

Carpal Tunnel Syndrome and Trigger Digit: Common Diagnoses That Occur “Hand in Hand”

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Learning Objectives

- Discuss the risk factors and pathophysiology for concomitant carpal tunnel syndrome (CTS) and trigger fingers.
- Review the literature for the incidence of concomitant CTS and trigger fingers.
- Clarify the nature of the association between CTS and trigger fingers.
- Examine the frequency of developing trigger finger following carpal tunnel release.
- Elucidate whether trigger finger can be caused by carpal tunnel release.

Deadline: Each exam purchased in 2013 must be completed by January 31, 2014, to be eligible for CME. A certificate will be issued upon completion of the activity. Estimated time to complete each month's JHS CME activity is 2 hours.

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BACKGROUND

Carpal tunnel syndrome (CTS) and trigger digit (TD) are 2 of the most common disorders treated by hand surgeons.¹ Both conditions are due to limited space in

an enclosed anatomical region and often coexist in the same patient, suggesting a common pathophysiological process.^{2,3} The clinical scenario of the postoperative carpal tunnel syndrome patient presenting with a new-

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onset trigger finger, which he or she believes to be caused by the surgery, is relatively common. There is sufficient evidence to support a tendency for CTS and TD to develop “hand in hand” in the same individual.

PATHOPHYSIOLOGY

Whereas the etiology of CTS and TD is idiopathic, one causative theory is of fibrous proliferation of the flexor tendon synovium and thickening of either the transverse carpal ligament or the A1 pulley.^{2,4–6}

Diabetes has also been reported to play a causative role. In a prospective study by Chammas et al,⁷ CTS was 6 times more frequent in the patients with type I diabetes and 4 times more frequent in the patients with type II diabetes. The pathogenesis was felt to be entrapment and compression owing to connective tissue proliferation.⁷ Ferree et al⁸ examined the risk factors for developing multiple TDs and found that, of 22% of patients who developed a second TD, the only significant risk factors were concomitant CTS and diabetes.

CONCOMITANT TD AND CTS: HOW COMMON IS IT?

Case reports of pediatric CTS and associated TD were published as early as 1969 by McArthur et al⁹ in a paper that presented an example of CTS and TD in young siblings. Garti et al, in 2001,¹⁰ found that 63% of adults with TD and no symptoms of CTS had increased median nerve distal motor latencies compared with less than 8% of a control group without TD or carpal tunnel symptoms. Rottgers et al, in 2009,³ reviewed 108 patients to study the incidence of CTS and TD at initial presentation. Sixty-two percent presented with a primary complaint of CTS and 38% with complaints of trigger finger, although on initial evaluation, it was found that 61% actually had evidence of concomitant CTS (electromyography [EMG] proven) and TD.³ Kumar and Chakrabati, in 2009,⁶ reviewed 681 consecutive patients presenting with CTS and/or TD. Of the 211 patients with TD, 43% also had CTS, which they noted to be much higher than the population prevalence of 3.8% for CTS.

Wessel et al, in 2013,² examined the incidence of CTS in patients treated for TD (single vs multiple), by either surgical release or corticosteroid injection, during a period of 24 months before treatment and for an average of 35 months after treatment. They found carpal tunnel symptoms in 41% of the subjects with multiple TDs, compared with 16% with a single TD, with ipsilateral presentation being more common.² The frequency of carpal tunnel symptoms in hands with 0, 1, 2, 3, and 4 ipsilateral TDs was 13%, 20%, 36%, 44%, and

80%, respectively. In addition to multiple TDs, they found that diabetic patients had higher odds of CTS presentation than nondiabetic subjects. They concluded that these results suggest a common pathological process independent of surgical intervention.

TD OCCURRING FOLLOWING CARPAL TUNNEL RELEASE: COMPLICATION OR COINCIDENCE?

The first cases of TD following carpal tunnel release (CTR) were reported in the late 1950s.¹¹ Hombal et al, in 1970,¹¹ analyzed 140 hands in 124 patients undergoing CTR. Twenty-one hands required surgery for subsequent TD, and only 4 had symptoms consistent with TD before CTR. They hypothesized that loss of the flexor retinaculum enables the flexor tendons to bowstring, placing more tension on the proximal pulleys, possibly predisposing to TD development following CTR.^{11,12} Harada et al, in 2005,¹³ in a series of 875 idiopathic CTS cases, found that 11.5% of patients required trigger digit release (TDR) within 3 years before and/or after CTR; preoperative distal motor latency was significantly more prolonged in CTS with associated TD in the Harada et al study.¹³ There was no difference between endoscopic and open CTR.¹³ Also, in 2005, a prospective study of 152 patients conducted by Hayashi et al¹⁴ found that 16% of patients treated conservatively for CTS had TD, whereas 20% of those treated operatively had TD. By 1-year follow-up, 30% of subjects had developed a new TD, with most of these patients being in the operative group.¹⁴ They concluded that surgery was a significant risk factor for the onset of TD and may accelerate development of TD when CTS was mild to moderate, but not when it was severe.¹⁴ Rottgers et al, in 2009,³ noted a higher tendency for TD following CTR to occur in the contralateral hand, suggesting that CTR did not precipitate TD in the operated hand.

In 2010, Goshtasby et al¹⁵ conducted a retrospective study of 792 patients undergoing CTR and found the incidence of new-onset TD after CTR to be 6.3%. Endoscopic carpal tunnel release (ECTR) (but not open CTR), along with osteoarthritis, was an independent risk factor for new-onset TD following CTR.¹⁵ King et al¹² recently published a retrospective study on the incidence of TD and de Quervain after 1185 cases of CTR. The incidence of TD in the hand that underwent CTR was 6.6% compared with 3.5% for the untreated contralateral hand ($P < .001$).¹² The only digit to trigger more frequently in the hand that underwent CTR was the thumb; other digits did not exhibit such a tendency.¹² This association was stronger for the dom-

inant hand. There was no tendency for de Quervain to develop after surgery in the operated hand.

DISCUSSION

CTS and TD do seem to occur “hand in hand.” Patients presenting with either CTS or TD should be made aware of this association to prepare them for the possible occurrence of the second diagnosis following surgical or nonsurgical treatment of their condition. Based on published studies, the chance of having concomitant TD and CTS at initial presentation is as high as 40% to 60%. Because the chance of developing TD with a previous CTS diagnosis is substantial, it is difficult to determine whether CTR accelerates or predisposes to new-onset TD (compared with nonoperative CTS treatment), and the literature is conflicted on this issue. Further large-scale studies concerning the epidemiology of these conditions will shed more light on these associations.

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JOURNAL CME QUESTIONS

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What is the approximate incidence of concomitant carpal tunnel syndrome (CTS) and trigger digit (TD)?

- 10%
- 25%
- 50%
- 75%
- 90%

What situation is more likely for CTS and TD to be encountered simultaneously?

- When CTS and TD are not in the same hand
- Only among male patients in the nondominant hand
- If TD is due to congenital anomaly of the flexor tendon
- If the patient is nondiabetic
- When TD affects multiple digits

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