



ORIGINAL RESEARCH

Medicine Science 2017;6(4):729-32

## The frequency of de quervain tenosynovitis, trigger finger and dupuytren contracture accompanying idiopathic carpal tunnel syndrome

Cengiz Aldemir, Fatih Duygun

Antalya Training and Research Hospital, Department of Orthopedics and Traumatology, Antalya, Turkey

Received 15 November 2017; Accepted 15 November 2017  
Available online 08.12.2017 with doi: 10.5455/medscience.2017.06.8678

### Abstract

Our aim in this study was to determine the frequency of Trigger finger, De quervain tenosynovitis and Dupuytren contracture in patients who underwent Idiopathic carpal tunnel release. The frequencies of trigger finger (TF), De Quervain tenosynovitis (DQ), and Dupuytren contracture (DC) on the same or contralateral extremity were evaluated in 430 patients who underwent surgery with a diagnosis for idiopathic carpal tunnel syndrome (ICTS) from January 2008 to August 2017. The mean age of patients was 54.6 (range, 40-68), and 348 were female while 82 were male. We identified 42 cases with TF (9.76%), 7 cases with DQ (1.62%), and 10 cases with DC (2.32%). We believe that our data could provide insight for the evaluation of the Turkish population.

**Keywords:** Idiopathic carpal tunnel syndrome, De Quervain tenosynovitis, trigger finger, Dupuytren contracture

### Introduction

Currently, there is a lack of studies in which the frequency of De Quervain tenosynovitis, trigger finger and/or Dupuytren contracture accompanying idiopathic carpal tunnel syndrome is determined. The literature on this matter shows that results vary according to population. Carpal tunnel syndrome (CTS) was first defined by Paget in 1854. Carpal tunnel syndrome, which is defined as the compression of the median nerve at the wrist, is the most common entrapment neuropathy of the upper extremity [1-3]. It is most frequently seen from the 3rd decade to the 5th and female/male ratio is 3/1. Incidence is 52/100000 in men and increases with age; while in females, incidence is 149/100000 and shows a sharp increase after menopause. Prevalence is 3-3.4% in females, and 0.6-2.7% in males [4,5]. It is frequent in middle-aged females, and may also be found in employed young females and older females [6, 7]. Diagnosis is usually made with history and physical examination. Neurophysiological tests may be utilized to confirm the diagnosis [8].

Trigger finger is characterized by catching, clicking or locking of the fingers due to the flexor tendon being caught at the A1 pulley [9, 10]. It is the most frequent distal tendinitis of the hand and wrist. De Quervain tenosynovitis is less common, with a frequency 1/20th of TF [11].

De Quervain tenosynovitis (DQ) is an entrapment tendinitis of the tendons at the first dorsal compartment of the wrist and pain is caused by movements of the thumb [12].

Dupuytren contracture (DC) is a fibroproliferative disease of the palm. It has been shown to be associated with genetic, environmental factors, diabetes, HIV infection, alcohol, smoking, and antiepileptic drugs. No associations with hand labor or working with tools causing vibration have been shown [13]. Dupuytren contracture has been shown to frequently cause flexion contractures at the proximal interphalangeal and metacarpophalangeal joints of the fingers [14, 15].

### Material and Methods

The presence of TF, DQ and DC in the effected or contralateral hand at the time of intervention for ICTS was investigated in 430 patients who were operated on from January 2008 to August 2017. Cases were evaluated retrospectively by reviewing hospital records. Patients who had history of antiepileptic use, thyroid disorder, diabetes mellitus, coronary artery disease, heart failure, scleroderma, inflammatory arthropathy, romatoid arthritis, chronic obstructive pulmonary disease, pregnancy, and those who had previously undergone wrist surgery or had had any kind of wrist infection were excluded from the study. The age, sex, effected finger(s) and the number of effected fingers were recorded for all patients. Among the 430 patients who underwent surgery for ICTS, 348 were female, 82 were male, and mean age was 56.4 (range, 40-66).

