

# Carpal tunnel syndrome during pregnancy

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## ABSTRACT

**Objectives:** To assess the current frequency of carpal tunnel syndrome during pregnancy in our area and to assess the course of carpal tunnel syndrome during pregnancy in those patients.

**Material and Methods:** This is a prospective study of 400 women attending antenatal outpatients' clinic. This study was conducted between the 1st of July 2009 and the end of August 2010 at King Hussein Medical Center, Jordan. At each demographic details and issues related to their problems were obtained.

**Results:** During the study period, 400 pregnant women attending antenatal outpatients' clinic in our hospital, 74 (18.5%) women were found to have carpal tunnel symptoms. Most of them were in third trimester of pregnancy 81.1% (no=60) followed by the second trimester 16.2% (no=12) and the least were in the first trimester 2.7% (no=2). The most common complaint was numbness, particularly during the daytime (78.4%), while the least frequent symptom reported was pain. However, about half of women with CTS during pregnancy still complained of CTS symptoms one year after delivery.

**Conclusion:** A large number of pregnant women suffer from the frequent occurrence of CTS in pregnancy and are first noted during the third trimester, but only in half of women CTS symptoms disappeared one year after delivery.

**Key words:** Carpal tunnel syndrome, pregnancy, prevalence.

## Introduction

Carpal tunnel syndrome (CTS) is an entrapment median neuropathy, causing paresthesia, pain, numbness, and other symptoms in the distribution of the median nerve due to its compression at the wrist in the carpal tunnel(1). Most cases of CTS are of unknown causes, or idiopathic(2), but CTS may be associated with trauma, and with any condition that causes pressure on the median nerve at the wrist. Some common conditions that can lead to CTS include obesity, oral contraceptives, pregnancy, hypothyroidism, arthritis and diabetes. Up to one third of cases of carpal tunnel syndrome occur in association with such medical conditions (3). So Carpal tunnel syndrome is one of the most common peripheral neuropathies, and is one of the commonest elective clinical conditions presenting to hand surgery departments(4).

Carpal tunnel syndrome is common during pregnancy and is considered to have a short and benign course. It occurs most frequently in the third trimester but can develop at any time. Conservative therapies for the patient with mild symptoms of CTS are appropriate and common initial measures with very few cases require surgery. The symptoms resolve after delivery in most women with pregnancy-related carpal tunnel syndrome(5). However, in moderate to severe cases, surgery is the only treatment that provides cure. The basic principle of surgery is to increase the volume of the carpal tunnel by dividing transverse carpal ligament to release the pressure on the median nerve(6).

In the general population, the prevalence of CTS is approximately 9.6%, approximately 2.3% to 4.6% of patients with CTS are pregnant, and up to 50% of all pregnant women have nocturnal hand symptoms, mostly in the third trimester. Swelling in the hand and wrist caused by fluid retention compresses the median nerve. Also hormonal changes in pregnancy may explain this increase because a similar predisposition has been reported with menopause(7).

In spite of the public health importance of CTS, there are no universally accepted diagnostic clinical and laboratory criteria. However, it is agreed that certain electrophysiological abnormalities support the diagnosis. The most frequently used parameters are distal motor and sensory latencies as well as the sensory conduction velocity across the carpal tunnel(8). The diagnosis of CTS is traditionally based on clinical history, physical examination results, and electrophysiologic study results. More recently, ultrasonography (US) has been shown to be an accurate and useful diagnostic tool in patients with CTS(9).

The present study was undertaken with the aim of assessing the current frequency of carpal tunnel syndrome during pregnancy in our area in patients attending this hospital in Jordan and to assess the course of carpal tunnel syndrome during pregnancy.

## Methods

This is a prospective study of 400 women attending antenatal outpatients' clinic. This study was conducted between the 1st of July 2009 and the end of August 2010 at King Hussein Medical Center, Jordan. The study was approved by the ethics committee and informed written consent from all participants was obtained.

History and clinical examination of the patients was performed for all women. Maternal demographics, obstetrical events, delivery outcome, previous medical and surgical history were evaluated. All the data were compiled and continuous variables were analyzed using Student t-test. CTS were diagnosed clinically based on patient history, physical examination and electrophysiological findings.

