

Trigger Digit, Carpal Tunnel Syndrome, and de Quervain's Disease:
Co-existence, Gender, and Age Distribution in a Surgical Cohort

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Abstract

Background: The association of trigger digit, carpal tunnel syndrome, and de Quervain's disease is well known. **Question:** The etiology of these three idiopathic tenosynovitides remains unclear. **Patients and:** The records of 177 surgical cases are reviewed in this clinical, retrospective study. **Results:** The peak age incidence is the sixth decade. 31% of the patients with the three tenosynovitides have multiple forms of the tenosynovitides. Females are more likely to suffer from more than one form of tenosynovitis than males. ($p < 0.05$). 26.1%, 40.5% and 29.2% of patients with trigger digit, carpal tunnel syndrome, and de Quervain's disease, respectively, have bilateral involvement. Trigger digit occurs most commonly in the middle finger, followed by the ring, thumb, index and little fingers. However, bilateral trigger thumb and trigger ring finger is more common than expected ($p < 0.01$). Only 28% of trigger middle finger patients become bilateral, which is less than expected ($p < 0.01$). **Conclusions:** There appears to be a gender and age relationship among the three disorders, suggesting a genetic origin.

Aetiology, of Evidence Level IV

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The association of stenosing tenosynovitis, carpal tunnel release, and de Quervain's disease has been described in the past by numerous authors (6, 17, 21). While trauma is sometimes the etiology, the cause of most cases of tenosynovitis remains unknown (14-15, 18-19, 23, 25-26, 28, 30-32). Phalen and other authors mentioned 35 associated disorders with carpal tunnel syndrome, including trigger digit and de Quervain's disease (18-19, 25, 27-28, 30, 32). Lipscomb recorded the association of the three idiopathic tenosynovitides in over 600 cases and referred to them as a collagen disease (20). Other studies have referred to the etiological importance of constitutional factors (6,17,21,15,14,23,26,31,28), (32,27,20,1,3,4,5,7-12, 16,29,24,13,2,22). The purpose of this clinical, retrospective study is to demonstrate that trigger finger, carpal tunnel syndrome and de Quervain's disease are age and gender related, and often occur in the same person.

MATERIALS AND METHODS

The records of 177 consecutive hand surgical cases from the practice of Daniel C. Riordan, M.D. with any of the three idiopathic tenosynovitides i.e. carpal tunnel syndrome, trigger digit, de Quervain's disease, were examined for the presence of other instances of carpal tunnel syndrome, de Quervain's disease and trigger digit. There were 129 females and 48 males with a female-to-male ratio of 2.69:1. The ages of the patients ranged from 9-85 years (Figs. 1 and 2). 195 right and 143 left hands were involved by tenosynovitis (table 1). Follow-up ranged from 1-13 years. The mean follow-up was 4.4 years and the median 4.0 years. Pregnancy, post

pregnancy lactation, local injury, rheumatoid arthritis, gout, cancer, chronic renal or gastrointestinal disease, birth control pills, hypothyroidism, and severe cardiovascular disease excluded patients from the study. This manuscript was reviewed by my Institutional Review Board

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RESULTS

Carpal tunnel syndrome is the most common form of tenosynovitis followed by trigger finger and de Quervain's disease (Table 1). On a disease by disease basis females outnumber males by at least 3:1 (table 2). Carpal tunnel syndrome or trigger finger on the right hand and bilateral carpal tunnel syndrome or bilateral trigger finger are more common than the left-hand occurrence of either alone ($p < 0.01$ and $p < 0.025$, respectively). De Quervain's disease is equally likely to occur on the right hand, left hand, or bilaterally (not significant).