**Corresponding author:** Cengiz Aldemir, Antalya Training and Research Hospital, Department of Orthopedics and Traumatology, Antalya, Turkey  
**E-mail:** [aldemircengiz@yahoo.com](mailto:aldemircengiz@yahoo.com)

## Results

Among all the ICTS patients included into the study (Table 1); 42 had TF, 33 were female, 9 were male, mean age was  $57.1 \pm 6.3$  (Table 2). Distribution of affected fingers were: the thumb (38.1%), index finger (9.5%), middle finger (19%), ring finger (28.6%), little finger (4.8%) (Fig 1). Additionally, 8 patients had multiple TF.

Ten patients were found to have DC, 2 were female and 8 were male. Mean age of these patients was  $58.9 \pm 4.2$  (Table 3).

A total of 7 patients were identified as having DQ, 2 males and 5 females. Mean age was  $52 \pm 6.8$  (Table 4).

A 56-year-old female had ICTS accompanied by TF on the 4th digital and DQ. Another patient, a 65-year-old male, had ICTS accompanied by DQ and DC (Fig 2).

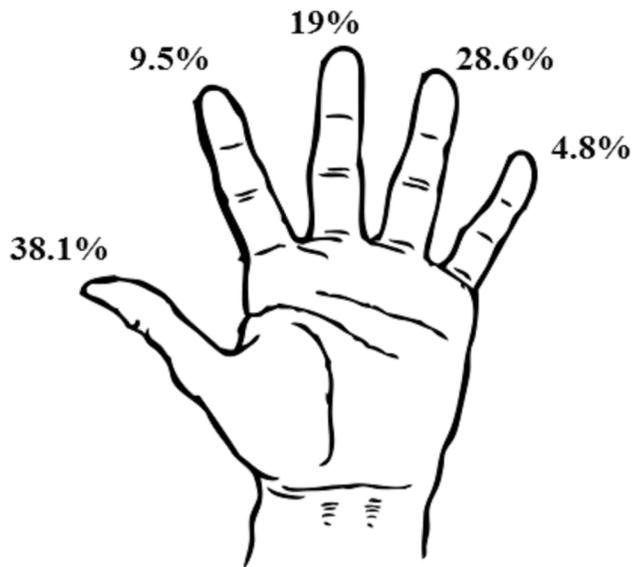


Figure 1. Percent of fingers

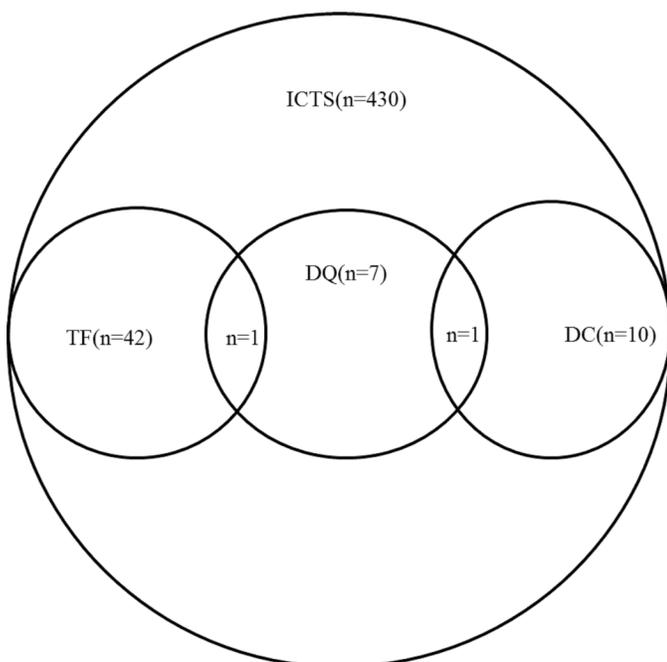


Figure 2: Frequency distribution of ICTS types

Table 1. Patients characteristics

		n:61
Age, mean±SD		56.9±6.25
Gender, n(%)	Female	41(67.2)
	Male	20(32.8)
Group, n(%)	ICTS and TF	42(68.9)
	ICTS and DC	10(16.4)
	ICTS and DQ	7(11.5)
	ICTS, TF and DQ	1(1.6)
	ICTS, DC and DQ	1(1.6)

Table 2. ICTS and TF patients characteristics

		n:42
Age, mean±SD		57.1±6.3
Gender, n(%)	Female	33(78.6)
	Male	9(21.4)

Table 3. ICTS and DC patients characteristics

		n:10
Age, mean±SD		58.9±4.2
Gender, n(%)	Female	2(20)
	Male	8(80)

Table 7. ICTS and DQ patients characteristics

		n:7
Age, mean±SD		52±6.8
Gender, n(%)	Female	5(71.4)
	Male	2(28.6)

## Discussion

The frequency of TF and DQ development prior to surgery or within an allotted time in ICTS patients have been investigated in some studies. However, the frequencies reported in these studies vary [10, 16, 17].

