

# CARPAL TUNNEL SYNDROME TREATED BY OPEN CARPAL TUNNEL RELEASE THROUGH A SMALL TRANSVERSE INCISION

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## Abstract:

*The carpal tunnel syndrome (CTS) is the most common compressive neuropathy in clinical practice. Treatment for carpal tunnel syndrome is based on the seriousness of the condition of the patient. Surgery is recommended when other conservative treatment has failed. In this prospective interventional study, 30 patients were treated by open carpal tunnel release through a small transverse incision. Among 30 patients, satisfactory outcome was observed in 29 (96.67%) patients & unsatisfactory outcome was observed in 1 (3.33%) patient. Release of transverse carpal ligament through a small transverse incision provides a quick and definite cure.*

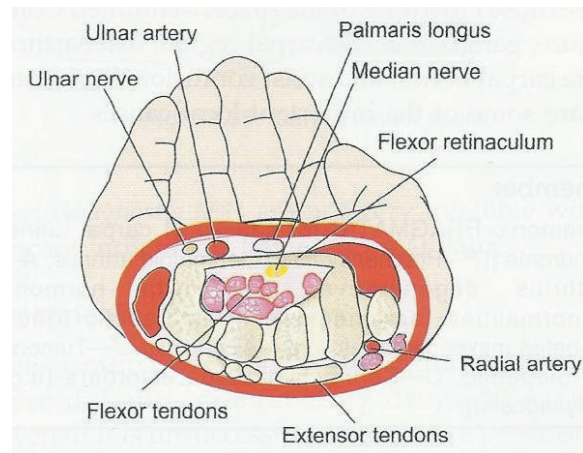
*Key Words : Carpal tunnel syndrome, Small transverse incision, Transverse carpal ligament.*

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## Introduction:

Carpal tunnel syndrome is a median entrapment neuropathy that causes paresthesia, pain, numbness, atrophy of thenar muscles and other symptoms in the distribution of median nerve due to its compression at the wrist in the carpal tunnel<sup>1</sup>. It occurs most often in patients between 30 and 60 years old and is five times more common in women than in men<sup>2</sup>. Most cases of CTS are of unknown causes or idiopathic<sup>3</sup>. Initially treatment is started with NSAIDs, Splinting, Physiotherapy or local infiltration of steroid. Surgical treatment is indicated when other conservative

treatment has failed. Treatment of carpal tunnel syndrome through a small transverse incision is safe, of quick recovery, low cost and no major complication..



**Fig.-1: Anatomy of carpal tunnel**

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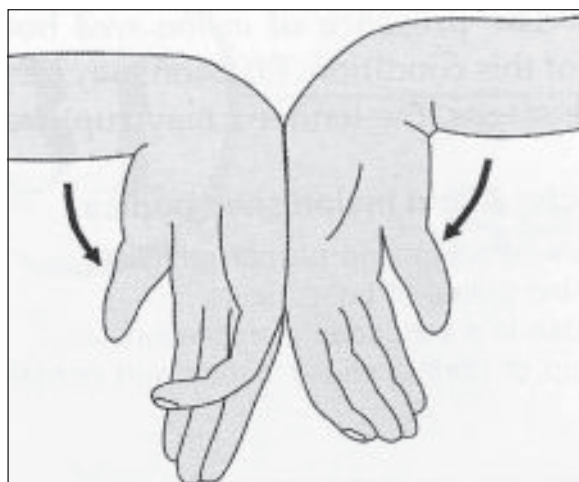
## Material and method:

In this prospective interventional study 30 patients were treated by small transverse incision at central police hospital, Rajarbag, Dhaka and private chamber during the period of 1<sup>st</sup> January 2011 to 31<sup>st</sup> December 2012. A brief history was taken from each patient and full clinical examination (Phalen's test, Tinel's sign etc) were done. Laboratory investigation like complete blood count, Random blood sugar, Rose-waler test, Serum uric acid, T3, T4 & TSH, X-ray wrist joint to exclude other pathology. The diagnosis was confirmed

by nerve conduction velocity (NCV) test. In this study patients with idiopathic causes were considered. Patients due to other causes were excluded.



**Fig.-2:** Clinical photograph of carpal tunnel.



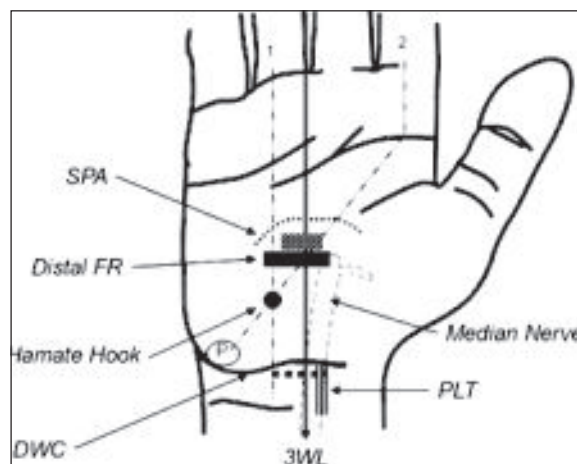
**Fig.-3:** Phalen's test.