The exclusion criteria include patients with diabetes mellitus, gestational diabetes mellitus, eclampsia, preeclampsia, thyroid disorders, trauma to the hand or wrist, and prior history of CTS.

All the women who were found to have carpal tunnel symptoms with electrophysiological proven CTS were followed in the neurosurgical clinic throughout their pregnancy and one year after delivery. Those patients were treated in different modalities. Symptoms follow up was done.

## Results

During the study period (2009-2010), 400 pregnant women attending antenatal outpatients' clinic in our hospital, and 74 (18.5%) women were found to have carpal tunnel symptoms and were sent to the neurosurgical clinic. All of them were subjected to nerve conduction study for objective assessment of CTS, and electrophysiological test proven CTS. So the current incidence of carpal tunnel syndrome amongst women attending our hospital was 18.5%. Most of them were in the third trimester of pregnancy 81.1% (no=60) followed by the second trimester 16.2% (no=12) and the least were in the first trimester 2.7% (no=2).

The most common complaint was numbness, particularly during the daytime (78.4%), while the least frequent symptom reported was pain, especially pain that awakened patients at night (16.2%) as seen in Table 1.

In addition, the study revealed that neurophysiological evaluation provided diagnosis of CTS in around half of women (45% were positive in one hand at least). Comparison of baseline and follow-up data showed a significant spontaneous improvement of patient-oriented and neurophysiologic measurements. However, about half of women with CTS during pregnancy still complained of CTS symptoms one year after delivery, despite symptomatic and electrodiagnostic improvement, 42% of patients still had diminished median distal sensory conduction velocities.

## Discussion

Carpal tunnel syndrome is a disorder of the hand caused by pressure on the median nerve as it runs through the wrist. During pregnancy, hormonal fluctuations, fluid shifts, and musculoskeletal changes predispose women to carpal tunnel syndrome. In pregnancy hormonal changes may result in fluid retention, which can compress the median nerve. CTS triggered during pregnancy usually resolves soon after birth. Symptoms may be exacerbated by repetitive hand movements, holding hands in sustained positions or by putting weight through outstretched hands(10).

Existing data reports a prevalence of CTS in pregnancy to be as high as 62%(11) and as low as 0.23%(12). Most of these data are based on clinical symptoms. Our findings were in agreement with those of a study by Bahrami et al that showed that 17% of pregnant women had CTS during pregnancy(13). Also our findings were in agreement with those of a study by Khosrawi et al(14) that showed that 63% had CTS hand symptoms during their third trimester of pregnancy, while in two other studies in the third trimester; the prevalence was 28% and 43%(15,16).

However, unlike many studies, numbness and tingling sensation were prominent symptoms in our study of pregnant women with CTS(78.4%). Pain was reported to be quite common among patients by other authors(17,18). We found that the incidence of numbness/tingling during daytime was slightly higher than at night among the women, which is at odds with the classical description of nocturnal paraesthesia in such patients in many orthopaedic textbooks.

Symptoms	No. (%)
Pain during daytime	16 (21.6%)
Pain during night	15 (20.3%)
Numbness during daytime	58 (78.4%)
Numbness during night	46 (62.2%)
Awakened at night by numbness	25 (33.8%)
Awakened at night by pain	12 (16.2%)
<b>Physical examination</b>	
Muscle atrophy (thenar)	4 (5.4%)

Table 1: Clinical findings among patients with carpal tunnel syndrome (n = 74).

In our study, neurophysiological evaluation provided diagnosis of CTS in around half of women (45% were positive in one hand at least) as seen by Padua et al study(19).

Almost all reported a short follow-up with disappearance of symptoms. Our study confirms that pregnancy-related CTS has a benign course: improvement of symptoms was evident at one year follow-up, but about half the women still complained of symptoms one year after delivery as Mondelli et al(20) reported that at one-year follow-up improved in 40% of women, did not change in 46.7% and 55.6% and worsened in 13.3% and 4.4%, respectively.

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