Rotgers and colleagues found the rate of simultaneous TF and CTS as 61%. They reported that 53% of their patients were diabetic, and mean age was  $62.2 \pm 13.6$ . Additionally, they observed that 18.5% of patients had findings suggestive of Dupuytren contracture [10].

Harada et al. reported that, among 875 ICTS patients, 101 (11.5%) required TF release surgery before or within 3 years of carpal tunnel release surgery. The patients' mean age was 60.7 years and female:male ratio was 3:1 [16].

Hayashi et al. reported TF prevalence as 11.5% in patients who underwent carpal tunnel release surgery [17]. Kumar et al. reported the same prevalence as 21%, mean age as 59, and observed multiple TF in 29% of which 63% were female [18].

In another study, Wessel and colleagues showed that CTS development was 3-fold more frequent in patients who were

operated due to multiple TF, compared to those who underwent surgery due to single TF [19].

In our study, all patients had been diagnosed with ICTS. However, we do not have any record that indicates if these patients developed any other pathologies after CTS release surgery. This may be seen as a limitation of our study.

We found that 42 patients had simultaneous ICTS and TF, which translates to 9.76% of patients. Harada and Hayashi found this ratio as 11.5% and Kumar et al. found 21%. Although these values are very different, explanations to identify the cause of these differences were insufficient. In the present study, mean age of these patients was 57.1±6.3, while Harada found 60.7, and Kumar found 59 years. Female to male ratio was 3.66:1 in our study, 3:1 in the study by Harada et al., and 1.7:1 in the study by Kumar et al.

The distribution of fingers effected by TF in ICTS patients was found as 37% in the thumb, 9% in the index finger, 31% in the middle finger, 19% in the ring finger, and 4% in the little finger by Harada. We found this distribution as 38.1% in the thumb, 9.5% in the index, 19% in the middle, 28.6% in the ring, and 4.8% in the little finger. Thus, we found that middle finger involvement is low and ring finger involvement is high.

In our study, 8 cases had multiple TF (19%). In Kumar's study, this ratio was 29%. While there are various studies in which the associations between CTS with identified etiology (especially diabetes) and DQ, DC, TF are identified [10, 20]; there are very few studies with ICTS.

Simultaneous De Quervain tenosynovitis and ICTS is very rarely reported in the literature. King et al. have reported that development of De Quervain tenosynovitis on the same or contralateral hand after CTS surgery is seen in 1.3% of patients [21]. In our study, we found 7 (1.62%) patients had this condition and mean age was 52±6.8 while female:male ratio was 5:2.

Although the literature is extremely limited, presence of simultaneous DC and ICTS has been reported to be 4.6% in the literature [22]. In the present study, 10 (2.32%) patients had DC and ICTS. Mean age was 58.9±4.2 and female:male ratio was 1:4.

In addition to these findings, we found that a 56-year-old female had ICTS accompanied by TF on the 4th digital and DQ. Another patient, a 65-year-old male, had ICTS accompanied by DQ and DC.

## Conclusion

Although there are various studies in the literature which report findings for pathologies accompanying CTS with identified etiology, the literature is very limited when ICTS is considered and the results of these few studies show significant differences. Our opinion is that these differences are influenced by a broad range of factors, from the surgeon to environmental and social differences. We believe that our data could provide insight for the evaluation of our population.

