in study of Carlos H. et al .<sup>15</sup>

All of Patients in severe group except two had satisfactory recovery postoperatively. Those two patients with unsatisfactory recovery had tenosynovitis which may be explained by the old age and poor movement of hand in preoperative and postoperative period.

This supported by similar results by Bilic´and´ Pec´ina's review found that surgery brought pain relief, improved function and esthetics features, and promoted deceleration of the disease process.<sup>16</sup>

There were no intraoperative complication and all patient discharge homes one hour after operation.

All patients started active movement of hand after 6 hours of surgery and this may contributed to low incidence of hand stiffness and tenosynovitis post-operatively.

## Conclusion

CTS remains one of the most well-known and frequent form of median nerve entrapment.

The open surgical treatment is safe, effective and produces excellent results.

A low complication rate and good recovery strongly suggests that early intervention should be encouraged specially in sever group.

Early active movement of hand postoperatively contributes to increase satisfactory results.

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