68.9% (126) of the patients have one form of tenosynovitis (F:M = 2.2:1), 27.1% (48) have two tenosynovitides (F:M = 7:1), and 4% (7) have three tenosynovitides (F:M = 2.5:1). Females are more likely to have more than one form of tenosynovitis than males ($p < 0.05$). Trigger finger, de Quervain's disease, and carpal tunnel syndrome occur with other tenosynovitides in 69.6%, 58.4%, and 32.7% of cases, respectively. Trigger finger occurs with carpal tunnel syndrome in 52.9% of cases. Carpal tunnel syndrome occurs with trigger finger in 27% of cases. De Quervain's disease occurs with trigger finger in 41.6% of cases. Trigger finger is more likely to

occur with another tenosynovitis than is de Quervain's disease or carpal tunnel syndrome ($p < 0.01$). Trigger finger or de Quervain's disease is more likely to occur with another tenosynovitis than is carpal tunnel syndrome ($p < 0.05$). Trigger thumb ($p < 0.01$) and trigger little finger ($p < 0.05$) are more likely to occur with another tenosynovitis than triggering of the index, middle or ring fingers. There were 210 trigger digits among the 89 patients with trigger finger. The mean number of trigger fingers per patient was 2.36 and the median was 1.58.

The relative frequency of occurrence of trigger finger among the five digits in unilateral and bilateral cases ($n = 89$), is middle, ring, thumb, index, little. However, when trigger finger occurs in a patient who has also experienced carpal tunnel syndrome, the sequence is digits 3, 1, 4, 2, 5 ($p < 0.01$). Stenosing tenosynovitis occurs in the same digits of both hands in 48.2% of all cases (Table 3). One-third of all patients with trigger thumb or trigger ring finger developed bilateral involvement of their thumbs and ring fingers, respectively. This is more common than expected when compared to the relatively frequent occurrence of unilateral or bilateral trigger fingers i.e., middle, ring, thumb, index, little ($p < 0.01$).

The peak age incidence for each of the tenosynovitis's is the sixth decade (fig. 1). The number of patients with bilateral disease or patients with multiple trigger fingers also peak in the sixth decade (Figs. 3 and 4). Two-thirds of patients with trigger finger and greater than 40 years of age have more than one trigger finger. 42.9% of patients with trigger finger and less than 40 years of age have more than one trigger finger. 46.1%, 40.5%, and 29.2% of patients with trigger finger, carpal tunnel syndrome, and de Quervain's disease, respectively, have bilateral involvement.

DISCUSSION

The frequency with which trigger finger, carpal tunnel syndrome, and de Quervain's disease are associated with each other suggests diathesis to the diseases among affected individuals. 31.1% of the patients with tenosynovitis have two or more forms of tenosynovitis. Over 40% of patients with trigger finger or carpal tunnel syndrome and almost 30% of patients with de Quervain's disease have bilateral involvements. Trigger finger occurs in the same digits of both hands in almost 50% of cases. Trigger thumb and ring finger become bilateral more commonly than expected, and trigger middle, less often than expected. The variations in the distribution of the diseases among the digits and in either or both hands suggest that repetitive trauma is etiologically less important in the idiopathic tenosynovitis than in constitution.

Trigger finger is accompanied most often by carpal tunnel syndrome (52.9%) and occurs in these cases more commonly in the thumb and little finger. This may be due to the proximal extension of the radial and ulnar bursae into the carpal tunnel. Females predominant in this study group and are more likely to suffer from more than one form of tenosynovitis than males. The peak age incidence for each form of disease is the sixth decade. Postmenopausal hormonal differences may be related to the onset of the idiopathic tenosynovitis's.

Frequent co-existence, common peak age incidences, frequency of bilaterally, serial development of multiple tenosynovitis's, female predominance and a greater likelihood of multiple disease forms suggest that trigger digit, de Quervain's disease, and carpal tunnel syndrome are tardive manifestations of a genetic predisposition.

Legends

Figure 1: Clinical material

Figure 2: Total patients

Figure 3: Incidence of bilateral disease with increasing age.

Figure 4: Incidence of multiple trigger fingers with increasing age.

Table I

Clinical Material

Disease	Male	Female	Total	Left	Right	Both	Total Hands
TF	21	68	89	18	30	41	130
DQ	5	19	24	7	10	7	31
CT	32	94	126	19	56	51	177

TF = Trigger Finger

DQ = De Quervain's Disease

CT = Carpal Tunnel Syndrome

Table II

Distribution

Disease	Percent	Female:Male Ratio
Trigger finger	50.3	3.24
De Quervain's disease	23.6	3.8
Carpal tunnel syndrome	71.2	2.94

Table III

Patients with Bilateral
Trigger Finger

Digit	Percent
1	13.5
2	2.2
3	16.8
4	14.6
5	1.1

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