**Table-I**  
*Demographic profile of patient.*

Number of patient. - 30	
Sex	
Male	06 (20%)
Female	24 (80%)
Age	
Range-	30-60
Average	43 -47
Duration of Symptom	
< 1 year	6 (20%)
1-2 years	17 (56.67%)
> 2 years	7 (23.33%)
Side involvement	
Unilateral	28 (93.33%)
Bilateral	2 (6.67%)

### Surgical Procedure:

Before initiating the procedure the main anatomic references are identified<sup>4</sup> (Presented in figure).



**Fig.- 4:** Landmarks for orientation during surgery. Transverse interrupted line: incision; Dashed area: safe zone after the FR, DWC: distal wrist crease; P: pisiform; SPA: superficial palmar arch; PLT: palmaris longus tendon; FR: flexor retinaculum; 3WL: 3<sup>rd</sup> web space line; DWC: distal wrist crease; (1) ring-metacarpal line, (2) index-metacarpal-pisiform line.

The procedure is conducted in the surgical theater, under general anesthesia. An ideal hand position is obtained with a wrist extension of 30 degree, the hand held in place by a cushion placed under the wrist joint and with the thumb abducted. A 1.5 cm transverse incision is made just proximal to the distal palmar crease, ulnar to the palmaris longus tendon. Dissection is performed so that the palmaris longus is isolated and stays laterally in the field. The deep antebrachial fascia is identified, and the point of transition between the fascia and transverse carpal ligament is sought. A longitudinal opening is performed in this transition point until the carpal tunnel is entered in its middle aspect. Structures are identified, specially the median nerve. Then a blunt tip dissector is advanced in the carpal canal for opening through the tunnel. With a small skin retractor, the subcutaneous-skin layer is elevated to allow for direct visualization of the opening through the tunnel. The opening of the FR is performed using slim straight scissors. The upper tip of the scissors runs in the dissected supraligamentar space.

The lower tip runs below the FR. The ligament is cut and the characteristic snap of the FR opening is heard and felt<sup>5</sup>.

**Results:**

A total of 30 cases were studied. Out of 30 cases, 29 (96.67%) patients had satisfactory outcome and 1 (3.33%) patient had unsatisfactory outcome. Among satisfactory outcome patients 1 patient developed haematoma in first post operative day, which spontaneously recovered, no intervention was needed. The unsatisfactory outcome patient had persistent symptoms & sign of carpal tunnel syndrome.

**Table-II**  
*Functional Outcome of the study.*

Result	Number	Percentage
Satisfactory	29	96.67%
Unsatisfactory	01	3.33%

**Table-III**  
*Complication of this procedure.*

Complication	Number	Percentage
Persistent Symptoms & sign of carpal tunnel	01	3.33%
Haematoma	01	3.33%
Superficial sensory nerve injury	0	0%
Motor nerve injury	0	0%
Infection	0	0%

**Discussion:**

Among 30 patients, the high number was female 24 which were (80%). It occurs usually during 4<sup>th</sup> to 6<sup>th</sup> decades that is 31 to 60 years. In this study all of the patients (100%) belong to this age range. Among 30 patients, duration of suffering of patients (<1 year) were 6 (20%) patients, duration of suffering of patients (1-2 years) were 16 (56.67%) patients and duration of suffering of patients >2 years) were 7 (23.33%) patients. In this study all of the patients (100%) were

treated previously by Non steroidal anti inflammatory drugs, Physiotherapy, splinting, local infiltration of steroid, but no improvement was seen. Among 30 patients, 29 (96.67%) patients had satisfactory outcome. 1 (3.33%) patient was unsatisfactory in terms of outcome.

Satisfactory outcome patients report relief of paresthesia, numbness, nocturnal pain and other symptoms at the 30<sup>th</sup> day of evaluation. According to another study the statistics reflect equal result, like all patients 30 (100%) cases reported relief of paresthesia and nocturnal pain symptom after the same surgical procedure<sup>6</sup>.

**Conclusion:**

Carpal tunnel release is one of the common surgical procedures. Treatment of carpal tunnel syndrome by release of carpal tunnel through a small transverse incision was safely performed. No major complications were found. So this safe, low cost, effective technique can be used for treatment of carpal tunnel syndrome without any hesitation.

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