NOVENA
Medical Center

Carpal Tunnel Syndrome

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What is Carpal Tunnel Syndrome (CTS)

Carpal Tunnel Syndrome can be a chronic painful condition of the wrist area. It is often due to compression of the median nerve by over crowding of the carpal tunnel canal due to inflammatory swelling of the flexor tendons in the carpal tunnel canal. of the wrist resulting in the dysfunction of the nerve. The main cause of the condition is thought to be swelling of wrist tendon linings resulting in overcrowding of the carpal tunnel, since the nerve is the most vulnerable structure and is not able to function normally when it is squeezed. Other conditions associated with CTS include a tumour in the carpal tunnel canal, diabetes mellitus, hypothyroidism, menopause, pregnancy, renal failure, Raynaud's Disease, repetitive strain injuries and Double Crush Syndrome *Osterman (Lancet, 1991)*

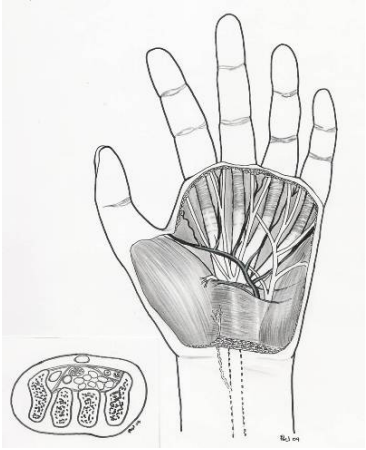


Figure showing the median nerve (dotted lines) deep to the carpal tunnel ligament

What are the signs and symptoms?

Patients usually present with a sensation of 'pins and needles' or numbness at the fingertips, particularly to the thumb, index, and middle finger. There maybe associated tightness at the wrist area. In more severe cases, patients may have more pronounced numbness (decreased sensation) and pain. Repetitive activities of the wrist, such as computer typing, driving, reading the newspaper, holding the telephone receiver and using chop sticks can sometimes bring on the sensations. Night symptoms can disturb the patient's sleep. Clumsiness of the hands, such as dropping tea cups, difficulty in buttoning and weakness in pinch and grip activities are seen in severe cases.

Diagnosis

An accurate medical history and clinical examination are usually sufficient to make the diagnosis. X-rays may be considered if a bone problem is thought to be a possible cause. Nerve conduction studies, either alone or with electromyography (EMG), may be necessary in severe cases or when there is suspicion that there are more than one area of the nerve is being squeezed.

What are the treatment options?

Conservative treatment usually involves taking anti inflammatory medication, nerve vitamins, splinting and physio-therapy.

There are however 3 surgical options available. The traditional open carpal tunnel release, the endoscopic carpal tunnel release and the limited open carpal tunnel (LOCTR) release using special instrumentation.

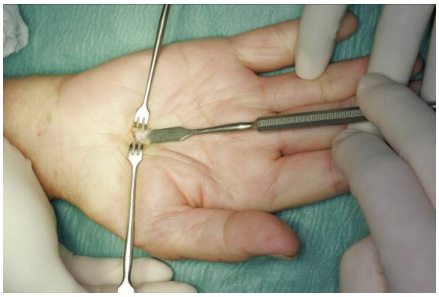
Based on a prospective, randomised study comparing endoscopic versus limited-open methods by Drs WONG K. C; HUNG L. K; HO P. C; WONG J. M. W. from the Prince of Wales Hospital, HONG-KONG, they found the while the limited open(LOCTR) and endoscopic carpal tunnel releases have the advantage over the traditional open release of reduced tissue trauma and postoperative morbidity, the limited open carpal tunnel release(LOCTR) is easier to perform and is safer.

In their prospective, randomised trial of thirty patients with bilateral carpal tunnel syndrome with simultaneous bilateral releases done, the results showed that the outcome was similar after a follow-up period of one year using both techniques.

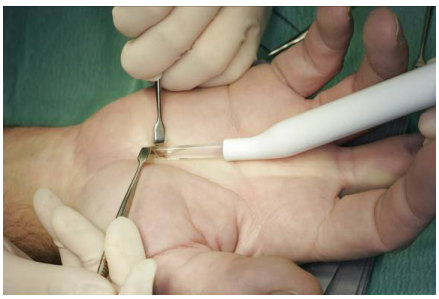
However, the limited open (LOCTR) group had significantly less scar tenderness and pain at the palm area.

This was published in The Journal of Bone and Joint Surgery. British volume in 2003, vol. 85, pgs 863-868

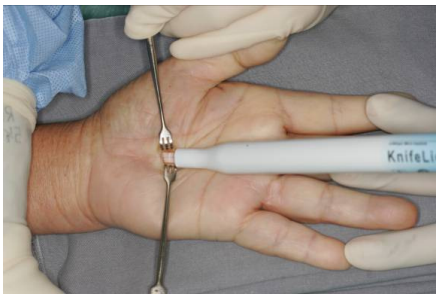
The limited open (LOCTR) involves a small skin incision at the palm area and identifying the transverse carpal ligament which is compressing on the median nerve. A special instrument is used to divide the ligament and the carpal tunnel canal is inspected and ensures complete release. The skin is usually closed with absorbable sutures.



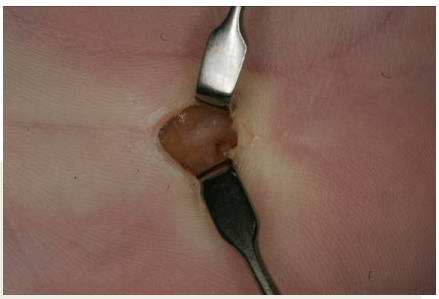
Identifying the transverse carpal liament



Insertion of the special knife to divide the ligament



Division of the ligament



Inspection of the carpal tunnel canal

To help the doctors or patient decide, I find this journal article to be useful.

Predictive factors in the non-surgical treatment of carpal tunnel syndrome by Kaplan SJ, Glickel SZ, Eaton RG from Hand Surgery Service, Roosevelt Hospital, New York. This paper was published in the J Hand Surg [Br]. 1990 Feb;15(1):106-8

This study identifies patients that are likely to respond to the medical management of carpal tunnel syndrome.

In this study, 331 hands in 229 patients were evaluated. Medical treatment included wrist splint and anti-inflammatory medication.

These patients were follow-up for a period of an averaged 15.4 months with a minimum six months in some patients.

Treatment was successful in 18.4%. Statistical evaluation identified five factors which were important in predicting response to treatment, namely: age over 50 years, duration of symptoms over ten months, constant paraesthesiae, stenosing flexor tenosynovitis, and a Phalen's test positive in less than 30 seconds.

When none of these factors was present, two-thirds of patients were cured by medical therapy. 59.6% of patients with one factor, 83.3% with two factors, and 93.2% with three factors failed. No patient with four or five factors present was cured by medical management. The table below summarized the results of medical treatment.

Number Of Factors Present In Patient's Profile	Percentage of success with Conservative Treatment (%)
None	67.0 %
One	40.4%
Two	16.7%
Three	6.8%
Four	0%
Five	0%

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