## Compliance with Ethical Standards

**Conflict of Interest** The authors declare that they have no conflict of interest.

**Funding** There is no funding source.

**Informed consent** was obtained from all individual participants included in the study.

## References

- Mackinnon SE, Novak CB. Compression Neuropathies. In: Wolfe SW, Hotchkiss RN, Pederson WC, Kozin HS, editors. *Green's Operative Hand Surgery*, 6th edition. Churchill Livingstone Elsevier, Philadelphia, 2011;985-94.
- Beasley RW. *Beasley's Surgery of the Hand*, 1st edition. Thieme Medical Publishers, New York, 2003;443-55.
- Canale ST, Beaty JH. *Campbell's Operative Orthopaedics*, 12th edition. Elsevier Mosby, Philadelphia, 2012;3637-57.
- Chammas M, Boretto J, Burmann LM, Ramos RM, Dos Santos Neto FC, Silva JB. Carpal tunnel syndrome - Part I (anatomy, physiology, etiology and diagnosis). *Rev Bras Ortop* 2014;49(5):429-36.
- Kaymak B, Özçakar L. Karpal Tünel Sendromu. *Hacettepe Tıp Dergisi* 2007;38:141-6.
- Wyatt MC, Gwynne-Jones DP, Veale GA. Lamb boning-an occupational cause of carpal tunnel syndrome? *J Hand Surg Eur Vol.* 2013;38(1):61-6.
- Townshend DN, Taylor PK, Gwynne-Jones DP. The outcome of carpal tunnel decompression in elderly patients. *J Hand Surg Am.* 2005;30(3):500-5.
- Graham B, Regehr G, Naglie G, Wright JG. Development and validation of diagnostic criteria for carpal tunnel syndrome. *J Hand Surg Am.* 2006;31(6):919-24.
- Masanori Hayashi, Shigeharu Uchiyama, Hiroshi Toriumi, Hiroyuki Nakagawa, Mikio Kamimura, Tadaatsu Miyasaka. Carpal tunnel syndrome and development of trigger digit. *J Clin Neurosci.* 2005;12(1):39-41.
- Rottgers SA, Lewis D, Wollstein RAJ. Concomitant presentation of carpal tunnel syndrome and trigger finger. *Brachial Plex Peripher Nerve Inj.* 2009; 25(4):7221-4
- Guerini H, Pessis E, Theumann N, Le Quintrec JS, Campagna R, Chevrot A, et al. Sonographic appearance of trigger fingers. *J Ultrasound Med.* 2008;27(10):1407.
- Ilyas AM, Ast M, Schaffer AA, Thoder J. De quervain tenosynovitis of the wrist. *J Am Acad Orthop Surg.* 2007;15:757-64.
- Nunn AC, Schreuder FB. Dupuytren's contracture: emerging insight into a Viking disease. *Hand Surg.* 2014;19(3):481-90.
- Rayan GM. Dupuytren disease: anatomy, pathology, presentation, and treatment. *J Bone Joint Surg Am.* 2007;89:189-98.
- Shih B, Bayat A. Scientific understanding and clinical management of Dupuytren's disease. *Nat Rev Rheumatol.* 2010;6:715-26.
- Harada K, Nakashima H, Teramoto K, Nagai T, Hoshino S, Yonemitsu H. Trigger digits-associated carpal tunnel syndrome: Relationship between carpal tunnel release and trigger digits. *Hand Surg.* 2005;10(2-3):205-8.
- Hayashi M, Uchiyama S, Toriumi H, Nakagawa H, Kamimura M, Miyasaka T. Carpal tunnel syndrome and development of trigger digit. *J Clin Neurosci.* 2005;12(1):39 - 41.
- Kumar P, Chakrabarti I. Idiopathic carpal tunnel syndrome and trigger finger: is there an association? *J Hand Surg Eur.* 2009;34(1):58-9.
- Wessel LE, Fufa DT, Boyer MI, Calfee RP. Epidemiology of carpal tunnel syndrome in patients with single versus multiple trigger digits. *J Hand Surg Am.* 2013;38(1):49 -55.
- Chammas M, Bousquet P, Renard E, Poirier JL, Jaffiol C, Allieu Y. Dupuytren's disease, carpal tunnel syndrome, trigger finger and diabetes mellitus. *J Hand Surg Am.* 1995;20(1):109 -14.

21. King BA, Stern PJ, Kiefhaber TR. The incidence of triggerfinger or de Quervain's tendinitis after carpal tunnel release. *J Hand Surg Eur.* 2013;38(1):82-3.
22. Buller M, Schulz S, Kasdan M, Wilhelmi BJ. The Incidence of Complex Regional Pain Syndrome in Simultaneous Surgical Treatment of Carpal Tunnel Syndrome and Dupuytren Contracture. *Hand.* 2017;1:1-4.